7. 別添資料

7—1　ミニプロガイドブック

7—2　ミニプロフォームシート

7—3　ミニプロデータブック

7—4　JSISTパンフレット

7—5　NEC-JSISTコンピュータ・ラボラトリーパンフレット

7—6　トップマネージメントセミナーパンフレット（58，59，60年度）

7—7　NCBパンフレット

7—1　ミニプロガイドブック

MINI-PROJECT

GUIDEBOOK

AD01

February 1988

JAPAN SINGAPORE INSTITUTE OF SOFTWARE TECHNOLOGY

C O N T E N T S

1. Mini-Project Outline

1.1 Aim

1) To enable the students to set up an information system applying selected methodologies and the online database approach

2) To enable the students to consolidate all that they have been taught on the course

1.2 Objectives

1) To apply project management skills to manage a project

2) To plan and designed an information system using an appropriate system development methodology

3) To develop a computerized information system using a relational database management system and data communication system and some software productivity tools

4) To develop programs to interface the operating system and the application software

1.3 Outline of Jupiter-Saturn Institute (JSI)

1.3.1 Background

The Jupiter-Saturn Institute (JSI) was set up in early 1982. It was a joint venture between Jupiter and Saturn with the aim of training suitable candidates as computer professionals to meet the demand in Singapore.

Currently, the courses conducted in JSI are as follows:
1) Diploma in System Analysis and Programming
2) Certificate in System Analysis
3) Diploma in System Analysis
4) Advanced Diploma in Software Technology

With these 4 courses running, JSI has a student population of 350 and a pool of 35 lecturers.

The Administration section is supported by 1 Directorate and 6 Administration staff who can barely cope with the paperwork and the retrieval of up-to-date information.

As the demand of the computer industry changes, the Institute has to introduce more courses to meet such requirements. Hence, the management feels that an Administration Information System is desirable to support the administrative functions of JSI.

A 5-member project team undertook the task of conducting a feasibility study on the JSI Administration Information System. Their recommendations are detailed below.

1.3.2 Outline of JSI Administration Information System (JSI-AIS)

The objectives of the JSI-AIS are:

1) To provide information to support the administrative functions of JSI

2) To maintain accurate, timely and relevant information

3) To provide information necessary to support the decisions and reporting obligations of JSI

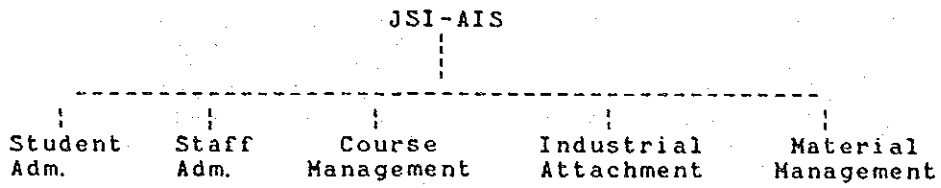


Fig 1.1 Module Structure of JSI-AIS

The outline of each subsystem is as follows:

Student Administration

students' examination results, assessment results, project evaluation and other performance reports

Staff Administration

up-to-date timetable schedules, staff movements, staff training courses

Course Management

information on course advertisement, course application, course assessments and course feedback

Industrial Attachment

online updating and ad hoc enquiries on students' industrial attachments and companies' background

Material Management

online updating and ad hoc enquiries on all inventorised items

1.3.3 Outline of the Student Administration Sub-System (SAS)

SAS consists of 5 modules:

1) Students Recruitment

This module handles enquiries, by applicants or students, on course information. It also shortlists applicants and allows queries based on the number of GCE 'A' Level passes by the JSI Directorate.

2) Students Registration

This module selects applicants based on the criteria set by the JSI Directorate. Subsequently, it registers successful applicants as students of JSI.

3) Course Coordination

This module prints a list of students on any specific course upon request as well as providing an online enquiry based on corresponding input codes.

Registration of new course(s) information and termination of students are also performed by this module.

4) Examination

This module registers information and results on examinations, and subject assessments. It provides detailed examination information and examination results (both on individual and batch) and prints transcripts upon request at the end of a course.

5) Students' Awards

Outstanding students are presented with awards from various organizations. This module selects students who meet the stated criteria and prints out a list of eligible students for the JSI Directorate's final approval.

This module also registers details on new awards. It support enquiries on types of awards available and the recipients of each award.

1.4 Scope of Mini - Project

The following shows the scope of Mini - Project in comparison with that of actual system development.

Phase	Activities to be carried out in actual system development		Mini - Project
SYSTEM ANALYSIS	Problem clarification	Formalization of problems to be solved	X
		Investigation of restrictive conditions	X
		Determination of system area	•
		Job analysis	•
		Function interface analysis	•
	System model creation	System concept model creation	•
		System installation plan creation	X
	Basic system design	Basic system structure design	•
		Basic function design	•
		Data relation design	X
	Clarification of system requirement	Job execution requirement	•
		Process requirement	•
		Man-machine interface requirement	O
		Database (file) requirement	•
		Hardware requirement	•
		System operation requirement	•
	System model evaluation	Cost estimation	X
		Effect estimation	X
	Implementation plan	System development plan	O
	Documentation	System requirement specification	•
GENERAL DESIGN	Man - machine interface design	Output system investigation	O
		Input system investigation	O
		Conversational system investigation	O
	Database (file) design	Data structure optimization	•
		Database (file) specification	O
	Data-item (code) design	Data-item specification	•, O
		Check method specification	•
	Process design	Program structure investigation	O
		Program processing requirement	O
	Reliability design	Trouble countermeasures and recovery	•
	Job operation design	Job investigation by department	X
		Job operation method	•
		Job process flow	X
	System operation design	Computer operation plan	•
		Operation regulation method	X
		Program and data preservation method	X
	Performance evaluation	Memory capacity, response time	X, O
		Hardware load estimation	X
		Determination of hardware configuration	•
	System test design	Investigation of procedure and method	O
	System transfer planning	Investigation of procedure and method	X
	Documentation	System specification	X

PHASE	Activities to be carried out in actual system development		Mini-Project
DETAILED DESIGN	Code Design	Code table creation	X
		Code management method	X
	Man-machine interface detailed design	Output layout	O
		Input layout	*
		Terminal operation specification	O
		Screen layout	O
		Message specification	O
	Database (file) detailed design	Table specification	O
		Item arrangement	O
		Allocation of database to volume	O
	Program design	Program processing outline	O
		Program function specification	O
		Program structure specification	O
		Work area specification	O
		Common module specification	X
		Module specification	O
		Key record specification	X
	Module test design	Module test procedure	O
		Module test method	O
		Support tool design for module test	*
	Documentation	Program specification	X
SYSTEM CONSTRUCTION	Man-machine interface implementation	Screen file creation	O
		Print format control file creation	O
	Database (file) construction	Table creation	O
		Initial master file creation	O
	Programming	Common module creation	X
		Coding, source library creation	O
		Compile and link	O
	Module test	Preparation of module test	O
		Execution of module test	O
	Documentation	Program maintenance manual	X
SYSTEM TEST AND INSTALLATION	System test	Preparation of system test	O
		Execution of system test	O
	Documentation	Code manual	X
		Job operation manual	X
		System operation manual	O
	System transfer	Preparation of job operation	X
		Preparation of system operation	X
		Parallel processing	X

Note
O : to be practised
* : to be given and explained to the students as Project Background
X : not to be practised under the Mini-Project

1.5 Evaluation

1) Individual evaluation (technical)
   - based on the assigned tasks during phase reviews

2) Group leader evaluation (management)
   - progress of project, coordination
   - organization of work assignments
   - strategy of phase review
   - evaluation is progressive (daily, during phase reviews etc.)

3) Overall Project evaluation (group)
   - integration of modules
   - cooperation among members
   - group's attitude

2. Project Work Guidelines

2.1 Organization of student groups

4 students in a group with each member playing the role of group leader at least once. The selection of group leader is left to each group. This assignment schedule must be submitted to the LLs in charge.

2.2 Role of Group Leader

- assign work to members
- determine project's schedule
- coordinate work flows
- arrange meetings with local lecturers
- organize phase reviews

2.3 Role of Local Lecturers (LLs) and Japanese Experts (JEXs)

- LLs play the role of technical advisors
- JEXs are internal advisors

2.4 Meeting, Riview and Communication

2.4.1 Rule of communication

- all meetings should be arranged by the group leader
- appointments should be fixed with the LLs & JEXs
- there are three types of meetings:

1) Regular Meeting
   - once a week on every Monday
   - conducted by the group leader
   - report on progress and problems of the previous week
   - adjust the schedule if necessary
   - LLs to correct and guide progress of the students

2) Phase Review
   - at the end of General Design, Detailed Design, VIS Design, Coding and System Test Design
   - conducted by the group leader
   - review specification and program codes
   - LLs play the role of observers
   - techniques such as walkthrough should be practised
   - ensure that required deliverables for each phase is completed

3) Presentation
   - at the end of the Mini Project
   - conducted by LLs
   - each group presents their system
   - all groups meet together

2.4.2 Review Guidelines

1) Each review must not exceed two hours.

2) The materials to be reviewed must be distributed at least one day before.

3) Each member must read the materials beforehand and complete the problem description list (use Form Sheet FC-99). Leave the "solution plan" column blank.

4) For the review, the following roles are played by the members:

a)	Moderator	- conduct the meeting
b)	Secretary	- record any problems found during the meeting
c)	Presenter	- present the materials to be reviewed
d)	Reviewers	- review the presentation and identify any bugs

5) The method of correcting the problem must not be discussed during the review. It is the task of the author to find a solution for the problem himself and submit the inspection summary report (problem description list) to the group leader and advisors.

6) The purpose of the review is to find errors/problems and not to make destructive criticisms aimed at the author. If many errors/problems are found, the review is considered as successful.

2.5 Work Documents to be submitted by the students

All the Work Documents listed in Chapter 4 are to be completed and submitted by each group.

2.6 Scope of Practice (AP, VIS, RIQS etc.)

The following tasks are to be carried out by the students:

1) Application (AP)

The following functions, under Module 1.4 - Examination are to be developed :

In this case, students should consider totoal system, but at the programming stage students only construct below 4 programs.

Function iii - Registration of Examination Results
Function iv - Printing of Transcripts
Function v - Enquiry on Assessment Results
Function vii - Registration of Subject assessments

and students will consider only for the Diploma in System Analysis and Programming course.

2) VIS

a) Setting up VIS using VDL and JCL
b) Setting up VIS Control Files
c) Defining Message Format using MFDL and IMFD

3) RIQS

a) Specifying RIQS using DS/TQF
b) Setting up RIQS DB

4) Recovery System

a) Setting up a DB recovery
b) Setting up a Journal File

2.7 Software Products provided for the students

Students can access the following software and their respective documents.

	Software Products	Documents
System Environment	• ATSS • Batch System • IMFD environment • Software tools	• MMF Guidebooks
Actual data for the Database	After construction of the DB structure, these data can be loaded into the DB	• Actual data records • Data Book
OCR System	• OCR Form • FD containing actual data of shortlisted applicants	• MMF Guidebooks • Actual data records

2.8 Reference Materials

Students can refer to the following materials for the Mini-Project:

1) Mini Project Guidebook

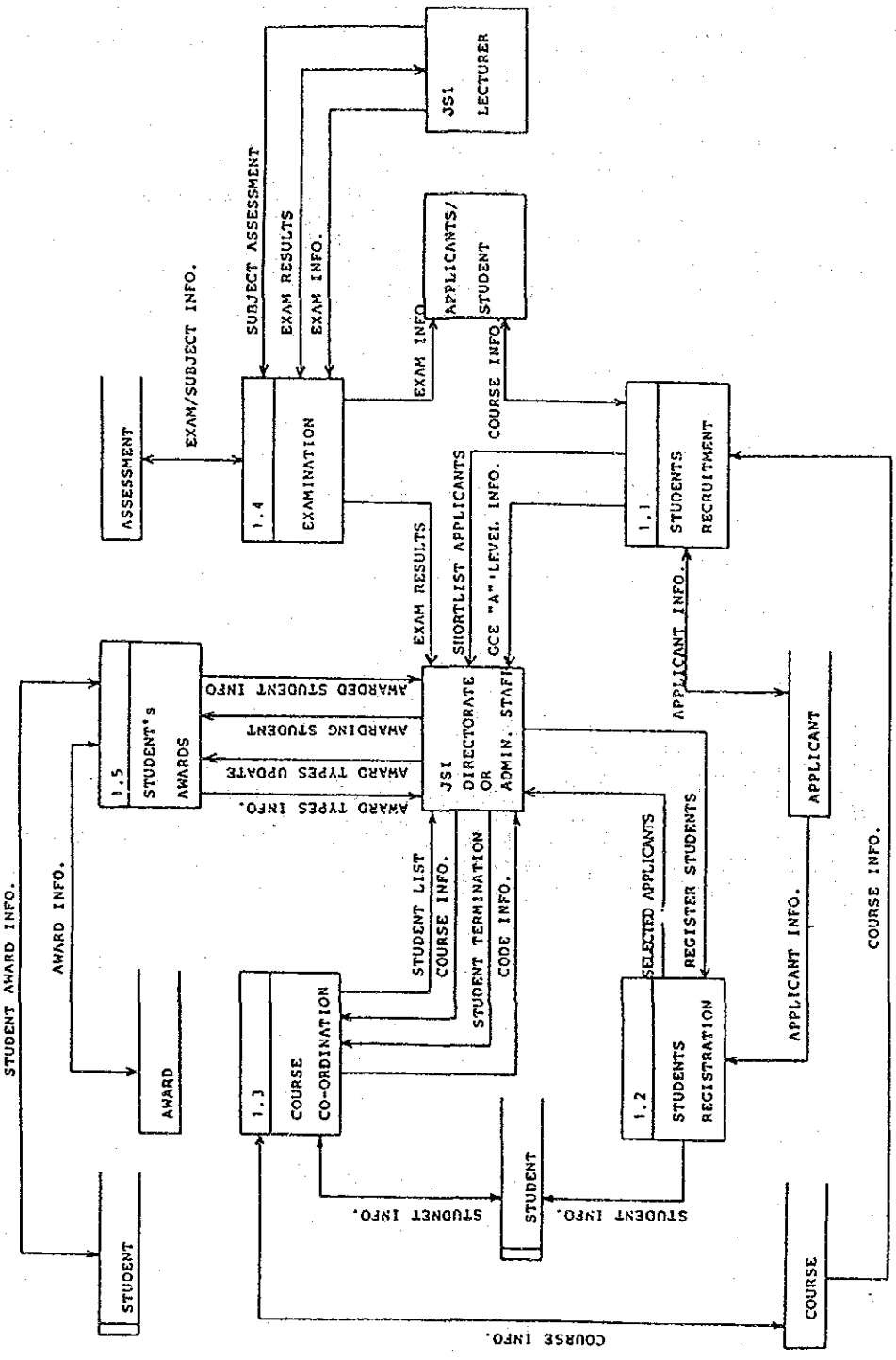
2) Mini-Project Forms

3) Data Book

4) MMF Guidebooks
   - NEC SYSTEM 630 OPERATION GUIDEBOOK
   - NEC VIS GUIDEBOOK
   - NEC RIQS GUIDEBOOK
   - NEC STRUCTURED PROGRAMMING DIAGRAM (HANDOUT)
   - NEC N6370U OCR OPERATIONS GUIDEBOOK
   - NEC RIQS SUPPLEMENTARY & DIAGNOSTIC MESSAGES GUIDEBLOOK
   - NEC VIS SUPPLEMENTARY (HANDOUT)
   - NEC RIQS SUPPLEMENTARY (HANDOUT)

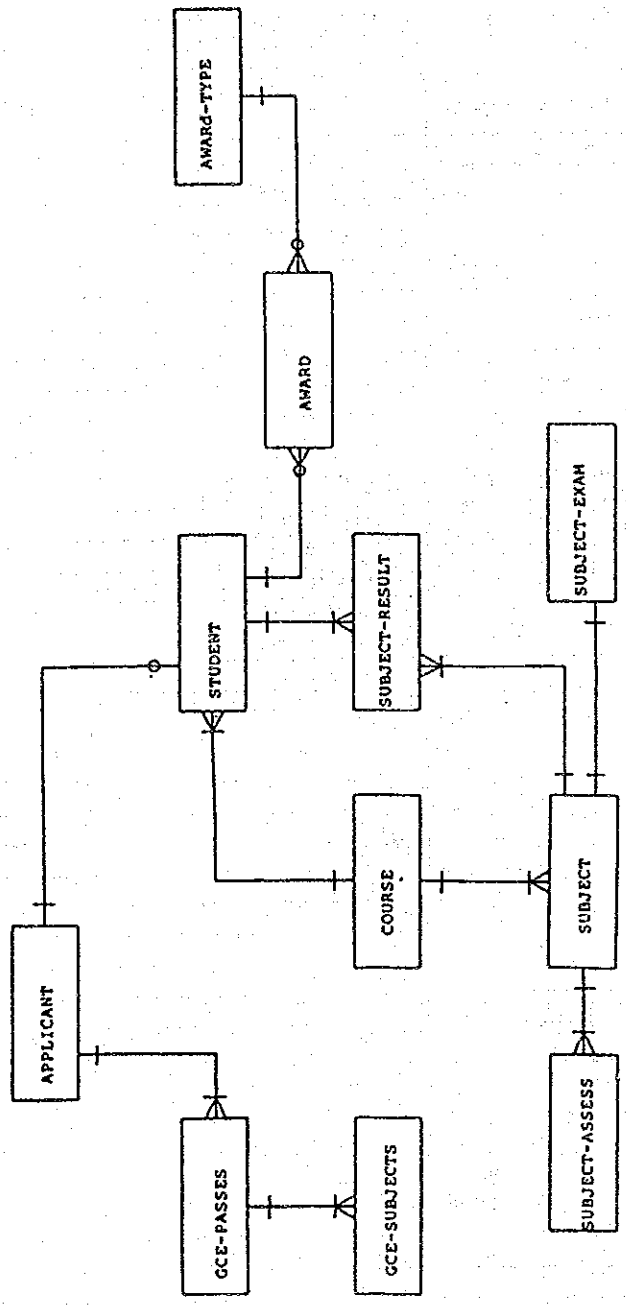
3. PROJECT BACKGROUND

3.1 DFD of the Student Administration Sub-System



3.2 Data Model and Data Dictionary

3.2.1 Composite Logical Data Model



3.2.2 Data Dictionary

Entities	Item Name	Attribute: Character type	Attribute: Number of columns	Code Specifications
Applicant	Application - No	C	8	Note 1
	Course - No	C	4	Note 2
	NRIC - No	C	8	cf. GUIDE BOOK page 14
	Application Date	N	6	YY MM DD
	Applicant's Name	C	30	
	Address	C	60	
	Tel-No	N	7	
	NRIC - Colour	C	1	P(Pink) / B(Blue)
	Citizenship	C	2	S/PR
	Race	C	1	C/M/I/O
	Birth Date	N	6	YY MM DD
	Age	N	2	
	Birth-Place	C	10	
	Sex	C	1	M/F
	NS - Status	C	2	Note 3
	NS - Division	C	1	Note 4
	Run-Out-Date	N	6	YY MM DD
	Marital-Status	C	1	M/S
	Company Sponsored Ind	N	1	1 (Yes) / 0 (No)
	Ter-Inst-App-Ind	N	1	1 (Yes) / 0 (No)
	End-Notice-Period	N	6	YY MM DD (When Ter-Inst-App-Ind=1)
	Conviction-Ind	N	1	1 (Yes) / 0 (No)
	Illness - Ind	N	1	1 (Yes) / 0 (No)
	Phy-disab-Ind	N	1	1 (Yes) / 0 (No)
	Ill Detail	C	40	blank unless Illness-Ind=1
GCE-Passes	Application-No	C	8	Note 1
	GCE-Level	C	1	A/O
	Exam-year	N	2	YY
	Exam-Stream	C	2	Note 5
	Level-No-of Passes	N	2	
	AO-No-of Passes	N	2	0 if GCE-Level = O
Student	Course-No	C	4	Note 2
	Student-No	C	3	001-999
	Application-No	C	8	Note 1
	Student-Name	C	30	
	Student-Status	C	1	R/F/W/G /P cf. GUIDE BOOK page 15, 16
	Evaluation-Marks	N	4	
GCE-Subject	Application-No	C	8	Note 1
	GCE-Level	C	1	A/O
	GCE-Subject-Code	C	2	Note 6
	GCE-Subject-Name	C	20	
	GCE-Subject-Grade	C	1	
Course	Course-No / Course Type / Batch - No	C / N	2 / 2	Note 2
	Course-Name	C	60	
	Coordination-Name	C	30	
	Course-start-date	N	6	YY MM DD
	Course-end-date	N	6	YY MM DD
	Course-description	C	60	
	Course-prerequisite	C	60	
	Course-Fee	N	6	(S$)

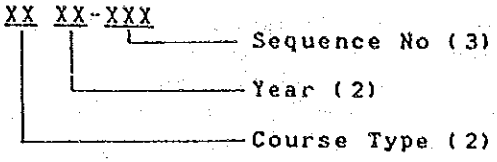
Entity	Item Name	Attribute: Character type	Attribute: Number of columns	Code Specification
Subject	Course-No	C	4	Note 2
	Subject-Code	C	4	Note 7
	Subject-Name	C	40	
	Subject-Aim	C	80	
	Subject-Details	C	80	
Subject-Exam	Course-No	C	4	Note 2
	Subject-Code	C	4	Note 7
	Exam-date	N	6	YY MM DD
	Exam-day	C	3	MON/TUE/WED/THU/FRI/SAT
	Exam-place	C	10	
	Time-from	N	4	HH MM
	Time-to	N	4	HH MM
	Examiner-Name	C	30	
	IEB-SEC-SUB-DATE	N	6	YY MM DD
	Mod-date	N	6	YY MM DD
	Invigilator 1-Name	C	30	
	Invigilator 2-Name	C	30	
	Invigilator 3-Name	C	30	
	Invigilator 4-Name	C	30	
	Printed-Sub-date	N	6	YY MM DD
Subject-Result	Course-No	C	4	Note 2
	Subject-Code	C	4	Note 7
	Student-No	C	3	001 ~ 999
	Exam-Marks	N	3	000-100 cf. GUIDE BOOK page 18
	Ass-Marks-1	N	3	" "
	Ass-Marks-2	N	3	" "
	Ass-Marks-3	N	3	" "
	Ass-Marks-4	N	3	" "
	Ass-Marks-5	N	3	" "
	Overall-Marks	N	3	" "
	Overall-Grade	C	1	A~F "
	Remarks	C	30	
Subject-Assess	Course-No	C	4	Note 2
	Subject-Code	C	4	Note 7
	Ass-Name	C	20	cf. GUIDE BOOK page 18
	Ass-Weightage	N	3	000-100 cf. GUIDE BOOK page 18
Award-Type	Award-ID	C	4	Note 8
	Award-Name	C	20	
	Award-Value	N	6	(S$)
	Award-Condition	C	1	1~6 e.g. 2: for the second best student in Overall-Marks
	Award-Description	C	200	
Award	Award-ID	C	4	Note 8
	Course-No	C	4	Note 2
	Student-No	C	3	001-999
	Award-Date	N	6	YY MM DD

C: Alphanumeric
N: Numeric

Notes

1. Application - No

(1) Code structure

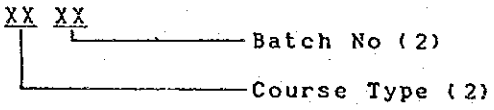


(2) Example

AP880001

2. Course - No

(1) Code structure



(2) Course Type

AP : Diploma in System Analysis and Programming
SI : Certificate in System Analysis
SII: Diploma in System Analysis
AD : Advanced Diploma in Software Technology
Only AP course is considered in Mini-Project.

(3) Example

AP01

3. NS - Status

R : Runout
NA : Not Applicable
E : Exempted

4. NS - Division

A : Army
N : Navy
F : Air Force
P : Police
C : Civil Defence

5. Exam - Stream

TE : English, Technical
CE : English, Commerce
AE : English, Arts
SE : English, Science
CC : Chinese, Commerce
SC : Chinese, Science
AC : Chinese, Arts
TC : Chinese, Technical

Notes

6. GCE - Subject

(1) GCE 'A' LEVEL EXAMINATION SUBJECTS

	Subject Name	Subject Code
1.	Addition Mathematics	MA
2.	Economics	EC
3.	Principle of Account	PA
4.	Business Management	MB
5.	Chinese as 2nd language	CS
6.	Physical Science	PS
7.	Malay as 2nd language	MS
8.	Applied Physics	PH
9.	Chemistry	CH
10.	General Paper (English)	GE
11.	English as 1st language	EF
12.	English as 2nd language	ES
13.	General Paper (Chinese)	GC
14.	Further Mathematics	FM
15.	Technical Drawing	TD
16.	Pure Mathematics	PM
17.	Biology	BI
18.	General Mathematics	GM
19.	History	HI
20.	Geography	GY
21.	Mathematics at 'O' Level	MO
22.	Applied Mathematics	AM
23.	Literature	LI

A LEVEL passes : Grades A - E
AO Level passes : Grades O/P1-P6

(2) GCE 'O' LEVEL EXAMINATION SUBJECTS

	Subject Name	Subject Code
1.	English as 1st language	EF
2.	English as 2nd language	ES
3.	Elementary Mathematics	EM
4.	Additional Mathematics	AM
5.	Biology	BI
6.	Physical Science	PS
7.	English Literature	LI
8.	Malay as 2nd language	MS
9.	Chinese as 2nd language	CS
10.	Geography	GY
11.	Metalwork	MW
12.	General Science	GS
13.	Commerce	CM
14.	Chinese as 1st language	CF
15.	Technical Drawing	TD
16.	Electronics	EE
17.	History	HI
18.	Art	AR
19.	Book-Keeping	BK

O Level Passes : from P1 to P6

Notes

7. AP Course Subject

SUBJECT CODE	SUBJECT NAME
ICDP	Introduction to computer/data processing
ISW	Introduction to software
IHW	Introduction to hardware
FSS	Fundamental of system software
SASD	System analysis/System design
SESM	System evaluation/system maintenance
SP	Security/Privacy
AS	Application system
APP	Application package
RTSP	Realtime system package
FONS	Fundamental to on-line systems
DCOM	Data communication
OS1	Operating system 1
OS2	Operating system 2
DB1	Database 1
DB2	Database 2
DB3	Database 3
ASSM	Assembly language
BAS1	BASIC 1
BAS2	BASIC 2
COB1	COBOL 1
FORT	FORTRAN
PAS	PASCAL
PL1	PL 1
OR	Operation research
MGAC	Management accounting
BUSO	Business organization
MAT1	Mathematics 1
MAT2	Mathematics 2
COMS	Communication skills

8. Award Type

Award - ID	Award - Name
NCB	NCB Award
NEC	NEC Book Prize
SCS	SCS Book Prize
EDB	EDB Book Prize

3.3 Data Volume

This data is only for the Diploma in System Analysis and Programming course. And we will consider only for this course.

Data Items	Data Volume	
	Min	Max
Total applicants per course	70	100
GCE 'O' Level subjects per applicant	6	10
GCE 'A' Level subjects per applicant	6	10
Total number of students per course	50	70
Number of courses conducted per year	1	2*
Total number of subjects per course	15	30
Types of Awards	3	4
Number of Awards per Award type	1	1

Note: In this system, we assume that we keep the data for five years.
* : Duration of AP course is 2 years.

3.4 Module Function Specification

The Student Administration application system consists of the following 5 modules:

1.1 Students Recruitment
1.2 Students Registration
1.3 Course Coordination
1.4 Examination
1.5 Students Award

Each module contains several functions.

Module 1.1 Students Recruitment

This module handles online enquiries, by applicants or students, on course information. It also shortlists applicants and allows queries based on the number of GCE 'A' Level passes by the JSI Directorate.

This module has 3 functions:
i. Course Enquiry
ii. Shortlist Applicants
iii. GCE 'A' Level Enquiry

i. Course Enquiry

Input: Input the required course number
Process: Retrieve the necessary course information with its related subject details.
Output: Display detail information of the selected course and its subjects.

Frequency : *10 times/hour (ad hoc)*
Period : April to June
Time of Day : 8:30 to 18:00
User : Applicant

ii. Shortlist Applicants

Input: Applicants' information which are recorded in the application form are stored into Floppy Disks via OCR (Optical Character Reader). These Floppy Disks are then used as an input source.

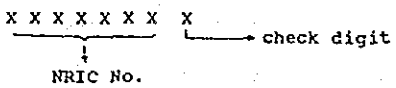
Process:
1. Validate the following data items:
   a. NRIC No (refer to Note)
   b. I/C Colour ("P" or "B")
   c. GCE subjects (refer to Data Book)
2. After validating the above data items check each applicant's data against the following criteria:
   a. At least 2 or more "A" Level passes
   b. Citizenship must be "S" or "PR"
3. Load the details of those applicants who meet the above criteria into the database.

Output: Print a list of applicants whose data are invalid or could not meet the criteria.

Frequency : 1 time/week (ad hoc)
Period : April to June
Time of Day : Any time
User : Administration Staff

Note :

AN EXAMPLE OF MODULAR 11 CHECK DIGIT FOR NRIC NO:



eg. NRIC No = 1234567

1	2	3	4	5	6	7	
x	x	x	x	x	x	x	Weight from left
2	7	6	5	4	3	2	2,7,6,5,4,3,2

2 + 14 + 18 + 20 + 20 + 18 + 14 = 106

Modular 11 check digit:
= 11 - remainder of (106/11)
= 11 - 7
= 4 ie.D

Hence, NRIC No = 1234567D

(Official Ref No/Check Digit)

1	:	A
2	:	B
3	:	C
4	:	D
5	:	E
6	:	F
7	:	G
8	:	H
9	:	I
10	:	Z
11	:	J

iii. GCE 'A' Level Enquiry

Input: Input the number of GCE 'A' Level passes.

Process: Based on the number of GCE 'A' Level passes being input, retrieve all the applicants (No. & Name) whose number of GCE 'A' Level passes is not less than the input value.

Output: Display the applicant number and name for those applicants who meet the input condition.

Frequency : 5 times/hour (ad hoc)
Period : April to June
Time of Day : 8:30 to 18:00
User : Directorate

Module 1.2 Students Registration

This module selects applicants based on the criteria set by the JSI Directorate as well as register successful applicants as students of JSI.

This module has 2 functions:

i. Applicants Selection
ii. Students Registration

i. Applicants Selection

Input: Input the required course number.

Process:

1. Select 50 of the shortlisted applicant based on the following criteria:
   a. Rank applicants in descending order of the number of GCE 'A', 'AO' and 'O' Level passes. An applicant who has the highest number of GCE "A" Level passes is ranked first. For applicants with the same number of passes for each Level, rank on a first come first serve basis.
   b. Select the first 50 ranked applicants as eligible students for the course.
   c. The 51st applicant and subsequent applicants whose number of GCE 'A', 'AO' and 'O' Level passes are the same as that of the 50th applicant are also selected as eligible students for the course.
2. Store all the eligible students' data into the database. Issue a new serial Student Number for each seccessful applicant.

Output: Print a list of all the eligible students for the requested course.

Frequency : 1 time/year (annually)
Period : on June 1
Time of Day : Any time
User : Administration staff

ii. Students Registration

Input: Input the applicant's number and NRIC No.

Process: Eligible applicants are given an initial status of P (Pending). After the applicant has paid his fees, he will be admitted as a Regular (R) student.

Output: Display confirmation messages to show that the student status has been updated.

Frequency : 10 times/hour (ad hoc)
Period : June
Time of Day : 8:30 to 18:00
User : Administration staff

Module 1.3 Course Coordination

This module prints the list of students on a specific course upon request and also provide online enquiry based on the corresponding input codes.

It also registers information on new courses and records termination of students from a course. This module has 4 functions:

i. Students Listing
ii. Course Information Registration
iii. Students Termination from a Course
iv. Code Enquiry

i. Students Listing

Input:	Input the course number and the student list type (Regular/Graduated/Withdrawn student list).
Process:	Based on the input course number and the list type, retrieve the necessary information from the database.
Output:	Print a list of students according to the input conditions. Display confirmation messages after the list is printed.

Frequency : 5 times/hour (ad hoc)
Period : Any time
Time of Day : 8:30 to 18:00
User : Administration staff

ii. Course Information Registration

Input:	Input the course information and its related subjects information.
Proceess:	Store the course information and its related subjects information into the database after validation.
Output:	Display confirmation messages after the database has been updated successfully.

Frequency : 10 times/hour (ad hoc)
Period : April to May
Time of Day : 8:30 to 18:00
User : Administration staff

iii. Students Termination from a Course

Input: Input the course number and student number.
1. Retrieve the student's data based on the input information and display his current status (R:Regular, F:Failed, W:Withdrawn, G:Graduated).
2. After the student's information has been confirmed, update the student's status to "G" or "W" or "F".

Output: Display confirmation messages to indicate that the record is updated.

Frequency : 50 times/week (ad hoc)
Period : December and May
Time of Day : 8:30 to 18:00
User : Administration staff

iv. Code Enquiry

Input: 5 types of enquiries are available depending on the input enquiry type:
a. Applicant
b. Student
c. Course
d. Subject
e. Award Type
Input the item number (a-e) corresponding to the enquiry type. For example, if Applicant Enquiry is selected, input the required Applicant No.

Process: Retrieve the relevant information for the selected item.

Output: Print the retrieved information (code and name) and display confirmation messages to indicate the end of processing.

Frequency : 10 times/hour (ad hoc)
Period : Any time
Time of Day : 8:30 to 18:00
User : Directorate and Lecturer and Administration staff

Module 1.4 Examination

This module registers new Examination information, results and subject assessments. It supports queries on students' performance, examination details and also prints transcripts at the end of a course.

This module has 7 functions:
i. Registration of Examination Information
ii. Registration of Examination Results
iii. Examination Enquiry
iv. Printing of Transcripts
v. Enquiry on Assessment Results
vi. Examination Results Enquiry
vii. Registration of Subject assessments

i. Registration of Examination Information

Input: Input the course number, subject code and examination information.

Process:
1. The following data items must be validated:
   a. Examination Day - must be a weekday or Saturday
   b. Examination Time - starting time must be from 0830 hrs onwards; ending time before 1700 hrs from Monday to Friday and before 1300 hrs on Saturday
2. If the examination information on the selected subject already exists in the databases, update the previous data with the input data. Otherwise, add the new data into the database.

Output: Display confirmation messages to show that the examination information has been successfully registered into the database.

Frequency : 10 times/hour
Period : August, November, February and May
Time of Day : 8:30 to 18:00
User : Lecturer

ii. Registration of Examination Results

Input: Input the course number, subject code, student number and marks obtained for all examinations, tests, assignments and practicals.

Process:
1. Marks must not be greater than 100 or less than zero.
2. Weightage of each assessment must be decided. Based on the weightage, calculate the overall marks and grade for the corresponding subject of student (Note).
3. Store the above information into the database.

Output: Display confirmation messages indicating the successful registration of examination results.

Frequency : 10 times/hour (quarterly)
Period : August, November, February and May
Time of Day : 8:30 to 18:00
User : Lecturer

Note: Grades are assigned to each subject based on the following criteria:

Overall-Marks	Grades	Description
81-100	A	Very good pass
71-80	B	Credit
61-70	C	Good pass
50-60	D	Pass
0-49	F	Fail

where, we will show the example of overall marks calculation:

Assessment Type	Marks Given		Weightage		Weighted Marks
a. Exam	90	X	60	=	5400
b. Practical	80	X	15	=	1200
c. Assignment	70	X	15	=	1050
d. Test 1	60	X	5	=	300
e. Test 2	50	X	5	=	250
f. Test 3	40	X	0	=	0
					8200

Overall-Marks = 8200/100 = 82

iii. Examination Enquiry

Input: Input course number and subject code.
Process: Based on the input data, retrieve from the database information regarding the subject's examination de ils.
Output: Display the examination information for the requested subject for students use.

Frequency : 20 times/hour (ad hoc)
Period : Any time
Time of Day : 8:30 to 18:00
User : Student

iv. Printing of Transcript (Batch Processing)

Input: Input course number.
Process: Based on the input course number, select all the Regular students. For each regular student, retrieve all the subjects taken with the corresponding grades attained.
Output: Print a Transcript (refer to below) for each student showing the grades for all the subjects taken.

Frequency : 1 time/year (annually)
Period : May
Time of Day : Any time
User : Administration staff

<< Print Image >>

ANALYST/PROGRAMMER DIPLOMA COURSE (AP09)
EXAMINATION RESULTS

SUBJECT	GRADE
INTRODUCTION TO FILE PROCESSING	B
COMMUNICATION SKILLS I	A
MATHEMATICS I	A
INTRODUCTION TO HARDWARE	A
INTRODUCTION TO COMPUTER & DATA PROCESSING	A
COBOL I	C
PRINCIPLES & TECHNIQUES OF PROGRAMMING	C
MANAGEMENT ACCOUNTING	C
ASSEMBLY LANGUAGE	C
PASCAL	C

Date for DIRECTOR

A - Very Good Pass
B - Credit
C - Good Pass
D - Pass
F - Fail

v. Enquiry on Assessment Results

Input:	Input course number, subject code and student number.
Process:	Retrieve all the assessment marks, the overall marks and overall grade of the desired subject for the input student number.
Output:	Display information retrieved above.

Frequency	:	10 times/hour (ad hoc)
Period	:	August, November, February and May
Time of Day	:	8:30 to 18:00
User	:	Directorate and Lecturer

vi. Examination Result Enquiry

Input:	Input course type (eg. AP, SA etc.) and subject code.
Process:	1. Select all the course number with the same course type (eg. AP01, AP02 etc.) 2. Compute the average marks of the input subject for each course.
Output:	Display a list of average marks for the input subject code for each course.

Frequency	:	10 times/hour (ad hoc)
Period	:	August, November, February and May
Time of Day	:	8:30 to 18:00
User	:	Directorate and Lecturer

vii. Registration of Subject Assessments

Input:	Input course number, subject code and assessment weightage for a. Exam b. Practical c. Assignment d. Test 1 e. Test 2 f. Test 3
Process:	Store or update the database with the input information.
Output:	Display confirmation messages to indicate that the updating has been done successfully.

Frequency	:	10 times/hour (annually)
Period	:	May
Time of Day	:	8:30 to 18:00
User	:	Lecturer

Module 1.5 Students' Award

Outstanding students are presented with awards from various organizations. This module will identify those outstanding students that meet the stated criteria and print out a list of the eligible students for JSI Directorate's final approval.

This module also registers details on new awards and supports enquiries on types of awards available and the recipients of each award.

This module has 4 functions:

i. Update Award Type
ii. Select student for award
iii. Award Enquiry
iv. Award type Enquiry

i. Update Award Type

Input: Input the award ID, award information and select one of the following 3 process types:
  i. Addition of award type
  ii. Update of award type
  iii. Delete award type

Process: Update the database according to the input process type.

Output: Display confirmation messages to indicate successful processing (addition, update or deletion of a record).

Frequency : 1 time/hour (annually)
Period : May
Time of Day : 8:30 to 18:00
User : Administration staff

ii. Select Student for Award

Input: Input the course number.

Process: 1. Students from each course are given certain awards for outstanding performance. A maximum of 4 awards are given to the top 4 students within a course. Students are ranked according to the total marks obtained for all the subjects taken in that course.
2. Store recipients of each award into the database.

Output: Print a list of the award-winning students. Display messages to reflect the completion of this process.

Frequency : 1 time/hour (annually)
Period : May
Time of Day : 8:30 to 18:00
User : Administration staff

iii. Award Enquiry

Input:		Input the course number and award type.
Process:		Based on the input data, retrieve from the database information regarding the recipient for the particular award in the input course.
Output:		Display the award type and name of student who was awarded.
Frequency	:	1 time/hour (annually)
Period	:	Any time
Time of Day	:	8:30 to 18:00
User	:	Directorate

iv. Award Type Enquiry

Input:		No input is required.
Process:		Access the relevant information from the database and produce a list of all the existing award types.
Output:		Print a list of all the available awards types.
Frequency	:	1 time/hour (annually)
Period	:	May
Time of Day	:	8:30 to 18:00
User	:	Directorate and Administration staff

3.5 Requirement for Input Validation

Input data validation should be designed not only on the bases of logic requirements but also on ease of use. For example, an user will not want to spend too much effort to re-input data which were already checked. On the other hand, unless there is sufficient checking, the system will not be secure.

3.6 RELIABILITY SPECIFICATION

3.6.1 FAULT ANALYSIS

1) Influence on one-line system and the basic measures when fault occurs

Main fault location and range				Examples of fault	Degree of influence	The basic measures when fault occours
CPU				.Memory error . CPU fault	System complete Stop	"System re-start" after removing of blocks or repair.
Peripheral	Magnetic Disc	General fault	File damage	.Head Crash	Application Stops according to the disc.	"Restart of Application" after "DB media Recovery"
			No file damage	.MSP fault	Substantial System Stop	"System restart" after repair.
		Partial fault	File damage	.R/W error due to poor media	Failure in this Application	"DB media recovery" after one-line time.
			No file damage	-	Ditto	Repair after on-line time
	Magnetic Tape	(Not to be used)		-	-	-
Program Miss		General fault		.Bug of OS .Dead lock	System Complete Stop	"System re-start" after amendment of program
		Partial fault		.Bug of application	Application Stops	Amendment of program after on-line time
Terminal/Line		General fault		.URP fault .B4670 fault	Substantial System Stop	"System re-start" after repair
		Partial fault		.Terminal fault	Almost no influence	Use of nearby terminal

2) Influence on batch process system and the basic measures when fault occurs

Fault Contents	Degree of influence	Basic measures when fault occurs.
Hardware and Software	Process Stop	Exchange/Repair of device, Amendment of Software and re-run
OCR	Process Stop	1) Re-process after repair 2) Process on substitute method if emergency.

3.6.2 FAULT PREVENT MEASURES

1) Measures based on hardware: Duplicate journal (DB log)-file during on-line time (on disc units)

2) Measures based on software: Carry out traffic control in order to prevent overload on the system.

3.6.3 FAULT RECOVERY METHODS

Fault situation				During On-line utilization time					After On-line time	Program used during recovery
				Centre Process				Terminal Process		
				Console Output	Operator process	Residual message process	Instruction to terminal	Terminal Operation	Centre Operation	
On-line	System down (Including dead-lock)				.Collect memory dump .Change of device ."System-restart	"Cancel process" (VIS)		."Central failure" displayed .Re-input message after "System re-start"		"System re-start" (VIS)
	DB fault	General fault	DB damage		.Disconnect the device ."DB media recovery" .Connect the device	Continue of process As such, - if completed file process .....O.K - if not .....N.G	-"File fault" to all terminals -"Allowed to start after recovery	-Re-input message that was N.G		"DB recovery"
			No DB damage		.Disconnect the device .Repair .Connect the device	ditto	ditto			
		Partial fault	DB damage			ditto		-Re-input the messageon the next day	"DB recovery"	"DB recovery"
			No DB damage			ditto		ditto	repair	
	Application program bug					."Cancel process" (VIS) for the message. .Continue process for others		ditto	Amendment of the program	Cancel (VIS)
	Terminal/ line fault	Complete fault			.Disconnect .Repair .Connect	-After repair, continue normal process. (re-send message, etc)	-"Continue" after repair			
		Individual fault		notification of reject message		"Cancel process" (VIS) if pre-conditioned.		.repair .Use another terminal		
Batch	Mainframe hardware Software fault			Change to substitute device or amendment /repair, and re-run						
	OCR fault			1) Re-process after repair 2) Use utility, in case of emergency						

3.6.4 The main function of fault recovery program

1) "System re-start" program

(1) Reading message journal file, reform the message that stopped in the middle.

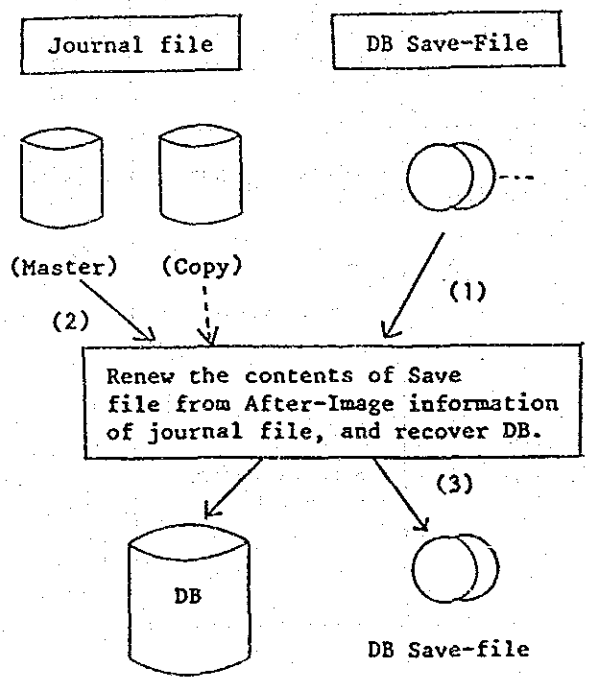
(2) Setting the environment of "System re-start" such as various table set, file open.

(3) From before image information of journal file, "cancel" the transactions that are not ended.

(4) Notify of "System re-start" to all terminals.

2) "DB recovery" program

From the following batch process, recovers DB.

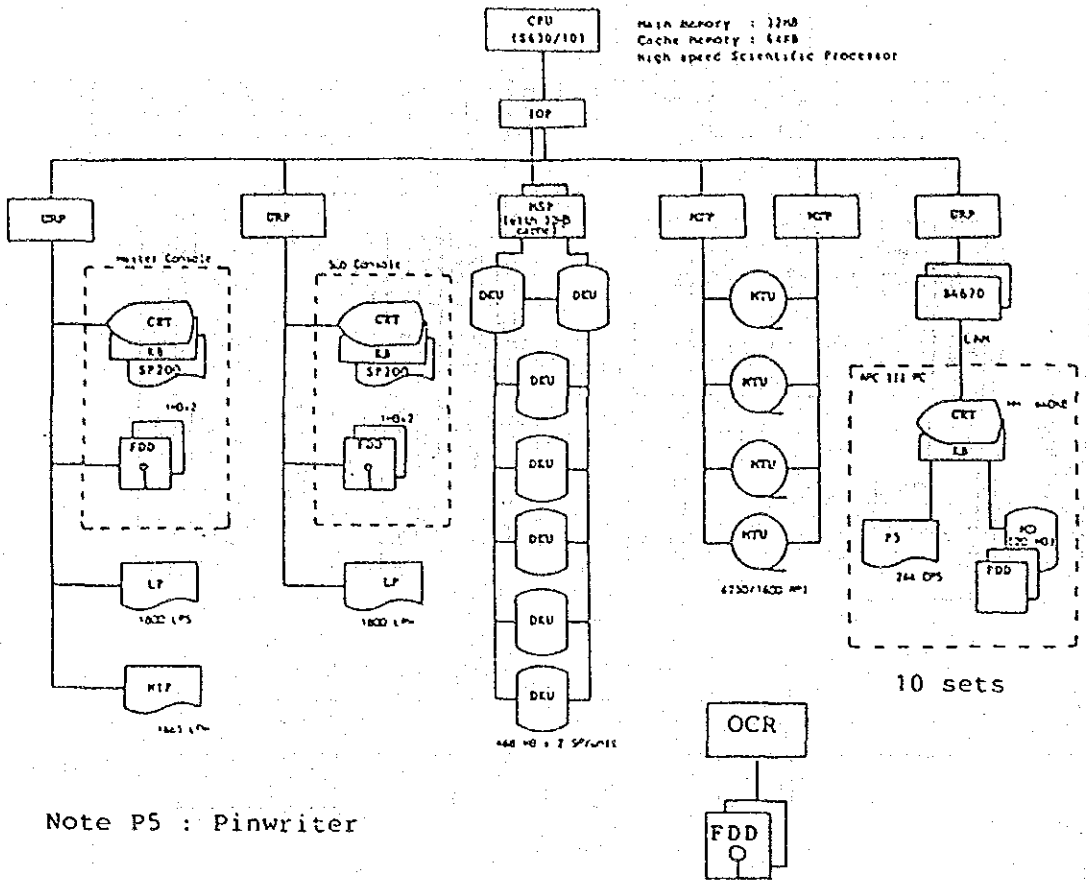


3.6.5 Collection of information for fault recovery

In order to have fault recovery with high reliability, it is essential to collect information systematically. For this system, the following information is collected.

Collected Information / Collection Pattern	DB Save	Message recovery information	DB file recovery information
Collection Contents	Full contents of DB	Output messages	.Before Image .After Image .Check point information
Accommodation Media	MT	MBF (Message Backup File) on DKU	Journal file on DKU (Dual as Master/Copy)
When to collect	Everyday, after on-line time	During on-line time	During on-line time
Number of generations to be kept	2 generation	1 generation	1 generation
Usage	DB media recovery	Relief of messages which have not been sent out	.Before Image for cancelling process of system re-start. .After Image for DB media recovery

3.7 Hardware Configuration

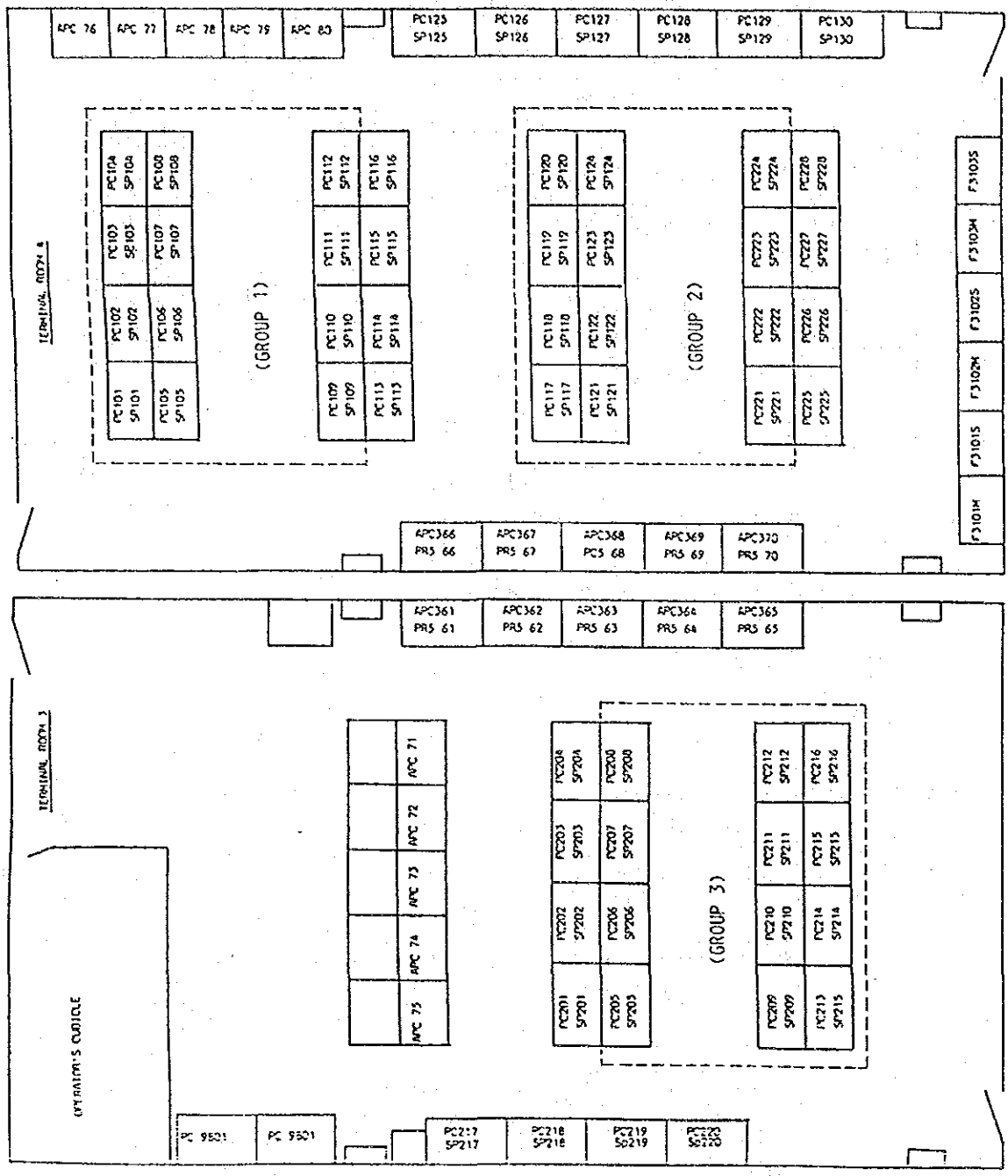


Note P5 : Pinwriter

3.8 Resource Allocation

Group name / Resource	Group A	Group B	Group C
Prefix of File	'ADPROJ.GRP01'	'ADPROJ.GRP02'	'ADPROJ.GRP03'
User Catalog Name	STUDENT.UCAT1	STUDENT.UCAT2	STUDENT.UCAT3
VIS Occurence No.	1	2	3
Journal File ID.	30	40	50
Terminal ID. (Terminal Attribute)	PC101-PC112 (GPT)	PC117-PC128 (GPT)	PC205-PC216 (GPT)
Serial Printer ID (Terminal Attribute)	SP101-SP112 (ADT)	SP117-SP128 (ADT)	SP205-SP216 (ADT)
Database, CBSF File (MEDIA)	PUB006	PUB007	PUB008
ILLIB, LMLIB, PRLIB (MEDIA)	PUB006	PUB007	PUB008
VIS Control Files (MEDIA)	PUB001	PUB002	PUB003
Journal Files (MEDIA)	PUB001-PUB003	PUB001-PUB003	PUB001-PUB003

TERMINAL LAYOUT



Note: PCxxx -------TERMINAL ID

SPxxx -------SERIAL PRINTER ID

3.9 Device Specification

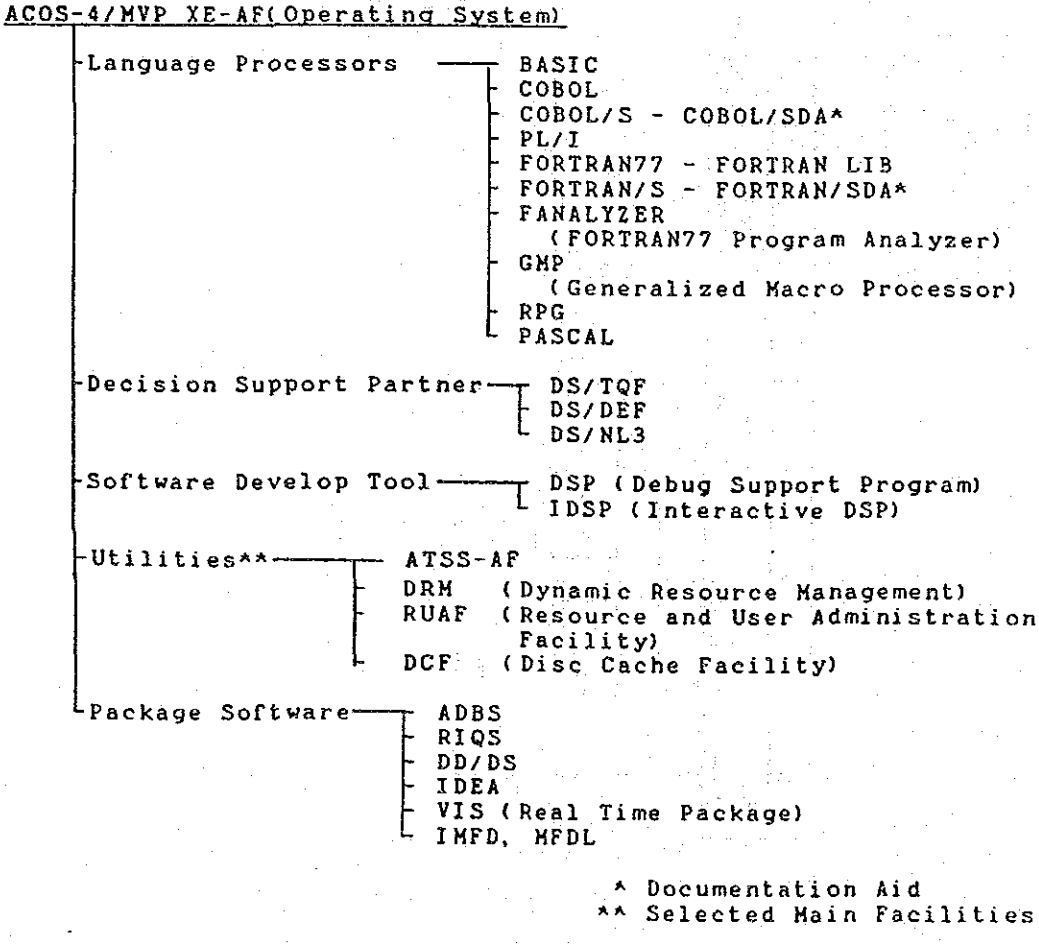
1). DKU (N7756 disc unit)
Device class = MS/M700
- 486 MB/spindle (486,953,052 Byte)
- 760 cylinders/spindle
- 19 tracks/cylinder
- 34 KB/track (34,036 Byte)

2). APC III Display Unit (N6352-63)
Size (diagonal) = 14 inch
- 25 lines x 80 characters
-(23 lines x 80 characters for user's usage)
- 640 x 400 pixels
- 8 colours
- attributes : reverse, blink, secret, underlining, vertical lines, overlining

3). Serial Printer (P5) (N5233-30)
Dot Printer : 220 cps
- 136 characters/line
- 66 lines/page
(60 lines/page for user's usage)

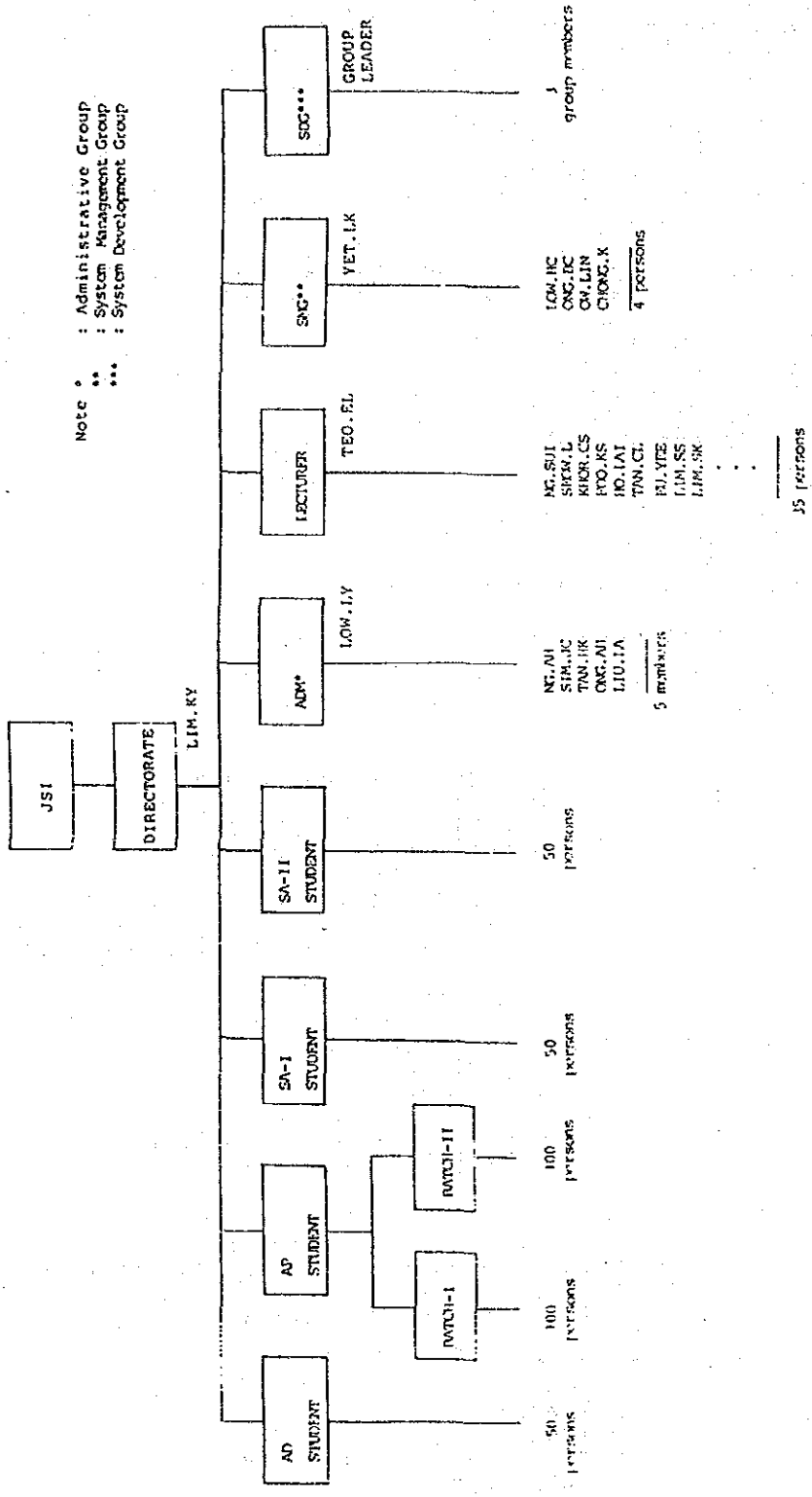
4). Line printer (N7342)
- Centre Printer = 1800 lpm
- 132 characters/line
- 66 lines/page (6 lpi)
(56 lines/page for user's usage)

3.10 Software (OS) Configuration



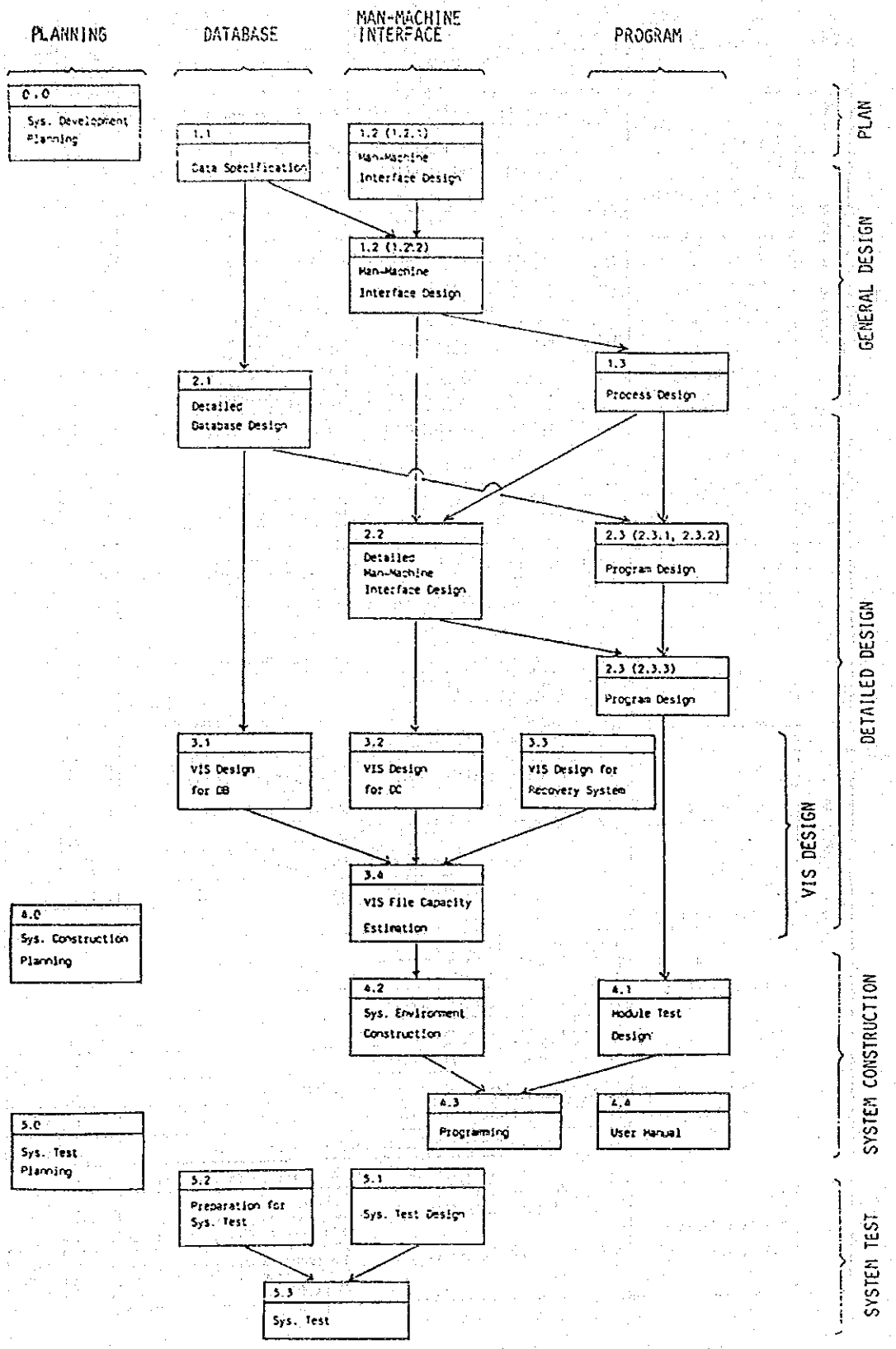
* Documentation Aid
** Selected Main Facilities

3.11 JSI ORGANIZATION CHART



4. JSI SYSTEM DEVELOPMENT PROCEDURE

4.1 SYSTEM DEVELOPMENT ACTIVITIES BLOCK DIAGRAM



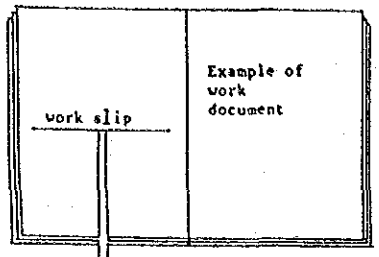
4.2 ACTIVITIES AND WORKSETS

PHASE	ACTIVITY	WORKSET		WORK DOCUMENT		
		WORKSET NO.	WORKSET NAME	WORK DOCUMENT NAME	FORM SHEET NO.	
PLAN	0.0 System Development Planning	0.01	System Development Planning	System Development Schedule	FC - 11	
GENERAL DESIGN	1.1 Data Specification	1.1.1	RIQS Table Specification	Table Specification List	F - 1.1.1	
		1.1.2	Item Description		F - 1.1.2	
	1.2 Man-Machine Interface Design	1.2.1	Man-Machine Interface Outline		F - 1.2.1	
		1.2.2	I/O Requirement Specification		F - 1.2.2	
	1.3 Process Design	1.3.1	System Hierarchy Structure	System Hierarchy Specification	F - 1.3.1	
		1.3.2	Program Specification (1)	Program Network Diagram(PND)	FC - 01	
			Program Specification (2)	Program Specification	F - 1.3.2	
DETAILED DESIGN	2.1 Detailed Database Design	2.1.1	RIQS Tabe and Item Design	Table Specification Sheet	F - 2.1.1	
		2.1.2	File Management Table		F - 2.1.2	
		2.1.3	User Management Table		F - 2.1.3	
	2.2 Detailed Man-Machine Interface Design	2.2.1	Transaction Type Specification	Transaction List	F - 2.2.1	
		2.2.2	Transaction and User Environment	(same as left)	F- 2.2.2-1	
				Traffic Density Calculation	F- 2.2.2-2	
		2.2.3	Terminal Operation Specification		F- 2.2.3	
		2.2.4	Screen Layout (1)	Screen Layout	F- 2.2.4-1	*
			Screen Layout (2)	Screen I/O Item Description	F- 2.2.4-2	*
		2.2.5	Print Layout (1)	Print Layout	F- 2.2.5-1	*
			Print Layout (2)	Print Item Description	F- 2.2.5-2	*
	2.3 Program Design	2.3.1	Program Interface Specification	Program Specification	F - 1.3.2	*
		2.3.2	Program Function Design	Program Function Diagram	F -2.3.2	*
		2.3.3	Program Logic Design	Program Logic Diagram	FC - 02	*
				Process Description	F - 2.3.3	*
				Error Message List	Free Format	*
	3.1 VIS Design for DB	3.1.1	VIS Design for DB	DBD Attribute Table	F - 3.1.1	
	3.2 VIS Design for DC	3.2.1	Virtual Destination		F- 3.2.1	
		3.2.2	Terminal Attribute		F - 3.2.2	
		3.2.3	Termianl Control Method		F- 3.2.3	
		3.2.4	Transaction Class		F- 3.2.4	
	3.3 VIS design for Recovery System	3.3.1	Journal File Specification		F - 3.3.1	
		3.3.2	System Failure Disposition Specification		F - 3.3.2	
		3.3.3	I/O Failure Dispcsition Specification		F - 3.3.3	
		3.3.4	Program Failure Disposition Specification		F - 3.3.4	
		3.3.5	Communication System Failure Disposition Specification		F - 3.3.5	
	3.4 VIS File Capacity Estimation	3.4.1	Control File Capacity Estimation	Control File List	F - 3.4.1	
		3.4.2	Data File Capacity Estimation	RDB File Capacity Estimation	F - 3.4.2-1	
				RDIR/RWX Capacity Estimation	F - 3.4.2-2	
				Data File List	F - 3.4.2-3	

PHASE	ACTIVITY	WORKSET		WORK DOCUMENT		
		WORKSET NO.	WORKSET NAME	WORK DOCUMENT NAME	FORM SHEET NO.	
SYSTEM CONSTRUCTION	4.0 System Construction Planning	4.0.1	System Construction Planning	System Construction Schedule	FC - 11	
	4.1 Module Test Design	4.1.1	Module Test Specification		F - 4.1.1	*
	4.2 System Environment Construction	4.2.1	File/DB Allocation	-	-	
		4.2.2	Message Format Definition	-	-	
		4.2.3	VIS Environment Construction	-	-	
		4.2.4	RIQS Environment Construction	-	-	
		4.2.5	Recovery System Construction	-	-	
		4.2.6	Batch Job JCL Construction	-	-	
	4.3 Programming	4.3.1	Program Production	-	-	*
		4.3.2	Module Test	Module Test Specification	F - 4.1.1	*
	4.4 User Manual	4.4.1	User Manual Planning	(System Construction Schedule)	(FC-11)	
		4.4.2	Machine Oper. for Normal Case	User Manual	Free Format	
		4.4.3	Machine Oper. for Abnormal Case	User Manual	Free Format	
		4.4.4	Application Program Operation	User Manual	Free Format	*
SYSTEM TEST	5.0 System Test Planning	5.0.1	System Test Planning	System Test Schedule	FC - 11	
	5.1 System Test Design	5.1.1	System Test Specification		F - 5.1.1	
		5.1.2	System Test Preparation		F-5.1.2	
	5.2 System Test	5.2.1	System Test	System Test Specification	F - 5.1.1	

* : These worksets are carried out only for functions indicated in section 2.6 1).

4.3 JSI-SYSTEM DEVELOPMENT WORK STANDARD



This section presents the various worksets which form system development jobs.
An outline of each workset is presented in the format shown left together with an example.

SYSTEM DEVELOPMENT
PHASE (1)

ACTIVITY (2) WORKSET (3)

WORK DOCUMENT (4) FORM SHEET NO. (5)*

OUTLINE

(6)

INPUT

(7)

WORK POINT

(8)

Items in the work slip :

(1) Phase name
(2) Activity name
(3) Workset name
(4) Title of work document created by the workset indicated in (3)
(5) Form sheet No. of the work document indicated in (4)
(6) Description of the aim and outline of the workset indicated in (3)
(7) Titles of work documents to be used as the input of the workset indicated in (3)
(8) Description of the works to be carried out in the workset indicated in (3)

* There are two types of form-sheet as follows :

Type. 1 Form-sheet No. FC-xx ..... These are commonly used for several worksets.
↳ serial No.

Type. 2 Form-sheet No. F-x.x.x-x ..... These are used only for specified worksets.
↳ serial No. under the workset
↳ workset No.

SYSTEM DEVELOPMENT PHASE	PLAN		
ACTIVITY	0.0 System Development Planning	WORKSET	0.0.1 System Development Planning
WORK DOCUMENT	System Development Schedule	FORM SHEET No.	FC-11

OUTLINE

1) The all work items during MINI-PROJECT are scheduled even including presentation and preparation.

2) This is the highest level work schedule of MINI-PROJECT.

WORK POINT

1) The followings are to be done before System Development Schedule is worked out.

   . have a whole picture of JSI-System Development referring section 4.1 and 4.2.

   . look into all the worksets under General Design and Detailed Design which are described in section4.3

   . discuss questions and problems on Guidebooks and other materials in order to get a good understanding of JSI-System development

   . estimate time necessary for each workset

   . assign worksets to each member.

2) Phase review should be definitely scheduled in a proper timing.

3) Both System Construction and System Test can be roughly planned out here, because they are to be scheduled in detail in worksets 4.0.1 and 5.0.1 respectively.

<< Example >>

FC-11

JISIST	SCHEDULE CHART	REV. 1	PAGE 1/1
TITLE	SYSTEM DEVELOPMENT SCHEDULE		

	WORK ITEMS	Person in charge	FEB 15	22	29	MAR 7	14	21	28	APR 4	11	18	25	MAY 2
	ORIENTATION		→											
PLAN	0.0 Sys. Development Plan	Leader, others		→										
GENERAL DESIGN	1.1.1 RIDS Table Spec.													
	1.1.2 Item Description													
	1.2.1 M-M Interface Outline													
	1.2.2 I/O Requirement Spec.													
	1.3.1 Sys. Hierarchy Structure													
	1.3.2 Program Spec.													
	Review					→								
DETAILED DESIGN	2.1.1 RIDS Table & Item Design													
	2.1.2 File Management Table													
	2.1.3 User Management Table													
	2.2.1 Transaction Type Spec.													
	2.2.2 Transaction & User Envir.													
	2.2.3 Terminal Operation Spec.													
	2.2.4 Screen Layout													
	2.2.5 Print Layout													
	2.3.1 Program Interface Spec.													
	2.3.2 Program Function Design													
	2.3.3 Program Logic Design													
	Review						→							
	3.1.1 VIS Design for DB													
	3.2.1 Terminal Attribute													
	3.2.2 Virtual Destination													
	3.2.3 Terminal Control Method													
	3.2.4 Transaction Class													
	3.3.1 Journal File Spec.													
	3.3.2 Sys. Failure Disp. Spec.													
	3.3.3 I/O Failure Disp. Spec.													
	3.3.4 Prog. Failure Disp. Spec.													
	3.3.5 Con. Sys. Failure Disp. Spec.													
	3.4.1 Control File Cap. Estim.													
	3.4.2 Data File Cap. Estim.													
	Review								→					
	SYSTEM CONSTRUCTION								Plan →	→	→			
	SYSTEM TEST											Plan →	→	
	PRESENTATION etc.													→

WORK SET NO.		WRITTEN BY	DATE WRITTEN
0.0.1		Goda	16/1/82

SYSTEM DEVELOPMENT PHASE	GENERAL DESIGN	
ACTIVITY 1.1 Data Specification		WORKSET 1.1.1. RIQS Table Spec.
WORK DOCUMENT Table Specification List		FORM SHEET NO. F-1.1.1.

OUTLINE

1) Decide the tables for Relational Data Base.

2) Define the primary key and secondary keys (if needed) for each table

INPUT

1) Data Model and Data Dictionary : Guidebook Section 3.2

2) Data Volume : Guidebook Section 3.3

3) Module Function Specification : Guidebook Section 3.4

WORK POINT

1) The primary key is the key which is unique in the Data Base. The compound key is usually used and in this workset, decide the items to be used as the compound key.

2) The secondary key is usually the single item. So, in this workset, decide the single items which are used for secondary keys.

F-1.1.1

JASTAST	WS-1.1.1	TABLE SPECIFICATION LIST	WRITTEN BY	DATE WRITTEN	REV.	PAGE
			H. W. M.	27/2/85	1	1/1

NO.	TABLE NAME	SIZE OF RECORD	NO. OF RECORDS	PRIMARY KEY	SECONDARY KEY
1	APPLICANT	207	70 ~ 500	APPLICATION-NO	NRIC-NO COURSE-NO
2	GCE-PASSES	17	140 ~ 1000	{ APPLICATION-NO GCE-LEVEL	LEVEL-NO-OF-PASSES
3	GCE-SUBJECT	32	1,400 ~ 10,000	{ APPLICATION-NO GCE-LEVEL GCE-SUBJECT-CODE	

<< Example >>

SYSTEM DEVELOPMENT PHASE	GENERAL DESIGN	
ACTIVITY 1.1 Data Specification		WORKSET 1.1.2. Item Description
WORK DOCUMENT Item Description		FORM SHEET NO. F-1.1.2

OUTLINE

1) From the "PROJECT BACKGROUND", decide the items' attributes which are used in the programmes.

2) Code specifications for each item are described in the "DESCRIPTION" field.

INPUT

1) Data Model and Data Dictionary : Guidebook Section 3.2

WORKPOINT

1) "Level No" is specified for compound keys.

2) "Data Name" is used by programs and is the same as the data name in RDIR as specified in WS-2.1.1.

3) "PIC" describes the attributes of the data item. Specified according to the programming language used in system construction.

4) "Description" is used for further comments on the data item. If the data item is to be coded, specify the range or all the code values. Use another sheet of paper if needed.

5) "Primary Key" is to be underlined and suffix with a hex (#) sign.

6) "Secondary Key" is to be suffix with a hex (#) sign.

<< Example >>

F-1.1.2

JISIST	ITEM DESCRIPTION	REV. 1	PAGE 1/1

TABLE NAME: GCE-PASSES

NO.	ITEM NAME	LEVEL NO.	DATA NAME	PIC.	DESCRIPTION
1	GP-PRIMARY-KEY#	02	GP-PRI-KEY	—	X(9)
	APPLICATION-NO	03	GP-APP-NUM	X(8)	
	GCE-LEVEL	03	GP-GCE-LVL	X(1)	ex. A or O
2	EXAM-YEAR	02	GP-EXM-YR	9(2)	
3	EXAM-STREAM	02	GP-EXM-STR	X(2)	See below ex. TE/CE/AE/SE/CC/SC/AC/TC
4	LEVEL-NO-OF-PASSES#	02	GP-NUM-PAS	9(2)	
5	LEVEL-NO-NO-OF-PASSES	02	GP-NO-NUM-PAS	9(2)	Ø if GCE-LEVEL = "O"

EXAM-STREAM CODE

TE : English, Technical
CE : English, Commerce
AE : English, Arts
SE : English, Science
CC : Chinese, Commerce
SC : Chinese, Science
AC : Chinese, Arts
TC : Chinese, Technical

WS-1.1.2		WRITTEN BY	DATE WRITTEN
		Ho WNJ	29/2/88

SYSTEM DEVELOPMENT PHASE	GENERAL DESIGN		
ACTIVITY	1.2 Man-Machine Interface Outline	WORKSET	1.2.1 Man-Machine Interface Outline
WORK DOCUMENT	Man-Machine Interface Outline	FORM SHEET NO.	F-1.2.1

OUTLINE

This gives basic Man-Machine Interface specification of the MINI-PROJECT SYSTEM and this is input of Workset-1.2.2 for further detailed specification.

INPUT

1) DFD of the Student Administration Sub-system : Guidebook Section 3.1
2) Data Model and Data Dictionary : Guidebook Section 3.2
3) Data Volume : Guidebook Section 3.3
4) Module Function Specification : Guidebook Section 3.4

WORK POINT

1) The all columns in the form-sheet must be filled in for all Application Modules.
   - Name of Processing
   - Handler
   - Input or Output
   - I/O Media
   - I/O Item
   - ID of I/O Spec. (within 6 characters)
   - I/O Spec Name

2) The following abbreviations are used.

I/O Media
SC : Screen LP : Line Printer SP : Serial Printer
SIN : SYSIN FD : Floppy Disk

INPUT/OUTPUT
I : Input
O : Output
I/O : Input/Output

<< Example >>

F-1.2.1

JISIST	MAN-MACHINE INTERFACE OUTLINE	REV. 1	PAGE 1/1

NAME OF PROCESSING		HANDLER	INPUT OR OUTPUT	I/O MEDIA	I/O ITEM	ID OF I/O SPEC.	I/O SPEC. NAME
1.1 Student Recruitment	1.1.1 Course Enquiry	Applicants	I	Screen	Course #	SRI11	Course Enquiry
			O	Screen	Course Information	SRO111	Course Information
	1.1.2 Shortlist Applicants	ADM	I	FD	Applicants Data	FDI112	Applicants Data
			O	LP	Rejected Applicants Data	LPD112	Rejected Applicants List
	1.1.3 GCE 'A' Level Enquiry	Directorate	I	Screen	Course #, the number of 'A' Level Pass	SRI113	GCE 'A' Level Enq.
			O	Screen	Applicants' Name, Status	SRO113	
1.2 Student Registration	1.2.1 Applicants Selection	ADM	I	Screen	Course #	SEI1	
			O	LP	Eligible Students	SE	
	1.2.2 Students Registration	ADM	I/O	Screen	Application#, Applicant's no		
1.3 Course Coordination	1.3.1 Students Listing	ADM	I	Screen	co		
			O				
	1.3.2 Course Information Regist						
	1.3.3						

WS-1.2.1		WRITTEN BY H. W N	DATE WRITTEN 29/2/82

SYSTEM DEVELOPMENT PHASE	GENERAL DESIGN	
ACTIVITY 1.2 Man-Machine Interface Design		WORKSET 1.2.2 Input/Output Requirement Specification
WORK DOCUMENT I/O Requirement Specification		FORM SHEET NO. F-1.2.2

OUTLINE

This is the further details of WD-1.2.1, and input of Activity 1.3, 2.2

INPUT

It serves as a useful guideline for Screen and Printer Layout design which is carried out afterwards in WS-2.2.4 and 2.2.5

1) WD-1.1.2 Item Description
2) WD-1.2.1 Man-Machine Interface Outline

WORK POINT

1) It also should be designed user-friendly.

2) Specify the input/output field on the screen Layout image, namely
   (I) :- input
   (O) :- output
   (IO):- input/output

   This notation is placed just before the field.

<< Example >>

F-1.2.2

JISJST	I/O REQUIREMENT SPECIFICATION	REV. 1	PAGE 1/1

I/O SPEC. NAME	ID OF I/O SPEC.	HANDLER	I/O MEDIA
Cource Information	SRŌ111	Applicants	Screen

(Ō) APØ1 CŌURSE INFORMATIŌN

CŌURSE DESCRIPTIŌN (Ō)- - - - - - - - - - - - - - - - - - -

CŌURSE START-DATE (Ō) dd/mm/YY

CŌURSE END-DATE (Ō) dd/mm/YY

CŌURSE PREREQUISIT (Ō) - - - - - - - - - - - - - - - - - -

CŌURSE FEE (Ō) $9999

[Continue to next page]

(1st Page)

SUBJECT INFORMATIŌN (Ō) APØ1)

(Ō) Subject# Subject-name

AIM (Ō) -

- -

DETAILS (Ō) -

- -

(Ō) Subject# Subject-name

AIM (Ō) -

DETAILS (Ō) -

(From 2nd Page)

[Continue to next Page]
or
[End] for last Page

WS-1.2.2		WRITTEN BY Ho WJ	DATE WRITTEN 29/2/22

SYSTEM DEVELOPMENT PHASE	GENERAL DESIGN	
ACTIVITY 1.3 Process Design		WORKSET 1.3.1 System hierarchy Structure
WORK DOCUMENT System hierarchy Specification		FORM SHEET NO. F-1.3.1

OUTLINE

The object business system is divided into several subsystems and the hierarchy relationship between each system is clarified.

INPUT

1) "Module Function Specification" : Guidebook Section 3.4

WORKPOINT

1) The object business system is first divided into SUB-SYSTEMS (Level 1) according to scope of study. These subsystems are then decomposed into MODULES (Level 2) by grouping major functions together. Finally, the modules can be further broken down into specific FUNCTIONS (Level 3) that actually carries out the processings.

2) Subsystems are usually divided into 2-3 levels.

3) "Level No" is given as follows:

Subsystem Level No	Module Level No	Function Level No

4) "Subsystem Name" is written according to the level to which the subsystem/module/function belongs. The name should portray the processings of the unit.

5) "Remarks" refer to any further comments on the subsystem/module/function such as input method, input medium, online or batch processings.

<< Example >>

F-1.3.1

JSTST	SYSTEM HIERARCHY SPECIFICATION	REV. 1	PAGE V1

LEVEL NO.	SUBSYSTEM NAME LEVEL 1 LEVEL 2 LEVEL 3	REMARKS
1	• Student Administration	
1.1	• Student Recruitment	
1.1.1	• Course Enquiry	
1.1.2	• Shortlist Applicants	Input media : Floppy Disc Containing applicants' data read thru OCR
1.1.3	• GCE 'A' Level Enquiry	
1.2	• Student Registration	
1.2.1	• Applicants' selection	
1.2.2	• Student Registration	
1.3		

WS-1.3.1		WRITTEN BY Ho W N	DATE WRITTEN 29/2/88

SYSTEM DEVELOPMENT PHASE	GENERAL DESIGN	
ACTIVITY 1.3 Process Design		WORKSET 1.3.2 Program Specification (1)
WORK DOCUMENT Program Network Diagram (PND)		FORM SHEET NO. FC-01

OUTLINE

1) The PROGRAM NETWORK DIAGRAM illustrates the relationship between transactions.

2) Extract, from the lowest level functions specified in the system Hierarchy Specification, those functions that are conversational. Expand these functions into transactions and arrange them in order of processing to form the Program Network Diagram.

INPUT

1) "Module Function Specification" : Guidebook Section 3.4

2) WD-1.1.2 : Item Description

3) WD-1.2.2 : I/O Requirement Specification

4) WD-1.3.1 : System Hierarchy Specification

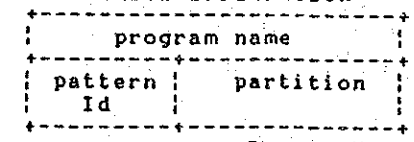
WORK POINT

1) To execute jobs serially, consider the following processings:
   a) Preparatory Job Processing

      This includes input data media conversation, checking and other relevant processings.

   b) Job Processing (most suitable to the relevant job)
      (i) Output information creation processing
      (ii) Master file updating, data accumulation and other related processings.

2) SYMBOL EXPLANATION



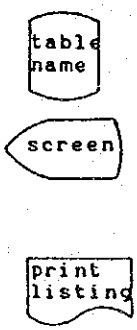
Progam Name : alphanumeric, not more than 8 characters.

Pattern Id : identification code of standardized pattern provided by SEA/I. Not available at present.

Partition : indication of online or batch processing.

Table Name : name of database table

I/O Specification : name of I/O specification



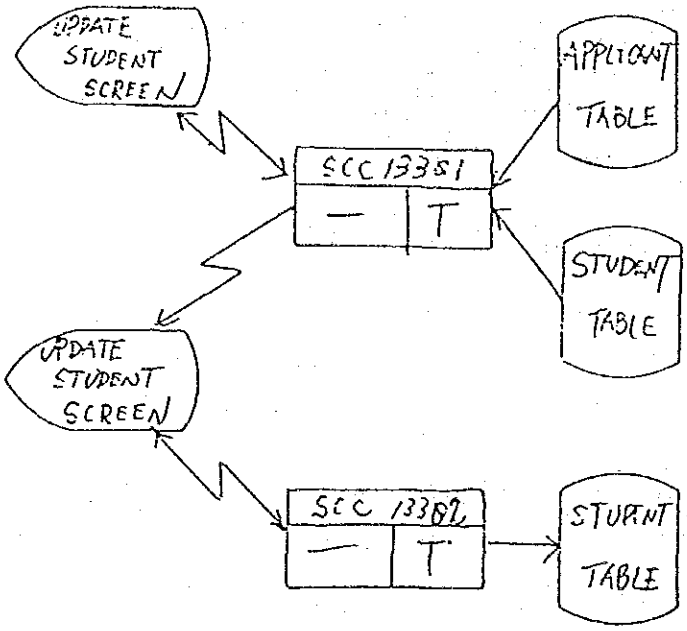
<< Example >>

FC-61

WORK DOCUMENT NAME	REV.	PAGE
PROGRAM NETWORK DIAGRAM (PND)	1	1/1

JOB NAME:
CO-ORDINATE COURSE

WORK NAME : TERMINATE COURSE FOR STUDENTS.



WORK SET NO.		WRITTEN BY	DATE WRITTEN
1.3.2		H. W N	29/2/82

SYSTEM DEVELOPMENT PHASE	GENERAL DESIGN	
ACTIVITY 1.3 Process Design		WORKSET 1.3.2 Program Specification(2)
WORK DOCUMENT Program Specification		FORM SHEET NO. F-1.3.2

OUTLINE

1) Define the files, input and output data used in conjunction for a specific process.

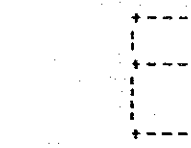
2) Outline the processings to be performed.

INPUT

1) "Module Function Specification" : Guidebook Section 3.4
2) WD-1.1.2 Item Description
3) WD-1.2.2 I/O Requirement Specification
4) WD-1.3.1 System Hierarchy Specification
5) WD-1.3.2(1) Program Network Diagram (PND)

WORK POINT

1) Describe the input/output relevant diagram concerning the Program.
2) Describe the processing outline of the program. Especially, particular counting methods or particular conditions etc. should be included.
3) Describe the input/output database table name used in the program.
4) Consider the Program Description that express the program contents.
5) Estimate the source program steps (write at the bottom of "PROCESSING OUTLINE")
6) If the steps are small enough in WD-1.3.2 (1), then you can combine two programs into one.
7) If you need to use SPA in interactive transaction, write the SPA size.
8) PROCESSING CYCLES : ad hoc, daily, monthly, annually
9) Symbol Explanation



Process Id : Alphanumeric, not more than 8 characters

Process Description : A concise description of the process

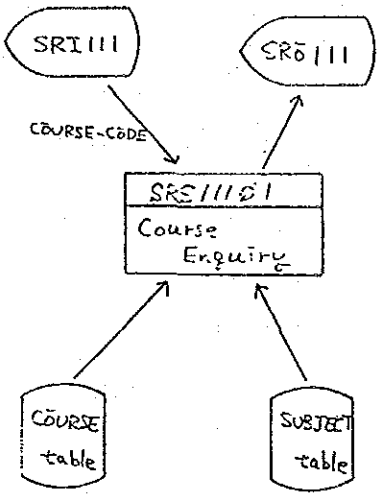
<< Example >>

F-1.3.2

JSTST	PROGRAM SPECIFICATION	REV. 1	PAGE 1/1

PROGRAM ID :	MODULE NAME :	PROCESSING CYCLES :	LANGUAGE :
SRS1101	Students Recruitment	AD-HOC	COBOL/S

CHART :



PROCESSING OUTLINE :

(1) Input COURSE-CODE

(2) Read course information from the COURSE table.

(3) Read subject informations relating the course from the SUBJECT tables.

(4) Compose the output screen image and send it to the terminal.

INPUT/ OUTPUT OR FILENAME	INTERNAL FILENAME	I/O	CHARACTERISTICS				
			CHARACTERS /RECORD	RECORD /BLOCK	ORGANIZATION	ACCESS MODE	REMARKS
SRI111 Screen		I					
SRO111 Screen		O					
COURSE table		I					
SUBJECT table		I					

WS-1.3.2 WS-2.3.1		WRITTEN BY	DATE WRITTEN
		H. W. N	27/2/27

SYSTEM DEVELOPMENT PHASES	DETAILED DESIGN
ACTIVITY 2.1 Detailed DB Design	WORKSET 2.1.1 RIQS Table & Item Design
WORK DOCUMENT Table Specification Sheet	FORM SHEET NO. F-2.1.1

OUTLINE

1) Scrutinizing the result of data specification (Activity 1.1), determine the attributes needed for definitions of RIQS, especially for DS/TQF.

2) Determine the screen display method of DS/TQF. (Input length/output length for each column and the "keep" attribute).

INPUT

1) WD-1.1.1. Table Specification List

2) WD-1.1.2. Item Description

3) Software Products Provided for the Student : Guidebook Section 2.7

WORK POINT

1) "Existing File Name" is to be filled only if the table is loaded from an existing sequential file. File name is less than 16 characters in length.

2) "Keep" specifies the number of columns to be retained when the screen is shifted horizontally. Usually, only the primary key column is kept.

3) "Data Name In RDIR" is the same as "Data Name" in Item Description (WD-1.2.2).

4) "Key" refers to specification of "Primary" (P) and "Secondary" (S) keys.

5) Consider whether conditions are specified for a specific data item when determine "Input Length".

6) When determine the "Output Length", take into account the editing pattern.

7) Refer to" NEC RIQS Supplementary & Diagnostic Messages Guidebook" pages 1.1 - 1.8

8) Review ISD3 (RIQS, DS/TQF)

<< Example >>

F-2.1.1

JISIST	TABLE SPECIFICATION SHEET	REV. 1	PAGE 1/1

TABLE NAME	Applicant	EXISTING FILENAME	APFILE
TABLE NAME IN RDIR	AP	RDB NAME	MIPDB1
HEADER DISPLAY	APPLICANT	NUMBER OF RECORD	500
		KEEP	1

ITEM NAME	DATA NAME IN RDIR (FOR DS/TQF)	ATTRIBUTE *1 CHARACTER TYPE	ATTRIBUTE NUMBER OF COLUMN	*2 KEY	SCREEN DISPLAY METHOD INPUT LENGTH	SCREEN DISPLAY METHOD OUTPUT LENGTH	SCREEN DISPLAY METHOD EDIT	REMARKS
Application-no	AP-NO	C	8	P	12	8		
Course-no	AP-COURSENO	C	4	S	8	4		Condition oper
NRIC-no	AP-NRIC-NO	C	8	S	12	8		
Application-date	AP-DATE	Z	6		8	6		
Applicant's-name	AP-	C	30		30			
Address								
Tel-								

REMARKS :

*1 C: CHARACTER
Z : NUMERIC

*2 P : PRIMARY KEY
S : SECONDARY KEY

WS-2.1.1		WRITTEN BY	DATE WRITTEN
		H. W. N.	29/2/88

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	2.1 Detailed DB Design	WORKSET	2.1.2 File Management Table
WORK DOCUMENT	File Management Table	FORM SHEET NO.	F-2.1.2.

OUTLINE

Specify the definition of File Management Table of RIQS.

INPUT

1) "PROJECT BACKGROUND" : Guidebook Chapter 3.

2) Software Products Provided for the Students : Guidebook Section 2.7

3) WD-2.1.1 Table Specification Sheet

WORK POINT

1) FILENAME (File name used by RIQS), TYPE (RIQS or STanDard), and EFN (External File Name : File name used by ACOS-4/OS) must be specified.

2) The informations of this table will be registered in File Management Table of RDIR for RIQS.

3) If "YES" is specified for Journal, then AJ and BJ are both collected. (AJ: After image Journal, BJ: Before image Journal)

4) Refer to" NEC RIQS SUPPLEMENTARY & DIAGNOSTIC MESSAGE GUIDEBOOK" (Page 1.9 - 1.12)

5) OWNER : - appoint the Data Base Administrator

F-2.1.2

JIS/ISI	WS-2.1.2	FILE MANAGEMENT TABLE	WRITTEN BY	DATE WRITTEN	REV.	PAGE
			H. W. N	27/2/88	1	1/1

NO.	FILE NAME	ALIAS	OWNER (DEFINER)	TYPE (RIQS/STD)	SHARE (ALL/READ/NO)	EFN	VOLUME (CATLGD)	JOURNAL (AS/BJ/YES/NO/)	REMARKS
1	MIPDB1	—	YETLK	RIQS	ALL	ADPRSJ.GRP99.DB1	CATLGD	YES	
2				RIQS	ALL	ADPRSJ.GRP99.WK1	CATLGD	YE	

<< Example >>

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	2.1 Detailed DB Design	WORKSET	2.1.3 User Management Table
WORK DOCUMENT	User Management Table	FORM SHEET NO.	F-2.1.3

OUTLINE

Specify the users who can maintain the JSI Data Base.

INPUT

1) "JSI Organization chart" : Guidebook Section 3.11

WORK POINT

1) The informations of this table will be registered in User Management Table of RDIR for RIQS

2) "LINE" means the number of lines set between tables (if user processes the multiple table on DS/TQF) on the screen.

3) "AUTH" = "YES" means "Authorized to handle all system tables of RIQS"

4) "COMD" is the start-up process command name for DS/TQF (P.- : Display Blank Table)

5) Refer to" NEC RIQS SUPPLEMENTARY & DIAGNOSTIC MESSAGES GUIDEBOOK" (page 1.10 - 1.11)

F-2.1.3

JAERI	WS-2.1.3	USER MANAGEMENT TABLE	WRITTEN BY H.OWN	DATE WRITTEN 29/2/88	REV. 1	PAGE 1/1

NO.	USER NAME	GROUP NAME	OWNER	AUTH	COMD	RDB	RWK	LINE	REMARKS
1	HOWN	GRP99	YETLK	YES	P.—	MIPDB1	MIPWK1	2	
2	DHANM	GRP99	YE						
3									

<< Example >>

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	2.2 Detailed Man-Machine Interface Design	WORKSET	2.2.1 Transaction Type Specification
WORK DOCUMENT	Transaction List	FORM SHEET NO.	F-2.2.1

OUTLINE

1) To determine the transactions pertaining to each program as well as the screens, and reports required.

2) To determine if VDs (Virtual Destinations) are required. If so, the type of VD required.

INPUT

1) WD-1.2.1 Man-Machine Interface Outline

2) WD-1.3.2 (1) Program Network Diagram(PND)

3) WD-1.3.2 (2) Program Specification

WORK POINT

1) Refer to "NEC VIS GUIDEBOOK" (page 2-24)

2) TRANS-NAME means the name of LM according to the Transaction Processing Program (TPP).

3) Program Description
   Specify sub-system name

4) TRANS CODE
   Identifier of transaction. Alpha-numeric within 6 characters.

5) TRANS NAME
   Name of the program.

6) TRANS TYPE
   Control method of transaction.
   - INQ : Inquiry type or Batch output type
   - CONV: First transaction of conversational process type
   - NONE: None first transaction of conversational process type
   - BIN : Batch input type

7) START MODE
   Transaction availability when VIS starts up
   E (Enable) : Available at VIS start up
   D (Disable): Not available at VIS start up. Need to start the transaction.

   If the transaction is rarely used, it is better to be set D (Disable) for memory saving.

8) INITIAL SCREEN ID
   Initial screen name of the transaction.

9) OUTPUT SCREEN /PR ID
   Output screen names of the transaction. If output is not on the screen, then printer format name is specified.

F2.2.1

JSIST	WS-2.2.1	TRANSACTION LIST	WRITTEN BY H.W.N	DATE WRITTEN 29/2/88	REV. 1	PAGE 1/1

PROGRAM DESCRIPTION	TRANS. CODE	TRANS. NAME	TRANS.TYPE	START MODE	INITIAL SCREEN ID	OUTPUT SCREEN/PRID	LINK TYPE	REMARKS
Course Enquiry	T1110 1	SRS1110 1	INQ	E	SRI111	SRŌ111	INIT	
GCE 'A' Level Enquiry	T1130 1	SRS1130 1	INQ	E	SRI113	SRŌ113	DEFLK	
Applicants selection	T1210 1	SEN1210 1	INQ	D	SRI121	SRI121/ PRŌ121	DEFER	VD
Students Registration	T122		INQ	E	SRI122	SRI122	INIT	

Stude

<< Example >>

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	2.2 Detailed Man-Machine Interface Design	WORKSET	2.2.2 Transaction & User Environment
WORK DOCUMENT	1) Transaction and User Environment 2) Traffic Density Calculation	FORM SHEET NO.	1) F-2.2.2-1 2) F-2.2.2-2

OUTLINE

Estimate the number of transaction per hour and the number of records accessed by the transaction. (This data is used for response time estimation and setting class/priority of transaction)

INPUT

1) Module Function Specification : Guidebook Section 3.4

2) WD-1.3.2 Program Specification

3) WD-2.2.1 Transaction List

WORK POINT

1) Refer to "NEC VIS GUIDEBOOK" page 2-23

2) This data will be used for operation design too.

3) TRANS NAME
   specify transaction name defined by WD-2.2.1

4) Frequency, periods, time-of-day
   Required available time for the transaction

5) User
   Specify who the user of the transaction is

6) AP NAME
   Specify application name. Alpha-numeric, within 8 characters.

7) AP START MODE
   Applicaton availability when VIS starts up.
   . E (Enable) : Available at VIS start-up
   . D (Disable): Not available at VIS start-up. Need operator command to start the application

8) TRANS/H (I)
   Specify the number of transaction per hour. (Average and peak)

9) ACCESS RECORD COUNT
   Average no. of records in the various RIQS tables accessed per transaction processed. This is dependent on the no. of READ and WRITE statements in WD-1.3.2

10) CPU Time calculation (t)
    1.2 x (Program Steps (D) x 5μs + RIQS I/O Instruction Number (R) x 6ms)
    where
    D=10 x (Number of COBOL statement) + 100

11) ELAPSED Time Calculation (T)
    1.2 x (I/O Instruction Number(F) x 40ms) + CPUTime(t)

12) Traffic Density (P)
    $\lambda \times T$

F-2.2.2-1

JAS/JST	WS-2.2.2	TRANSACTION AND USER ENVIRONMENT			WRITTEN BY	DATE WRITTEN	REV.	PAGE
					HoW N	29/2/88	1	1/1

TRANS. NAME	FREQUENCY (CYCLE)	PERIODS	TIME-OF-DAY	USER	AP NAME	AP START MODE	REMARKS
SRS1110/	AD-HOC	4, 5, 6	8:30 ~18:00	Applicants	STAPP1	D	
SRS1130/	AD-HOC	4, 5, 6	8:30 ~18:00	Dir...	ADMDIR1	E	
SEN1210/	Annually.	June 1...	8:3...			F	
SEN1220/	AD-HOC						
SCC1310							
SA							

<< Example >>

F-2.2.2-2

JSTAT	WS-2.2.2	TRAFFIC DENSITY CALCULATION	WRITTEN BY Mo WN	DATE WRITTEN 29/2/88	REV. 1	PAGE 1/1

TRANS. NAME	TRANS/H (I)	TRANS. DENSITY λ = I/3600	FILE I/O COUNT (F)	ACCESS REC. COUNT (R)	CPU TIME (mSEC) (t)	ELAPSED TIME (sec) (T)	TRAFFIC DENSITY ρ = λT	REMARKS
SRS1110 1	10	0.00278	4	31	1.423	0.415	0.0012	
SRS1130 1	5	0.00138	4	140	1.608	1.20	0.0017	
SCN1121 01	1	0.0			9	2.26	0.0006	
SCN1122 01						.01	0.0014	
SCC1							0.0008	

<< Example >>

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	2.2 Detailed Man-Machine Interface Design	WORKSET	2.2.3 Terminal Operation Specification
WORK DOCUMENT	Terminal Operation Specification	FORM SHEET NO.	F-2.2.3

OUTLINE

1) Clarify the sequence of terminal operation, regarding to the business/job processing sequence.

2) Mainly the operating sequence from starting-up application to the end of it, including error handling operations, is to be specified.

INPUT

1) WD-1.2.1 Man-Machine Interface Outline

2) WD-1.2.2 I/O Requirement Specification

3) WD-1.3.2 Program Specification

WORK POINT

1) Refer to" NEC VIS SUPPLEMENTARY HANDOUT"

2) Need to understand the input method to the terminal (eg. keyboard or card reader or floppy disc input) and requirements of input, output, and conversational system.

3) Consider the following points
   i) connection/disconnection of the system
   ii) connection of the transaction
   iii) PF key assignment
   iv) Return to MENU, etc

refer to HANDOUT

IN WD-2.2.3 Terminal Operation Specification

4) Left half part
Illustrate the operating sequence in a flow.
This may be different according to the subsystems and transactions.
The name of subsystem and transaction is specified at the top.

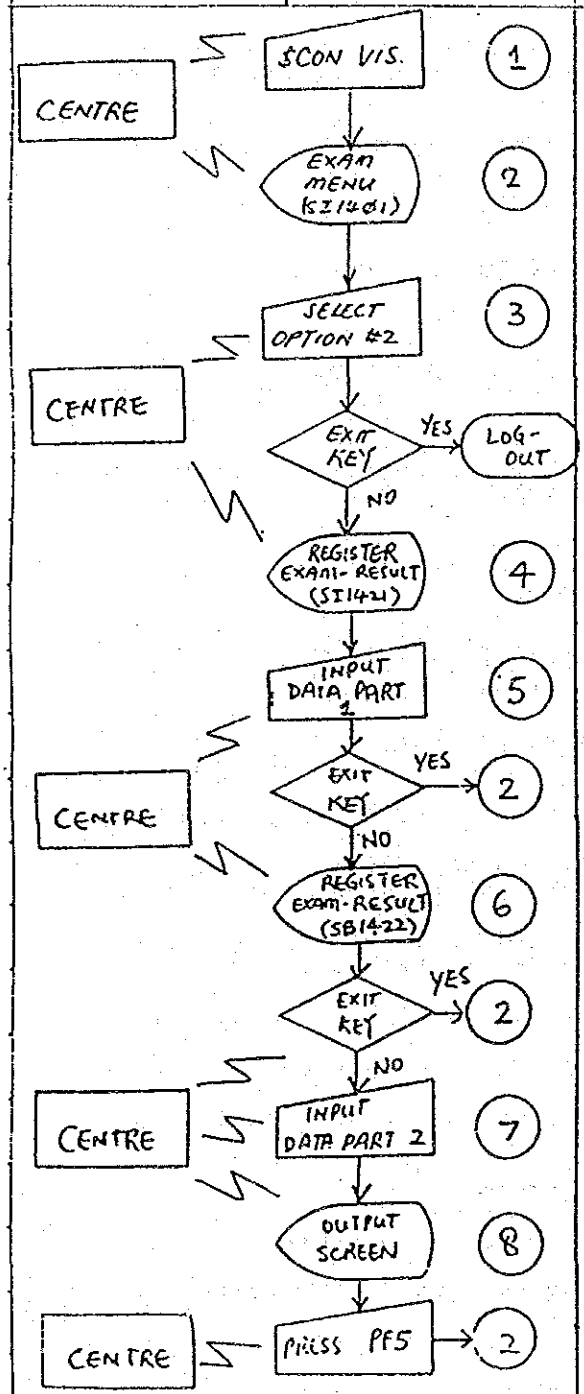
5) Right half part
Explain the operating Sequence according to the illustration of the left part.

<< Example >>

F-2.2.3

JSIST	TERMINAL OPERATION SPECIFICATION	REV. 1	PAGE 1/1

TRANSACTION NAME	TRANSACTION CODE	PROGRAM DESCRIPTION
PGM 142ØØ	T142Ø1	Registration of Examination Result



(1) Enter SCON VIS. in blank screen and press SEND-key

exam. menu is displayed for option selection.

(3) From the menu, select option #2. To continue, press SEND-key; to exit, press PF15.

(4) The register-exam-result screen #1 (SI1421) appears for data entry.

(5) Input course NO, SUBJECT CODE and STUDENT NO for information retrieval.

To continue, press SEND-key
To exit, press PF5

(6) The register-exam-result screen #2 (SB1422) appears for data entry.
To exit, press PF5

(7) Input marks for each assessment type. To update, press SEND-key; to exit, press PF5

(8) The total weighted marks and weighted marks are displayed
Press PF5 to exit.

WS-2.2.3		WRITTEN BY Timothy	DATE WRITTEN 29/2/88

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN	
ACTIVITY 2.2 Detailed Man-Machine Interface Design		WORKSET 2.2.4 Screen Layout(1)
WORK DOCUMENT Screen Layout		FORM SHEET NO. F-2.2.4-1

OUTLINE

Design screen Layout in considering easy operation, sufficient data entry error detection and appropriate error message.

INPUT

1) WD-1.2.1 Man-Machine Interface Outline

2) WD-1.2.2 I/O Requirement Specification

3) WD-2.2.1 Transaction List

4) WD-2.2.3 Terminal Operation Specification

WORK POINT

1) Ensure to make it easy to distinguish input fields and output fields. For example, input fields can be underlined or circled.

2) Set the display area of error messages, system data, and the transaction code.

3) Transaction Code is necessary on the screen of enquiry type and the first transaction of conversational type. Place it at the first of each field.

4) Consider terminal operation area.

5) Consider the following points to increase the input work easiness.
   - Default value display on the initial screen.
   - Concentration of fields that can be left with no input.
   - Fields that have no need of input (for example, transaction code field) can be protected.

6) The following notation can be used to specify the field usage.
   IN (I): Entered by operator or by program.

   INP : Not entered by operator, but entered by program.

   OUT (O): Entered by program.

   IO : Entered by operator or program.

   IOP : Not entered by operator, but entered by program.

WS-2.2.4

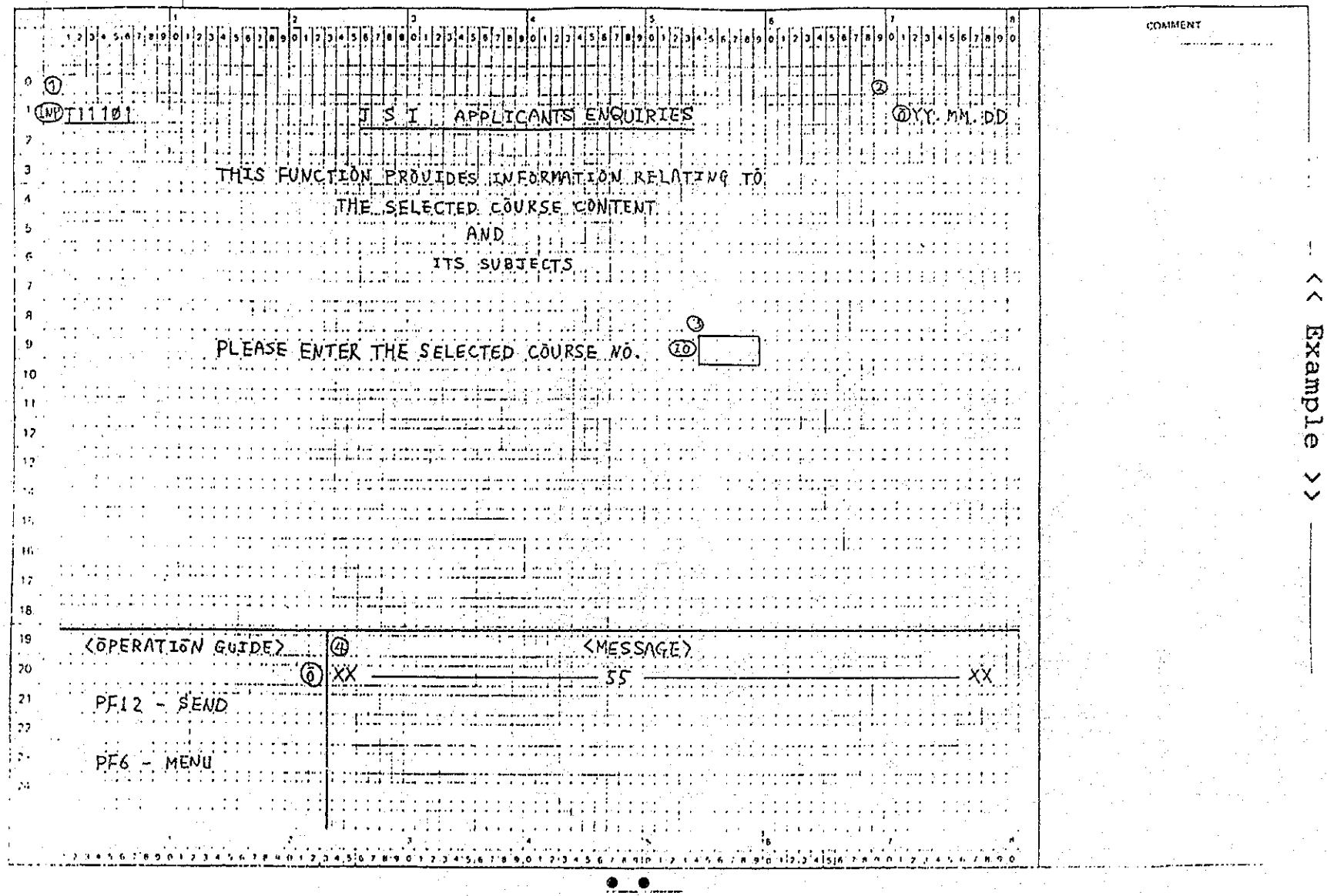
F-2.2.4-1

DISPLAY SCREEN LAYOUT

WRITTEN BY Ho W N
DATE WRITTEN 29/2/88
REV 1
PAGE 1/1

PROGRAM NAME:

TITLE SRI 111



<< Example >>

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN	
ACTIVITY	2.2 Detailed Man-Machine Interface Design	WORKSET 2.2.4 Screen Layout(2)
WORK DOCUMENT	Screen I/O Item description	FORM SHEET NO. F-2.2.4-2

OUTLINE

1) Design in detail the attributes of screen layout items (fields)

2) Also, design the processes that can be fulfilled by VIS (Data checking, edition, etc.)

INPUT

1) WD-1.1.2 Item Description

2) WD-2.2.3 Terminal Operation Specification

3) WD-2.2.4 Screen Layout

WORK POINT

1) Determine the followings as the screen item (field) attributes.
   . Classification of input, output, and input-output.
   . Color

2) Item names are the data names that will be used in the programs (TPP). So be careful to name them whether the names match the standard.

F-2.2.4-2

JAIST	WS-2.2.4	SCREEN I/O ITEM DESCRIPTION	WRITTEN BY	DATE WRITTEN	REV.	PAGE
			Ho W N.	29/2/88	1	1/1

ID of I/O Spec.	SRI111 (Applicant enquiries)	TRANSACTION CODE	TRN111

NO.	POSITION		ITEM ATTRIBUTES						REMARKS
	START LINE	START COL.	INPUT/OUTPUT/ PROTECT	ITEM NAME *	REPEAT	PIC	COLOR	EDIT	
1	1	1	INP	TRCODE	—	X(6)	WHI	—	"TRN111"
2	1	72	O	DATE	—	9(8)	WHI	yy/mm/dd	System date
3	9	54	IO	COURSE	—	X(4)	CYA	—	
4	20	24	O	MSG	—	X(55)	YEL	—	

* Prefix must be necessary according to the following rule.

for input item

SRI111I-

for output item

SRI111O-

<< Example >>

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN
ACTIVITY 2.2 Detailed Man-Machine Interface Design	WORKSET 2.2.5 Print Layout (1)
WORK DOCUMENT Print Layout	FORM SHEET NO. F-2.2.5-1

OUTLINE

1) Among the outputs of the system, design printer outputs

2) Design the layout of each item (field) on the output and determine the attributes of the item (field).

INPUT

1) WD-1.2.1 Man-Machine Interface Outline

2) WD-1.2.2 I/O Requirement Specification

3) WD-2.1.1 Table Specification Sheet

4) WD-2.2.3 Terminal Operation Specification

WORK POINT

1) New line or new page conditions should be specified

2) Program name on which the print output is used is also to be specified.

3) The top 4 lines and the bottom 6 lines are reserved for the system use. (Not available)

<< Example >>

WRITTEN BY H o W N
DATE WRITTEN 11/2/88
REV
PAGE 1/1
Reserved for system use
F-2.2.5-1
WS-2.2.5
SRS12M1
J S I APPLICATION LAST - ERROR REPORT
Ⓓdd/mm/yy
APPLICATION NO.
ERROR DATA
REMARKS
① XXXXXXXX
② XXXXXXXX
④ XX
XX
TOTAL ERROR :④29
ONLY FOR LAST PAGE
Reserved for System Use
PRINT LAYOUT

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN
ACTIVITY 2.2 Detailed Man-Machine Interface Design	WORKSET 2.2.5 Print Layout (2)
WORK DOCUMENT Print Item Description	FORM SHEET NO. F-2.2.5-2

OUTLINE

1) Design in detail the attributes of print layout items (fields)

2) Also, design the editing process can be done by VIS or Form Overlay packages.

INPUT

1) WD-1.2.1 Man-Machine Interface Outline

2) WD-1.2.2 I/O Requirement Specification

3) WD-2.1.1 Table Specification Sheet

4) WD-2.2.5(1) Print Layout

WORK POINT

1) Determine the followings as the print item (field) attributes
   - The way of editing
   - Unit ($1,000 or $1,000,000, etc)
   - New line or new page conditions (If the item is the repeated one).
   - Related DB item

2) ITEM Names are the field names that will be used in the programs (TPP or BATCH). So be careful to name them whether the names match the standard .

OUTPUT

WD-2.2.5(2) Print Item Description

JSTSTST	WS-2.2.5	PRINT ITEM DESCRIPTION	WRITTEN BY	DATE WRITTEN	REV.	PAGE
			Ho W N	29/7/88	1	1/1

ID of I/O Spec	LPD112 (Rejected Applicants List)	PROGRAM DESCRIPTION	Shortlist Applicants

NO.	POSITION		ITEM ATTRIBUTES								RELATED DB ITEM		REMARKS
	START LINE	START COL.	LEVEL NO.	ITEM NAME	RE-PEAT	PIC	EDIT	UNIT	NEW LINE	NEW PAGE	OTHERS	TABLE /RECORD	COLUMN /ITEM	
1	6	120	—	LPD-DATE	—	9(6)	99/99/99	dd/mm/88	—	O	—	—	—	System date
2	12	13	—	LPD-APPNŌ	O	X(8)	ZZZZZZZ9	—	O	AT THE BOTTOM OF THE PAGE	—	AP	AP-NŌ	
3	12	31	—	LPD-ERRDATA	O	X(8)	—	—	O	ditto	—	AP	any column	
4	12	50	—	LPD-REMARKS	O	X(70)	—	—	O	ditto	—	—	—	ERROR MESSAGE
5	55	78	—	LPD-NŌERR	—	9(2)	Z9	1	O	ditto	DAILY FOR LAST PAGE	—	—	NUMBER OF ERRORS

<< Example >>

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	2.3 Program Design	WORKSET	2.3.1 Program Interface Specification
WORK DOCUMENT	Program Specification	FORM SHEET NO.	F-1.3.2

OUTLINE

Define attributes of all files and screens used by the process.

INPUT

1) WD-1.3.2 Program Specification

2) WD-1.1.1 Table Specification List

WORK POINT

1) Use the work document sheet of program specification

2) Decide internal file name and file characteristics.

3) Indicate one of the symbols from Input : I, Output : O and Input-output : I/O in the column of I/O.

4) In the column of Organization, enter the following symbol.
   - S: Sequential file
   - R: Relative file
   - RDB(S): RIQS sequential file
   - RDB(I): RIQS Indexed file
   - RDB(R): RIQS Relative file
   - I: Indexed file
   - ADBS: database file

5) In the column of Access made, enter the following symbol.
   - S : Sequential access
   - R : Random access
   - D : Dynamic access

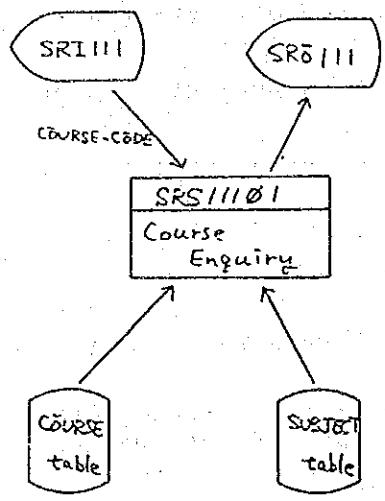
<< Example >>

F-1.3.2

JISTAST	PROGRAM SPECIFICATION	REV. 1	PAGE 1/1

PROGRAM ID :	MODULE NAME :	PROCESSING CYCLES :	LANGUAGE :
SRS1101	Students Recruitment	AD-HOC	COBOL/S

CHART :



PROCESSING OUTLINE :

(1) Input COURSE-CODE

(2) Read course information from the COURSE table.

(3) Read subject informations relating the course from the SUBJECT tables.

(4) Compose the output screen image and send it to the terminal.

INPUT/OUTPUT OR FILENAME	INTERNAL FILENAME	I/O	CHARACTERISTICS				
			CHARACTERS /RECORD	RECORD /BLOCK	ORGANIZATION	ACCESS MODE	REMARKS
SRI111 Screen	—	I					
SRŌ111 Screen	—	Ō					
COURSE table	RTCŌ01	I	210	—	RIQS (Index)	R	
SUBJECT table	RTSU01	I	188	—	RIQS (Index)	D	

WS-1.3.2 WS-2.3.1		WRITTEN BY	DATE WRITTEN
		H. W. N	29/2/27

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	2.3 Program Design	WORKSET	2.3.2 Program Function Design
WORK DOCUMENT	Program Function Diagram	FORM SHEET NO.	F-2.3.2

OUTLINE

1) Extract the essential function to solve the required problems in the program

2) Summarize them in program function procedure according to structured programming.

INPUT

WD-1.3.2 Program Specification

WORK POINT

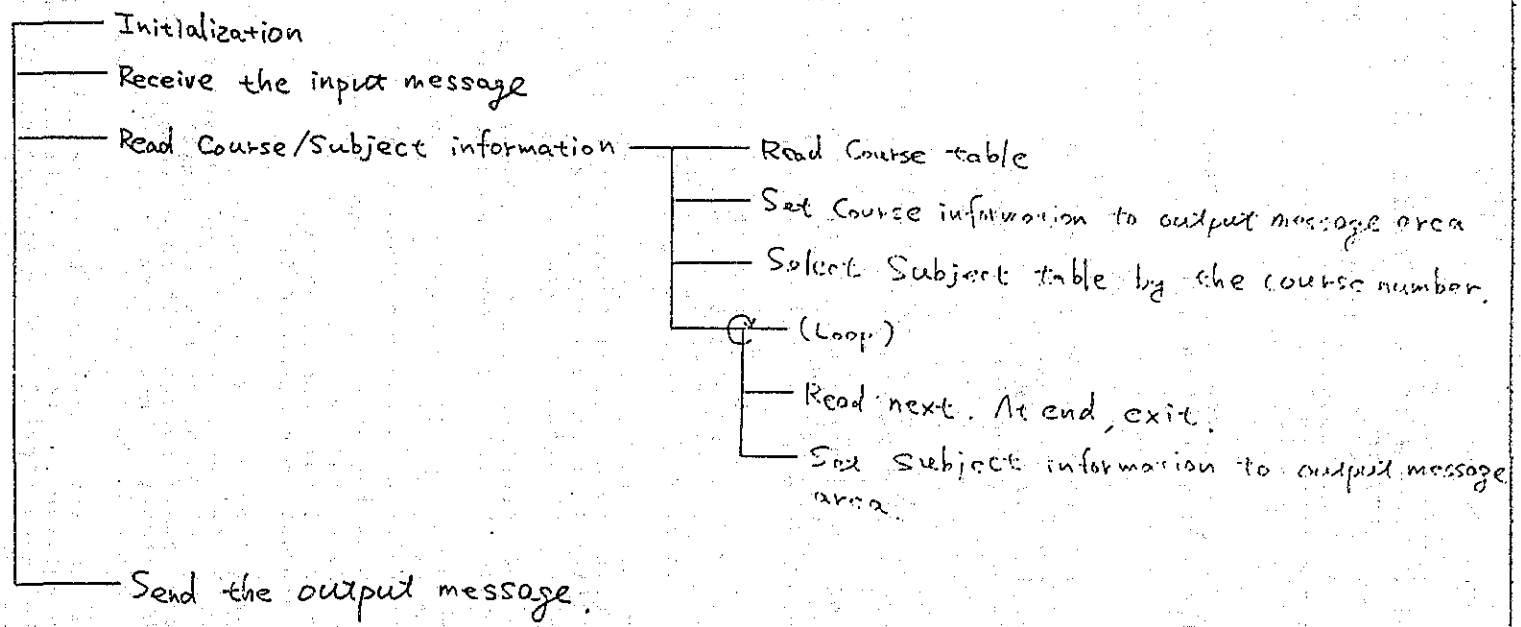
1) Consider the program function irrespective of the program flow.

2) Do not go into detail and divide the program into start processing, main processing and termination processing

3) Illustrate Program Function Procedure such as left is more abstract and right is more concrete.

F2.3.2

	WS-2.3.2	PROGRAM FUNCTION DIAGRAM	WRITTEN BY	DATE WRITTEN	REV.	PAGE
			Ho W N	29/2/88	1	1/1
PROGRAM ID	SRS1101	PROGRAM DESCRIPTION	Course Enquiry			



<< Example >>

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	2.3 Program Design	WORKSET	2.3.3 Program Logic Design
WORK DOCUMENT	1) Program Logic Diagram 2) Process Description 3) Error Message List	FORM SHEET NO.	1) FC-02 2) F-2.3.3 3) FC-02

OUTLINE

Expand the program from Program Function Procedure to detailed processing function.

INPUT

1) WD-2.1.1 Table Specification Sheet
2) WD-2.2.4 Screen Layout
3) WD-2.2.5 Print Layout
4) WD-2.3.2 Program Function Diagram

WORK POINT

1) Use the SPD (: Refer to NEC STRUCTURE PROGRAMMING DIAGRAM (SPD) HANDOUT)

2) Do not go into too much detail, because SPD should be laid out so that the program can be coded at a glance and SPD help making the program list easy to read.

3) SPD should be expressed by three control structures of program (sequential processing, branch selection and iteration). For further details, refer to "NEC Structured Programming Diagram" of MHF handout.

4) Level 1 should be considered to show what the program is going to do. Level 2 should expand the each section of level 1 to implement the processing functions and provide the actual processing.

5) Use specification code to clarify the correpondence between the SPD and processing description or program list.
The specification code indicates such as the following
Pattern (1 digit)
F----Updating program by sequential access
G----Updating program by random access
H----Retrieval program
R----Retrieval program of VIS
S----Updating program of VIS

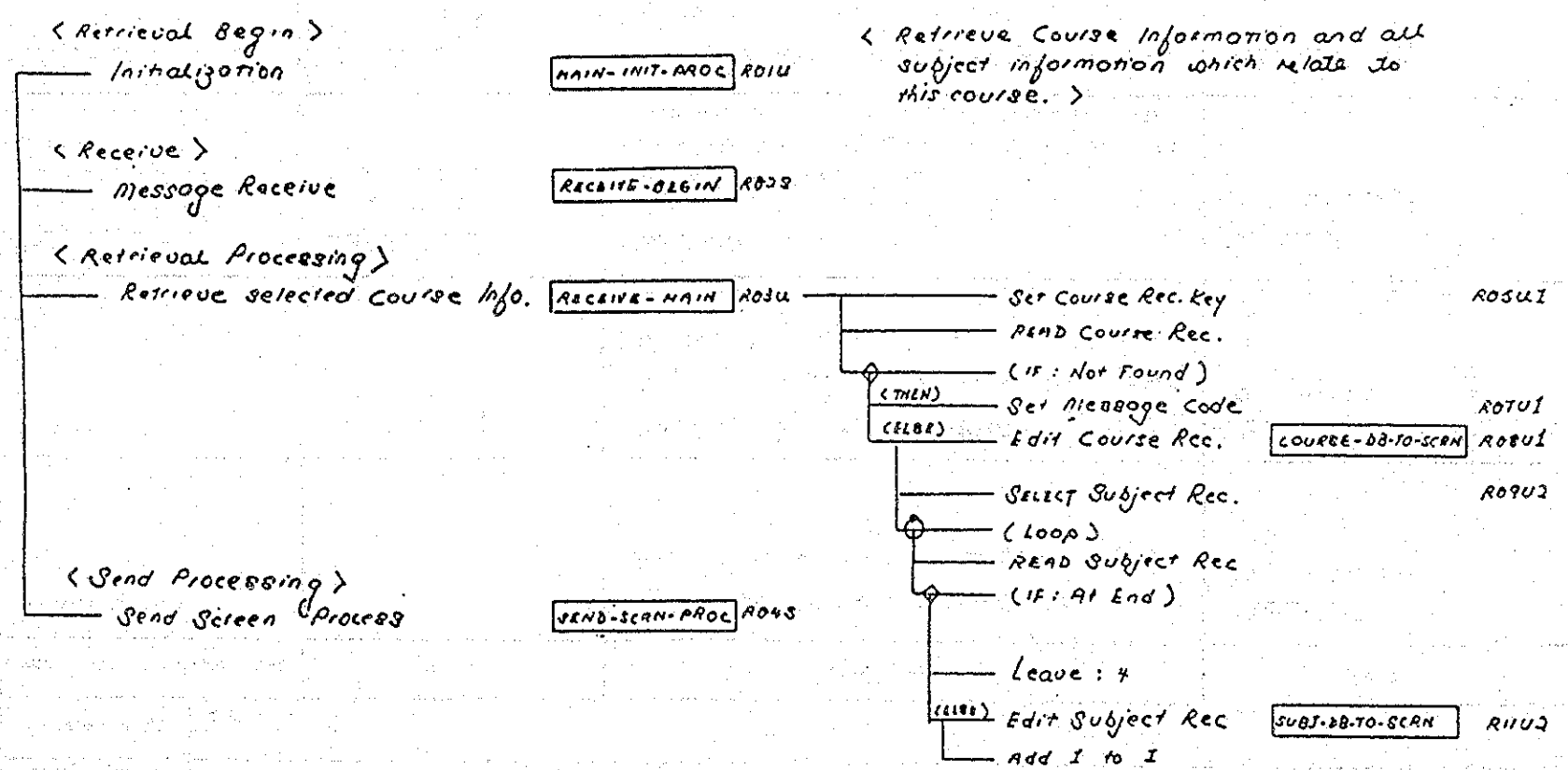
. Serial number (2 to 3 digit)
  This indicates the order of appearance
. Distinction of standard (1 digit)
  S----Standardized pattern or commonly used pattern
  U----pattern local to the program
ex) R01S, S012U.

6) Use "Process Description List" to give supplementary explanation on processes. Specify data items (including working data items) which relate to a process.

7) Use "Message Description List" to define all messages used within the application. Preferably, assign a message code for each message.

JSIST	WORK SET NO.	WORK DOCUMENT NAME	WRITTEN BY	DATE WRITTEN	REV.	PAGE
	2.3.3	Program Logic Diagram	H. W. N.	21/2/88	1	1/1

Program Name : SRS1110I (Course Enquiry)



<< Example >>

F-2.3.3

JISJST	WS-2.3.3	PROCESS DESCRIPTION	WRITTEN BY	DATE WRITTEN	REV.	PAGE
			Ho W N	21/2/88	1	1/1
PROGRAM NAME	SRS1101					

PROCESSING FUNCTION NAME	INPUT	PROCESSING	OUTPUT
Initialization		• Initialize necessary work areas such as the output message area.	Work Area 01 OUT-MSG
Receive	01 IN-MSG	• Receive the input message. • Set the course number from the message to the key area of course table on DB.	Course table 02 CD-COURSE-NO #
READ	Tables on DB 01 COURSE 01 SUBJECT	• Read the course table • Set the information of the course to the output message area. • Read the subject tables related to the course. • Set the information to the output message area.	Work Area 01 OUT-MSG
SEND	Work Area 01 OUT-MSG	• Construct the output message area including control informations. • Send the output message to the terminal.	01 OUT-MSG

<< Example >>

FC-02

JSIIST	WORK SET NO.	WORK DOCUMENT NAME	WRITTEN BY	DATE WRITTEN	REV.	PAGE
	2.3.3	Error Message List	Ho W N	29/2/88	1	1/2

No.	CODE	MESSAGE	REMARKS
1	M02001	COURSE NO. NOT ... TABLE.	
2	M02002	SUBJ... LE.	
3	M02003	...	
4.	M02...		
5	M...		
6			

<< Example >>

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN
ACTIVITY 3.1 VIS Design for DB	WORKSET 3.1.1 VIS Design for DB
WORK DOCUMENT DBD Attribute Table (VIS)	FORM SHEET NO. F-3.1.1

OUTLINE

1) Define the file attributes of each RIQS table for VIS

2) Each RIQS table is regarded as a file

3) If there is some standard file to be processed, then the attributes of it are also specified in this workset.

INPUT

1) WD-2.1.1 Table Specification Sheet
2) WD-2.3.1 Program Specification
3) Reliability Specification : Guidebook Section 3.6

WORK POINT

1) "FILE ID" refers to the internal file name as specified in WD-2.3.1.

2) "FILESTAT" states whether VIS opens the file (table) the time of initiating a transaction which uses this table.
   Enable : Automatically open by VIS (default)
   Disable : Open by operator's command

3) "IOERROR" refers to whether a file is to be closed or not when an I/O error occurs.

4) "OPENMD" states whether a file is to be opened in "Update" (UP) or 'Input' (IN) mode. Note that whatever mode is chosen, it is specified for the entire application.

F-3.1.1

JSD	WS-3.1.1	DBD ATTRIBUTES TABLE (VIS)	WRITTEN BY	DATE WRITTEN	REV.	PAGE
			HoWN	29/2/88	1	1/1

NO.	FILE ID	TYPE (RIQS/STD/)	FILE STAT (ENABL/ DISABL)	IO ERROR (CLOSE/ NO CLOSE)	EFN (TABLE-IDENTIFIER)	FIL ORG (DIRECT/ ISEQ/)	OPEN MD (UP/IN)	REMARKS
1	RTAPØ1	RIQS	ENABL		APPLICANT	ISEQ	UP	
2	RTGPØ1	RIQS	ENA		PASSES	ISEQ	UP	
3	RTGSØ1	RIQS				ISEQ	UP	
4	RTSTØ1						UP	
5	RTCŌØ1							
6	RT							

<< Example >>

SYSTEM DEVELOPMENT PHASE: DETAILED DESIGN

ACTIVITY 3.2 VIS Design for DC | WORKSET 3.2.1 Virtual Destination

WORK DOCUMENT Virtual Destination | FORM SHEET NO. F-3.2.1

OUTLINE

Define Virtual Destination for VIS

INPUT

1) WD-2.2.1 Transaction List
2) WD-2.2.2-1 Transaction and User Environment

WORK POINT

1) Refer to "NEC VIS Guidebook" page 1-23 to 1-25

2) Find all transaction needed in VD

IN WD-3.2.1 Virtual Destination

(3) VDID
Virtual Destination IDentifier. Alpha-numeric within 6 characters.

(4) TYPE
Select terminal types specified below.
TERM : Receiver of the message is terminal
TRNS : Receiver of the message is program
IND : Receiver of the message is other VD(s).

(5) VDSTAT
Initial status of VD. ENABLE (able to receive messages) or DISABLE (not able to receive messages) must be specified.

JASTEST	WS-3.2.1	VIRTUAL DESTINATION	WRITTEN BY HOWN	DATE WRITTEN 29/2/88	REV. 1	PAGE 1/1

VDF	VD-ID	TYPE	OUTPUT LOCATON	TRANS NAME	PRINT-ID(PRID)	VDSTAT	REMARKS
1	VDØ1	TERM	ADM ROOM1	SEN121Ø1	PRO121	ENABLE	
	VDØ2	TERM	ADM RE			ENABLE	
	VDØ3	TERM				ABLE	
	VDØ4						

<< Example >>

SYSTEM DEVELOPMENT PHASE: DETAILED DESIGN

ACTIVITY 3.2 VIS Design for DC | WORKSET 3.2.2 Terminal Attribute

WORK DOCUMENT Terminal Attrubute | FORM SHEET NO. F-3.2.2

OUTLINE

1) Determine the I/O devices required and their location

2) Determine the VDs required

INPUT

1) WD-2.2.2-1 Transaction and User Environment
2) WD-3.2.1 Virtual Destination

WORKPOINT

1) Refer to "NEC VIS GUIDEBOOK" page 2-17 to 2-18

IN WD-3.2.2 Terminal Attribute

2) TYPE
   Terminal type for I/O. Select from below attributes.
   IO : Input and Output can be done (Eg. APC III keyboard-Display)
   IN : Only input can be done. (Eg. Card reader, Mark-sheet reader)
   OU : Only output can be done. (Eg. Serial printer)

3) ADT/GPT
   Specifying GPT (General Purpose Terminal) or ADT (Application Dedicated Terminal). It can not be used for ATSS or other purpose.

4) CONTROL TERM
   If TYPE is "IN" or "OU", control terminal must specified. This terminal is used for error notification.

5) START MODE
   This mode is specified for ADT terminal. Select the connection mode to VIS (ENABLE) or not (DISABLE) at the starting-up time of VIS.

6) INIT.AP
   If specified, VIS will connect the terminal to the specified application at the starting-up time of VIS.

7) INIT.VD
   If specified, VIS will connect the terminal to the specified VD (Virtual Destination) at the starting-up time of VIS.

<< Example >>

F-3.2.2

JAIST	TERMINAL ATTRIBUTE						REV. 1	PAGE 1/1
USER	TERM. NAME	TYPE	ADT/GPT	CONTROL TERM.	START MODE	INIT. AP	INIT. VD	REMARKS
ADM	PC201	IO	GPT	—	—	ADMDIR1	—	
	SP201	OU	—	PC201	E	ADMDIR1	VD01	
	PC202	IO	GPT	—	—	ADMDIR1	—	
	SP202	OU	—	PC202	E	ADMDIR1	VD02	
	PC203	IO	GPT	—	—	ADMDIR1	—	
	SP203	OU	—	PC203	E	ADMDIR1	VD03	
	PC204	IO	GPT					
	SP205	OU						
LECTURER	PC20							

WS-3.2.2		WRITTEN BY Ho W U	DATE WRITTEN 29/2/88

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN	
ACTIVITY 3.2 VIS Design for DC		WORKSET 3.2.3 Terminal Control Method
WORK DOCUMENT Terminal Control Method		FORM SHEET NO. F-3.2.3

OUTLINE

1) Define the terminal operation (control) method

2) Determine the initial connection status between the terminal and application/transaction

3) Assign function keys to the various application/ transactions

INPUT

1) WD-2.2.3 Terminal Operation Specification
2) WD-3.2.2 Terminal Attribute

WORK POINT

1) Refer to "NEC VIS Guidebook" page 2-16 and 2-24 to 2-25 (Especially, NEXTP/BACKP/CANCEL/RETURN/COMMAND/ LOUT on 2-16 and APPFK on 2-23, TRPFK on 2-24)

IN WD-3.2.3 Terminal Control Method
2) This sheet is free format. But the informations stated below must be included.
. The method of connection/release for each application /transaction (PF-key or initial connection method)
. The use of PF-keys.

<< Example >>

	WORK DOCUMENT NAME	REV.	PAGE
JIS/JST	TERMINAL CONTROL METHOD	1	1/1

APPLICATION CONNECTION

APPLICATION	CONNECTION TERMINAL	CONNECTION METHOD	PFKEY
ADMDIR1	PC201 - PC202 SP201 - SP204	INITIAL	—
STAPP1	PC210 - PC SP	LI Command	—
E		ITIAL	—
APPLICATION RELEASE	—	—	PF15

TRANSACTION CONNECTION

APPLICATION	TRANSACTION CODE	CONNECTION METHOD	PFKEY
STAPP1	TM	PFKEY	PF5
		PFKEY	PF6
		PFKEY	PF7
		(TPP)	—
		PP)	—

		WRITTEN BY	DATE WRITTEN
WS - 3.2.3		H. W N	29/2/88

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN	
ACTIVITY 3.2 VIS Design for DC		WORKSET 3.2.4 Transaction Class
WORK DOCUMENT Transaction Class		FORM SHEET NO. F-3.2.4

OUTLINE

1) Set the various transactions' classess

2) Determine the no. of tasks per transaction class

3) Determine the no. of Message Processing Jobs (MPJs) required

INPUT

1) WD-2.2.2-1 Transaction and User Environment

WORK POINT

1) Refer to "NEC VIS SUPPLEMENTARY (HANDOUT)"

2) Refer to "NEC VIS GUIDEBOOK" page 2-14, 2-24, 2-25

3) PRIORITY - Logical grouping of transactions according to importance, frequency of execution, etc.

4) CLASS - Task's class in which the transaction is being executed. Range = (A, A1, A2, A3, B1... Z, Z1, Z2, Z3)

5) TASK - Task ID, within 8 alphanumeric characters

6) TASK START MODE - Initial mode of connection between task and MPJ
   E (Enable) : task is connected to MPJ once VIS invokes the MPJ
   D (Disable): task is invoked only via operator command

7) TASK PRIORITY - Task's execution priority, ranges from 0 to 7. The highest priority is 0.

8) REMARKS - The no. of MPJs required should be specified here. The MPJ's ID must be specified.

JAERI	WS-3.2.4	TRANSACTION CLASS	WRITTEN BY H. WAKU	DATE WRITTEN 29/2/88	REV. 1	PAGE 1/1

PRIORITY	TRANSACTION NAME	CLASS	TASK	TASK START MODE	TASK PRIORITY NUMBER	REMARKS
HIGHEST	SEN1210 1	B	TASK1 (0.0007)	ENABLE	0	1 MPJ Can support up to 64 tasks, hence in our case, we need only 1 MPJ JOB NAME (MPJ-ID) : MTPMPJ
	SCC1320 1					
	SENU0 1					
HIGH	SEN1220 1	D				
	SAS1530 1					
	SAS1530 2					
MIDDLE	SRS1130 1					
	SCC1330 1					
	SAS1520 1					
LOW	SRS1110 1					
	SAS1					
	SC					
LOWEST						

<< Example >>

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN	
ACTIVITY 3.3 VIS Design for Recovery		WORKSET 3.3.1 Journal File Specification
WORK DOCUMENT Journal File Specification		FORM SHEET NO. F-3.3.1

OUTLINE

Set up journal file specification which will be used as "JFDMTN" parameters.

INPUT

1) "Resource Allocation" : Guidebook Section 3.8
2) "Device Specification" : Guidebook Section 3.9
3) "Reliability Specification" : Guidebook Section 3.6
4) WD-2.2.4 Screen Layout
5) WD-2.2.5 Print Layout
6) WD-2.3.1 Program Specification

WORK POINT

1) Refer to "NEC VIS GUIDEBOOK" page 2-5 to 2-8 (Especially page 2-7 to 2-8)

2) Consider the following points
   i) Consider VIS base Journal
   ii) Fill in Journal File ID, Duplication, Record Length, Block Length, OPV ERROR, IOERROR, FILE NAME, DEVICE CLASS, and MEDIA TYPE
   iii) Determine the SPA, IME, OMA size
   iv) RECORD LENGTH > SPA + 9 > 4200
   IMA + 95
   OMA + 94
   v) BLOCK LENGTH > RECSIZE + 40
   vi) Specify "CYCLIC" for disposition when the file reaches the end
   vii) Select "DISK" for MEDIA TYPE
   viii) Specify "2 cylinder" for capacity
   ix) Specify "3" for No. of volumes
   x) Use "SHARE=YES", "COMPACT=YES" and "BLKTRL=YES" as JFDMTN parameters.

<< Example >>

F-3.3.1

JSTST	JOURNAL FILE SPECIFICATION		REV. 1	PAGE 1/1
JOURNAL FILE TYPE	BASE	JOURNAL FILE ID	2	
DUPLICATION	SINGLE (DUAL)	DISPOSITION WHEN END OF FILE REACHED	CYCL	
RECORD LENGTH		BLOCK LENGTH		
OPV ERROR		I/O ERROR	SWAP	
FILE NAME				
MEDIA TYPE	MT (DISK)	NUMBER OF VOLUMES	3	
DEVICE CLASS	MS/M700	CAPACITY		
MEDIA NAME				
REMARKS				

SPA SIZE	
IMA SIZE	
OMA SIZE	

WS-3.3.1		WRITTEN BY	DATE WRITTEN
		H. YJ	14/2/22

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	3.3 VIS Design for Recovery	WORKSET	3.3.2 System Failure Disposition Specification
WORK DOCUMENT	System Failure Disposition Specification	FORM SHEET NO.	F-3.3.2

OUTLINE

Specify the actions of VIS and operators when system fails (Actions to system-down)

INPUT

1) Reliability Specification : Guidebook Section 3.6

WORK POINT

1) Refer to "NEC VIS GUIDEBOOK" page 3-1 to 3-5

IN WD-3.3.2 System Failure Disposition Specification

2) VIS Start mode
Select the mode stated below
- COLD : Regardless of previous system status, start from initial status
- WARM : If previous system status is normal, start from initial status. Otherwise (eg. abnormal) same recovery process as CHKPT is done, and start again.
- CHKPT: If previous system status is normal, continue the previous job/work. If previous system status is abnormal, cancel the non-finished transactions (roll back recovery of DB), re-send the un-sended messages, and do some other recovery process. After that , start again the previous job/work and continue the previous conditions.

3) Journal Start Mode
Select the mode stated below
- COLD : Start output data from the top of the file.
- WARM : Start output data from the next block of the previously outputted block (on disc) or from the top of next volume (on MT)
- NEXTVOL : Start output data from the top of next volume.

(Note)
On the case of system failure, VIS assumes the journal start mode as WARM.

4) determine which journal tape should he used for recovery, if you will do the database at the system down.

5) determine the restart conditon after terminating the VIS normally.

6) after database saving, "COLD" mode is better, and in the other case, "WARM" or "NEXTVOL" is better.

<< Example >>

F-3.3.2

JSTST	SYSTEM FAILURE DISPOSITION SPECIFICATION	REV. 1	PAGE 1/1

	NORMAL START MODE	START MODE WHEN RESTARTING AFTER SYSTEM FAILURE
VIS START MODE		
JOURNAL START MODE	NORMAL START MODE	START MODE WHEN RESTARTING AFTER SYSTEM FAILURE

FILE OR DATA BASE RECOVERY METHOD WHEN A SYSTEM FAILURE OCCURS

1. Restart the VIS in warm-restart-mode.
2. Notice the terminal users that some transactions are canceled and that some terminal users have to input the transactions again.
3. If needed, print the journal file using the utility: "JNLPRINT".

WS-3.3.2		WRITTEN BY H. W. IJ	DATE WRITTEN 29/2/88

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN
ACTIVITY 3.3 VIS Design for Recovery	WORKSET 3.3.3 I/O Failure Disposition Specification
WORK DOCUMENT I/O Failure Disposition Specification	FORM SHEET NO. F-3.3.3

OUTLINE

1) Specify the actions to be taken for the file and transactions when I/O failure occurs.

2) Specify the actions to be the relevant DB and Files

INPUT

1) Reliability Specification : Guidebook 3.6

WORK POINT

1) Refer to "NEC VIS GUIDEBOOK" 2-22, 2-25 to 2-26 (IOERROR)

2) Specify the recovery method in case of Data Base or file I/O ERROR refering to the Reliability Specification : Guidebook 3.6

3) determine whether disconnect the file (or database)

4) determine whether disconnect the transaction which used the failure file.

<< Example >>

F-3.3.3

	I/O FAILURE DISPOSITION SPECIFICATION	REV.	PAGE
		1	1/1

DATABASE OR FILE	I/O FAILURE RECOVERY METHOD	METHOD OF DEALING WITH FAILURE	
		AREA OR FILE DISPOSITION	TRANSACTION DISPOSITION
MIPDB1	· After daily operations, Save data base contents to magnetic tapes. · If a media failure occurs, Close this database, deassign, change the media (device), and load the data from the save tape. Then, recover the database by using the utility : "$DBRECVR".		

WS-3.3.3		WRITTEN BY	DATE WRITTEN
		H. W. N.	29/2/88

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	3.3 VIS Design for Recovery	WORKSET	3.3.4 Program Failure Disposition Specification
WORK DOCUMENT	Program Failure Disposition Specification	FORM SHEET NO.	F-3.3.4

OUTLINE

Specify the actions to be taken by VIS when program loops or abnormally terminates

INPUT

1) Reliability Specification : Guidebook Section 3.6
2) WD-2.2.2-1 Transaction and User Environment
3) WD-3.2.4 Transaction Class

WORK POINT

1) Refer to "NEC VIS GUIDEBOOK" page 2-25 (CPUTIME, ELAPSETIME, ABORT,[DUMP])

2) In order to prevent the endless process loop caused by program bug, it is better to set the CPU and ELAPSE time of each transaction.

3) determine how to deal with the TPP or TRNS in case of abnormal termination of Program.

<< Example >>

F-3.3.4

JISIST	PROGRAM FAILURE DISPOSITION SPEC.	REV. 1	PAGE Y1

TRANSACTION CODE	TRANSACTION NAME	MONITORED TIME		ABNORMAL TERMINATION DISPOSITION
		CPU UTILIZATION TIME (ms)	EXECUTION ELAPSED TIME (s)	
T1110 1	SRS1110 1	1000	4	CONT
T1130 1	SRS113		10	
T1210				

WS-3.3.4		WRITTEN BY H. W. N.	DATE WRITTEN 29/2/88

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	3.3 VIS Design for Recovery	WORKSET	3.3.5 Communication-system Failure Disposition Specification
WORK DOCUMENT	Communication-system Failure Disposition Specification	FORM SHEET NO.	F-3.3.5

OUTLINE

Specify the actions to be taken by VIS when communication system fails.

INPUT

1) Reliability Specification : Guidebook Section 3.6
2) WD-2.2.1 Transaction List

WORK POINT

1) Refer to "NEC VIS GUIDEBOOK" page2-16 (AUTSTART, DCRECVR), and page 2-25 (MSGERROR, ALTVD)

2) Consider how to display the message in case of communication line failure

3) In case of alternate destination, it is necessary to determine the VD name and fill in the WD-3.2.1

<< Example >>

F-3.3.5

JAS/JAST	COMMUNICATION SYSTEM FAILURE DISPOSITION SPEC.	REV. 1	PAGE 1/1

TRANSACTION CODE	RESPONSE METHOD DISPOSITION WHEN TERMINAL OR LINE FAILURE OCCURS	ALTERNATE DESTINATION WHEN ALTERNATE IS TO BE USED	REMARKS
T1110 1	PEND	—	
T1130 1		—	
T1		—	

WS-3.3.5		WRITTEN BY	DATE WRITTEN
		H. W N	29/2/28

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	3.4 VIS File Capacity Estimation	WORKSET	3.4.1 Control File Capacity Estimation
WORK DOCUMENT	Control File List	FORM SHEET NO.	F-3.4.1

OUTLINE

1) Calculate the capacity for the files needed for VIS.

2) Allocate media on which each file will be stored.

INPUT

1) Resource Allocation : Guidebook Section 3.8
2) Device Specification : Guidebook Section 3.9
3) WD-2.2.4 Screen Layout
4) WD-2.2.5 Print Layout
5) WD-3.2.1 Virtual Destination
6) WD-3.3.1 Journal File Specification

WORK POINT

1) Refer to "NEC VIS GUIDEBOOK" page 2-2 tp 2-3, 2-8 and 2-27.

2) Students don't need to fill in the "organisation", "Record Length", "Block Length" and "Record Format" in the following case,
   i) Library for Source program, CU, JCL and Copy
   ii) Library for LM
   iii) Private Sysout Library

3) MFD file can be allocated by the JCL of MFDL, so you don't need to fill in above column.

4) For IL, Capacity of 3 cylinder is recommended.
   For LM, Capacity of 6 cylinder is recommended.
   For Private Sysout, Capacity of 3 cylinder is recommended.

F-3.4.1

JIS/JST	WS-3.4.1	CONTROL FILE LIST	WRITTEN BY	DATE WRITTEN	REV.	PAGE
			Ho W N	77/2/28		1/1

CONTROL FILE NAME	EXTERNAL FILE NAME	ORGANIZATION	RECORD LENGTH	BLOCK LENGTH	RECORD FORMAT	CAPACITY	DEVICE CLASS	MEDIA NAME
VDF	ADPR0J.GRP99.VDF.	DIRECT	8192	8192			DS/11700	
PGF	〃 .PGF	DIRECT	2048					
SPF	〃 .SPF	DIRECT	8					
CKPF	〃 .CkPF	DIRECT						
MBF	〃 .MBF	DIREC						
TSF	〃 .TSF	DIR						
MFD01	〃 .MFD01	▽						
VDDF	〃 .VDDF							
Base Journal	〃 .JNL							
IL(SL/CU/JS)	〃 .I							
LM	〃							
CBSF								
Private SYSOUT								
MFD02								

<< Example >>

SYSTEM DEVELOPMENT PHASE	DETAILED DESIGN		
ACTIVITY	3.4 VIS File Capacity Estimation	WORKSET	3.4.2 Data File Capacity Estimation
WORK DOCUMENT	1) RDB FILE CAPACITY ESTIMATION	FORM SHEET NO.	1) F-3.4.2-1
	2) RDIR/RWK CAPACITY ESTIMATION		2) F-3.4.2-2
	3) DATA FILE LIST		3) F-3.4.2.3

OUTLINE

1) Calculate the capacity for the RIQS files.

2) Allocate media on which RIQS files will be stored

INPUT

1) WD-2.1.1 Table Specification sheet
2) WD-2.1.2 File Management Table
3) WD-2.1.3 User Management Table
4) Resource Allocation : Guidebook Section 3.8
5) Device Specification : Guidebook Section 3.9

WORK POINT

1) Refer to" NEC RIQS SUPPLEMENTARY & DIAGNOSTIC MESSAGE GUIDEBOOK" (page 1-13 to 1-16)

2) 1 CI = 1 BLOCK = 4096B for RIQS DB

3) Total CI should be calculated.

4) Average number of column in RDB file should be calculated. This information is needed in RDIR/RWK capacity estimation.

F-3.4.2-1

JAERI	WS-3.4.2	RDB FILE CAPACITY ESTIMATION	WRITTEN BY H. W N	DATE WRITTEN 29/2/88	REV. 1	PAGE 1/1

NO.	NAME OF USER TABLE	COLUMN (nC)	DATA LENGTH (L)	NO.OF RECORD (N)	CALCULATION OF CAPACITY [(16+nC+L) x N/2,000] * x LF(1.2)	CAPACITY (CIs)	REMARKS
1	AP	25	207	500	$\left[\frac{(16+25+207)\times 350}{2.000}\right]^{+}\times 1.2$	75	
2	GP	5	17		[illegible] $\times 1.2$	16	
3	GS	3				215	
4	ST					11	
5	CŌ					1	
6							
	TŌTAL	Average 10				672	

<< Example >>

F-3.4.2-2

JAERI	WS-3.4.2	RDIR/RWK CAPACITY ESTIMATION	WRITTEN BY	DATE WRITTEN	REV.	PAGE
			H. W N	29/2/88	1	1/1

NO.	NAME OF RESOURCES	UNIT SIZE (BYTES)	AVERAGE NO. OF COL.(n)	NO. OF ENTRIES	CALCULATION OF CAPACITY	CAPACITY (CIs)	REMARKS
1	*USER	150	—	9	150 ×		
2	*FILE (RIQS)	150	—	5			
3	*FILE (STD)	150 + 80 (n+1)	10				
4	*TABLE	150 + 150 (n+1)					
5	RDIR Index	13 × 4					
6	RWK	36 ×					
	TOTAL	RDIR				20	
		RWK				270	

<< Example >>

F-3.4.2-3

JSTST	WS-3.4.2	DATA FILE LIST	WRITTEN BY H. W N	DATE WRITTEN 29/2/88	REV. 1	PAGE 1/1

DATA FILE NAME	EXTERNAL FILE NAME	ORGANIZATION	RECORD LENGTH	BLOCK LENGTH	RECORD FORMAT	CAPACITY	DEVICE CLASS	MEDIA NAME
RDB	APPROJGRP99.RDB1	VSAS (Relation)	60		FB	5 (Cyl.)	MS/M700	PUB009
RWK	ADPROJ...							PUB009

<< Example >>

SYSTEM DEVELOPMENT PHASE	System Construction
ACTIVITY 4.0 System Construction Planning	WORKSET 4.0.1 System Construction Planning
WORK DOCUMENT System Construction Schedule	FORM SHEET NO. FC-11

OUTLINE

"System Construction Schedule" arranges details of all work items under system construction phase, based on the detailed design specifications and the "System Development Schedule (WD-0.0.1)".

INPUT

WD-0.0.1 System Development Schedule
WD-2.X.X Detailed design specifications
WD-3.X.X (Especially WD-2.3.1)

WORK POINT

1) List down all work items during system construction phase. (You should break down "VIS CONSTRUCTION" or "RIQS CONSTRUCTION" to "Making VDL", "Test of VIS",.., "Registration of File table", etc.)

2) Assign the works to each group member.

3) Estimate time necessary for each work.

4) The module test of common programs should be in advance of other programs.

5) This workset should involve Workset 4.4.1 "User Manual Planning".

<< Example >>

FC-11

JAIST	SCHEDULE CHART	REV. 1	PAGE 1/1

TITLE: System Construction Schedule

Work Items	Person in charge	MAR.	APRIL 4	11	18	REMARKS
System Construction Planning	A	→	→			
Module Test Specification	A, B (C, D)		Make → Check/Rake →			
File / DB Allocation	C		→			
Mee						

WORK SET NO.		WRITTEN BY	DATE WRITTEN
4.0.1.		H. W N	29/3/82

SYSTEM DEVELOPMENT PHASE	System Construction
ACTIVITY 4.1 Module Test Design	WORKSET 4.1.1 Module Test Specification
WORK DOCUMENT Module Test Specification	FORM SHEET NO. F-4.1.1

OUTLINE

1) Specify how to test the programs according to the detailed design specifications.

2) Specify the data used in the module test.

3) Specify the conditions of the test and the estimated results.

INPUT

WD-2.3.X Program Design
WD-4.0.1 System construction schedule

WORK POINT

1) The module test is the test of programs to find out if each program follows the specifications, and the functions of each program are logically tested. The one who specified the specifications should review the test items.

2) The test should be classified to two cases: normal cases, and abnormal cases such as input data errors. IDSP can be used for setting abnormal conditions.

3) The columns of module test specification are as follows:
   TEST NO. ------- Sequence number of test item
   TEST METHOD ---- COMP: by using computer actual running
                    DESK: by debugging on the desk
   ITEM ----------- Process function to be tested.
   CONDIITON ------ test method and test data name.
   DATA ----------- Input data value or the data value needed for the test item.
   Estimated results -- The expected output; i.e., messages, data values, etc.

F-8.1.1

JSD/JSP	WS-8.1.1 WS-8.3.2	MODULE TEST SPECIFICATION	WRITTEN BY	DATE WRITTEN	REV.	PAGE
			Ho WN	29/2/88	1	1/26

PROGRAM NAME	SRS1110	PROGRAM DESCRIPTION	COURSE ENQUIRY

TEST NO.	TEST METHOD		TESTING			ESTIMATED RESULTS	VERIFIED		OK/NG	REMARKS
	COMP.	DESK	ITEM	CONDITION	DATA		BY (NAME)	DATE (DD/MM)		
1.	✓	✓	Key Check (Valid)	· COURSE Table 1.1. Input Course No.	AP01	1st Page of SR0111				
2.	✓	✓	Paging Check (Loop)	· SUBJECT Table 2.1 With 1 record 2.2 With 2 records 2.3 With 5 records 2.4 With 30 records 2.5 With 0 record		1 page 1 page 3 page 15 page NO-SUBJECT message				
3	✓	✓	Key Check (Invalid)	· COURSE Table 3.1 Input course No.	XXXX " " (Blank)	COURSE-Not-found message prompt message				

<< Example >>

SYSTEM DEVELOPMENT PHASE: System Construction

ACTIVITY 4.2 System Environment Construction

WORKSET 4.2.1 File/DB Allocation

WORK DOCUMENT _____ FORM SHEET NO. _____

OUTLINE

Construct the VIS control files, journal files, RIQS database files, and libraries for source, CU, LM, and private sysout.

INPUT

WD-3.3.1 Journal file Specification
WD-3.4.1 Control file list
WD-3.4.2 Data file list

WORK POINT

1) Construction of files should be done by the system administrator.

2) Refer to "NEC VIS Supplementary Handout", "NEC RIQS Supplementary and diagnostic messages guidebook" (page A2-2), and "NEC RIQS Supplementary (Handout)".

3) LIBALLOC command of library maintenance should be used for allocating libraries of source, CU, LM, and private sysout.

4) For constructing RIQS database, DEFINE command of RIQSMTN should be used.

5) After the allocation of files, the access right should be given to users by PROTECT command.

6) At the time of using DS/TQF under the multi VIS system, specify Journal File for every volume, referring to "NEC RIQS Supplementary (Handout)".

7) Please copy LMs from ADPROJ.GRP05.LMLIB to your LM library. (The names are VISMPJ, VISIMFD1, VISIMFD2, and VISIMFD3) and pre-initialize them by using "PLMMTN".

8) Please copy the source members (The names are VISUCA and VISFPTR) from ADPROJ.GRP05.ILLIB to your library.

SYSTEM DEVELOPMENT PHASE: System Construction

ACTIVITY 4.2 System Environment Construction

WORKSET 4.2.2 Message Format Definition

WORK DOCUMENT _____ FORM SHEET NO. _____

OUTLINE

1) Construct screens by using IMFD.
2) If outputs to the terminal printer from the transaction exist, MFDL is used to define message formats.

INPUT

1) WD-2.2.4-1 Screen Layout
2) WD-2.2.4-2 Screen I/O item description
3) WD-2.2.5 Print Layout
4) "Device Specification": Guidebook page 29.

WORK POINT

1) Refer to "NEC VIS Guidebook" Chapter 4 and 5

2) Refer to "NEC VIS Supplementary Handout" for the connection method of IMFD and attentions to use it.

3) Check the screen by the CHECK function (it can be used. It is supported by the current release) of IMFD.

4) After producing COPY-SOURCE members by IMFD, check them referring to WD-2.2.4-2.

SYSTEM DEVELOPMENT PHASE: System Construction

ACTIVITY 4.2 System Environment Construction

WORKSET 4.2.3 VIS Environment Construction

WORK DOCUMENT _____ FORM SHEET NO. _____

OUTLINE

Construct the VIS environment and test if it works.

INPUT

1) WD-2.2.1 Transaction List
2) WD-2.2.2 Transaction and User environment
3) WD-2.2.3 Terminal operation specification
4) WD-3.2.X VIS Design for DC
5) WD-3.3.X VIS Design for Recovery
6) WD-3.4.1 Control file list

WORK POINT

1) Refer to "NEC VIS Guidebook" pages 2-9 to 3-5.

2) Refer to "NEC VIS Supplementary Handout".

3) At the time of making the VDL, make note to specify IDSP function for the debugging use.

4) Make JCLs for VIS, MPJ, and RBRECVR.

5) To identify the VIS systems, each group should specify the following parameters.

Group No.	1	2	3
$VIS	OCC=1	OCC=2	OCC=3
$VISMPJ	OCC=1	OCC=2	OCC=3
$RBRECVR	SUBSYSTEM=VIS1	SUBSYSTEM=VIS2	SUBSYSTEM=VIS3

6) Make the JCL of "RBRECVR", following "NEC VIS Supplementary (Handout)". It should be stored in the internal format JCL catalog library.

7) The assign of the user catalog is needed for the MPJ job.

8) For the test run of VIS, Start VISJ and assure if MPJs are automatically made started.

9) Assure by the operator command if the applications which are specified "ENABLE" are active:
"CVn DI S AP" (n=1,2, or 3 according to the Group No.)

10) Assure if the transactions which are specified "ENABLE" are active by the operator command:
"CVn DI S TR" (n=1,2, or 3 according to the Group No.)

11) From the terminals, input "$CON VISn" (n=1,2 or, 3 according to the group number), and check if the initial screen appears.

12) If the VIS has the initial menu screen, check if the connection, release of each transaction and the release of each application work normally.

13) When modifying screens by IMFD of your VIS, copy your screen objects from ADPROJ.GRP05.CBSF to your CBSF.

14) Check if IMFD of your VIS works, by releasing of other applications and typing in"/LI IMFD" from your terminal.

SYSTEM DEVELOPMENT PHASE: System Construction

ACTIVITY 4.2 System Environment Construction

WORKSET 4.2.4 RIQS Environment Construction

WORK DOCUMENT _____ FORM SHEET NO. _____

OUTLINE

Construct RIQS database environment, load initial data, and test if it works.

INPUT

1) WD-1.1.2 Item Description
2) WD-2.1.1 Table Specification Sheet
3) WD-2.1.2 File Management Table
4) WD-2.1.3 User Management Table

WORK POINT

1) Log in DS/TQF (ATSS) by using the user-id of the OWNER specified in WD-2.1.2 and WD-2.1.3

2) Register RDB file and RWK file to the File Management Table. The existing files must be also registered to the table.

3) The RDB name and RWK name of the OWNER in the User Management Table is to be modified to the registered RDB and RWK name.

4) Refer to "NEC RIQS Supplementary Handout".

5) Once logged out and re-log-in, the RDB and RWK are initialized.

6) Register all user names in the User Management Table

7) Register all tables (user tables) in the Table Management Table

8) Give access rights on the registered user tables to other users who use the tables.

9) By using "L." command of DS/TQF, the data of existing file are to be loaded to the database.

10) By using "I." command of DS/TQF, one record should be stored for each table that has no existing data. (The data can be dummy and be deleted after the system test).

11) Register table names to the VSAS user catalog in order to access from programs.

12) Make data structure definitions in the copy library using PUHA command of RIQSMTN and SEDIT of ATSS.

13) Check the data structure definitions with the WD-1.1.2.

SYSTEM DEVELOPMENT PHASE	System Construction
ACTIVITY 4.2 System Environment Construction	WORKSET 4.2.5 Recovery System Construction
WORK DOCUMENT _____	FORM SHEET NO. _____

OUTLINE

1) Register the Journal File Definition (JFD) by using "JFDMTN".
2) Create JCLs for the batch recovery system such as "DBRECVR", "FILSAVE", etc.

INPUT

1) WD-3.3.1 Journal File Specification
2) WD-3.3.3 I/O Failure Disposition Specification

WORK POINT

1) Refer to "NEC VIS GUIDEBOOK" page 2-5, and 2-6, and "NEC VIS SUPPLEMENTARY (HANDOUT)".

2) Make parameters of JFDMTN according to the WD-3.3.1

3) Make the JCLs of saving and recovering database according to the WD-3.3.3.

4) The test of the recovery will be done in the system test phase.

5) To assure JFD parameters, after registering JFD, start up journal environment using "JSTART". (As "JNL24" operator message appears, respond by inputting "COR" from the operator console.)

6) In addition to preparing JCLs of media recovery, you have to consider ILLIB, LMLIB, and C3SF, too.

7) A backup copy of files should be saved during System Construction.

SYSTEM DEVELOPMENT PHASE: System Construction

ACTIVITY 4.2 System Environment Construction

WORKSET 4.2.6 Batch Job JCL Construction

WORK DOCUMENT _____ FORM SHEET NO. _____

OUTLINE

Make JCLs for the batch programs both in the test environment and the real business environment.

INPUT

WD-2.3.1 Program Interface Specification

WORK POINT

1) Refer to "NEC RIQS SUPPLEMENTARY (HANDOUT)."

2) Consider the programs to be the batch jobs which are considered in workset 2.3.1.

3) Consider the way of assign such as the tables of RIQS, VSAS User catalog, etc.

4) Consider the sharing of files, if the batch jobs will be running concurrently with the VIS TPPs.

5) At the time of testing, the program can be tested in the ATSS environment. Command procedures including TEST command (for IDSP) and assign commands are useful for debugging.