

4. 日本側提案のカリキュラム概要

(シンガポール側に提出)

JSIST Phase II Project Advanced Diploma Course for Analyst/Programmer Curriculum (DRAFT)

1. Goal of Training

The goal of this training is to upbuild the programmers who can play an role of leader in development of application program of large scale and system program by letting them acquire the advanced programming techniques necessary for system design and construction in the manner conforming to the actual status.

Commentary

- (1) The trainees who completed this training course shall be able to act as not only a high-level programmer for development of system program but also the chief of a large scaled application programs development group.
- (2) For the purpose of having the trainees acquire mainly the practice and application abilities relating to development of systems, this training course shall include the practical curriculum tightly combining theory with practice based on practice and exercise possibly conforming to practice in the society as much as possible.
- (3) In addition, the training course shall adopt positively the updated technical process, hardwares and softwares including the peripheral techniques in order to enable the trainees to upgrade their techniques and knowledges, as a whole, and to apply those to various works.

2. Trainee Selection Requirements

Trainees selected shall satisfy the requirements given below.

- (1) Trainees shall have already completed "Diploma Course for Analyst/Programmer (Hereinafter referred to as Diploma Course) by JSIST.
- (2) They shall be good English readers and speakers.
- (3) Their age shall be less than 35.
- (4) On otherwise they shall have the qualification equivalent to above (1) - (3).

3. Framework for Phase II of JSIST

- (1) The training period shall be one year subject to full-time training - consisting of 9 months' training in Training Center and 3 months' practice in corporates.
- (2) The training course shall aim at upbringing of high level programmers who can be engaged in development of application programs and system program. (not system analyst)
- (3) All of trainees shall be qualified and certified as "Advanced Diploma", after having completed the full course. (not degree)
- (4) The Curriculum/Syllabus would cover the scope of "Type I Data Processing Engineers Qualification Testing".
- (4) The course training period (total length of training period, in-corporate training period), selection requirements of trainees, and the names of major subjects shall be fixed for coming five years, at the occasion of R/D, and thereafter, items other than those shall be further discussed and finalized between Japanese specialist and Singapore.

- (6) Library hours to be given.
- (7) After execution of the 1987 initial course, the curriculum composition, lesson time, contents of subjects and course operation shall be carefully reviewed, and the reviewed results shall be reflected to next and subsequent training courses.

4. Curriculum Establishment Policy

- (1) The time for review of the technique and knowledge equivalent to "Diploma Course" shall be reserved, and the trainees shall be trained and upbrought by exercise and practice for programming and machine operation (using TSS, DB, personal computer, etc.) so that they can acquire the practical ability including the basic machine operation.
- (2) The training related to development of application program (acquisition of enhanced programming technique) shall be performed as an important theme, mainly by exercise and practice of application programming and data base development, associated with various programming and designing techniques, case study of embodied system and the technical knowledge on functional detail of software package.
- (3) The training related to development of system program (training for OS related programming and networking) shall be performed as another important theme mainly by practices for system program development and on-line programming, combining the detailed knowledges relating to operating system, hardware related system program, communication processing program, real time package (data communication program), network related on-line program.
- (4) The training course shall be the updated course based on new software engineering and new technology which is intended to upbringing staffs who can work as full-fledged programmers after having completed this training course. In addition, this updated training course shall include the subjects related to system analyst field and computer manager field to enable the

trained trainees to expand their techniques and knowledges and to apply their skills as programmers to various works/operations.

- (5) In this course, business knowledge is limited to the minimum required extent.
- (6) Library hours shall be given to the same extent and in the same manner as in "Diploma Course."

5. Curriculum (Draft)

No.1: Fundamentals of software

Classification	Subject	Description	Days of lecture	Days of exercise, practice
No.1	1) Outlined explanation of information processing	Industrial tendency	2D (D=day)	-
	2) General explanation of hardware		2D	-
	3) General explanation of software	System development and program development techniques and attentive points for program development	2D	-
	4) Programming language	5 days for assembler, 2 days for COBOL (full size, on-machine orientation)	4D	-
	5) Practice of programming language	Mainly use of assembler language	-	3D
	6) Computer operation practice	TSS command, File concerns, WP	-	8D
	Subtotal		10D	11D
			21D	

No.2: Programming Technique

Classification	Subject	Description	Days of lecture	Days of exercise, practice
No.2	1) Programming technique	Program designing, program development method, test method, maintenance method, debugging tool	8D	-
	2) How to use package	General AP (Accounting, finance, ..) Library, UP, evaluation tool	8D	-
	3) Practice of program technique	Program designing by theme, documentation Presentation and discussion	-	10D
	4) Data base programming	Designing of data base system, definition and generation of data base system	5D	-
	5) Practice of data base program	How to use DBMS data base programming, development and exercise of data base system	-	3D
	6) Practice for application development	Development of host terminal system by group	-	25D
	Subtotal		21D	38D
			59D	

No.3: System engineering

Classi- fication	Subject	Description	Days of lecture	Days of exercise, practice
No.3	1) Operating system	Hardware concerns, machine language, compiler, CCP, SMP, DC, module interface, system interface	7D	-
	2) File system	File compilation, file exchange, file transfer	3D	-
	3) Data communication	Flow of on-line data associated with OS-CCP- SMP, transmission con- trol, network architec- ture, network access type and interface, terminal communication processing	7D	-
	4) Design of system software	Development and design of system program, system program specification of macro command, own coding	4D	-
	5) Practice for design of system software	Generation of own coding, etc.	-	5D
	6) On-line programming	Designing of network and designing of on-line system, definition and generation on-line system	4D	-
	7) Practice for on-line programming	How to use OS, how to use CCP, SMP, and TSS, in accordance with terminal communication and processing	-	9D
	8) Practice for develop- ment of system program	Development of system program or on-line program by groups (Ex. Mini Compiler, NINI OS)	-	26D
	Subtotal			25D
			65D	

No.4: System design

Classification	Subject	Description	Days of lecture	Days of exercise, practice
No.4	1) Design of application system	Outline of system development Document standardization method, function configuration, function design, test program, project development management system simulation	7D	-
	2) Practice for design of application system	- ditto -	-	4D
	3) System evaluation	From basic study up to test (system installation planning, system development plan), reliability design, system simulation, estimation of system ability, capability evaluation	4D	-
	4) Practice for system evaluation	- ditto -	-	10D
	5) Introduction of cases	Case study of embodied system including system design, programming techniques, system engineering	3D	-
	Subtotal		14D	14D
			28D	

No.5: Management science

No.5	Management science		5D	
	Subtotal		-	-
				5D (0.5M)

No.6: New technology

No.6	1) Business knowledge (lecture by local corporation's engineer)	Analysis business and computer (Ex. Accounting and banking)	5D	-
	2) New technology tendency	Distributed processing, LAN, multi-media, software production engineering Σ plan, MULTIPL plan, UNIX	4D	-
	3) Management work	Computer operation, file management, recovery	2D	-
	Sbttotal		11D	-
			11D	

NO.7: Course operation

Classi- fication	Subject	Description	Days of lecture	Days of exercise, practice
No.7	1) Orientation		1D	-
	2) Pre-test		-	0.5D
	3) Free-discussion		3D	-
	4) Measurement of result		-	1.5D
	5) Opening ceremony and closing ceremony		0.5D	-
	6) Others		3D	-
	Subtotal		7.5D	2D
			9.5D (0.4M)	

No.8: Practice in corporations

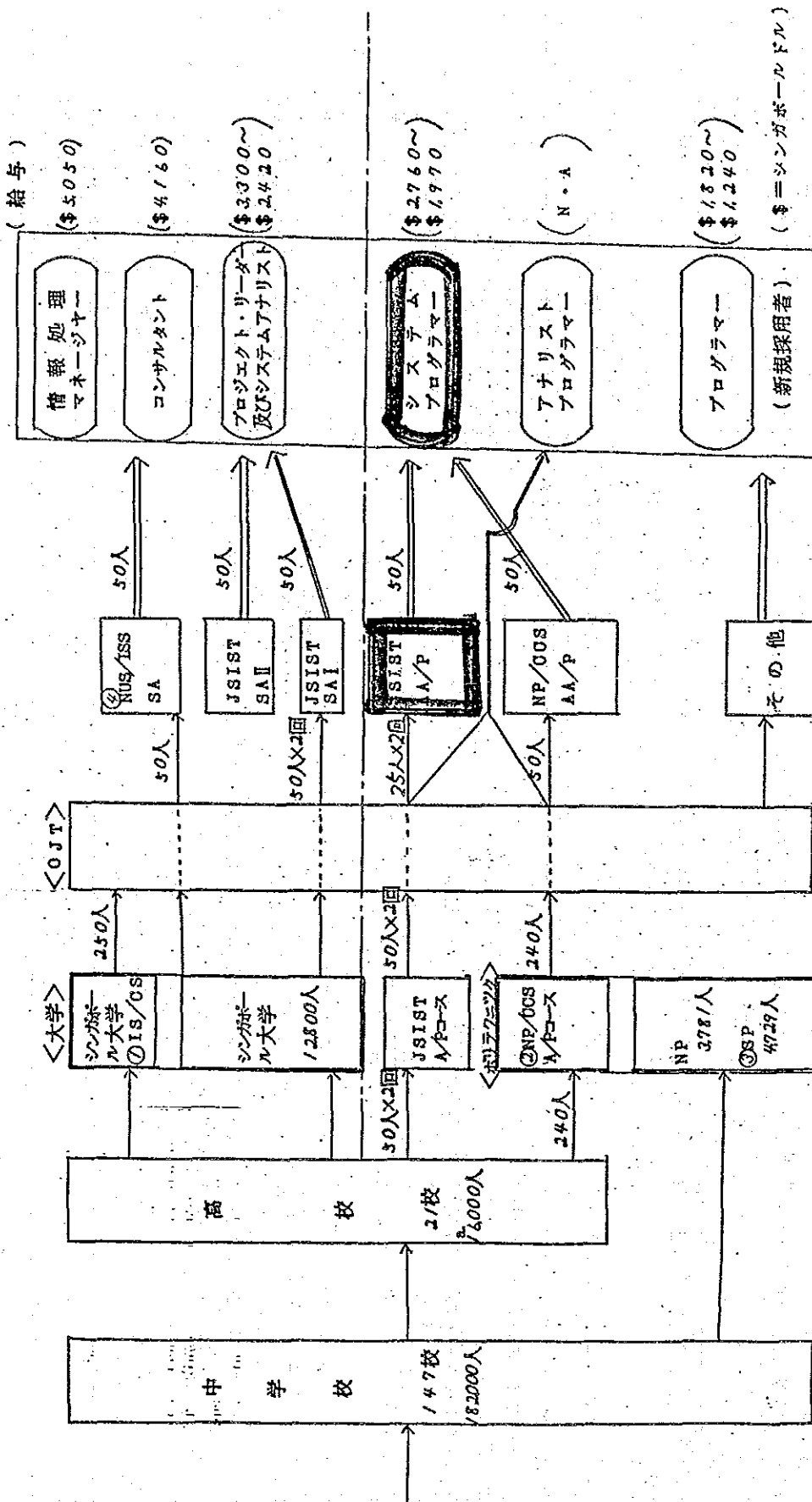
No.8				
	Subtotal		-	66D
				66D (3M)

No.9: Self-learning

No.9				
	Subtotal		(-	22D)
				22D (1M)

<参 考 資 料>

〜シンガポールにおけるコンピュータ教育概要〜



- ① IS - Dept. of Information Systems
- ② CS - Dept. of Computer Science
- ③ NP - Ngee Ann Polytechnic
- ④ CCS - Center of Computer Studies
- ⑤ SP - Singapore Polytechnic
- ⑥ NUS - シンガポール大学
- ⑦ ISS - Institute of System Science

～ シンガポールにおけるコンピューター専門家 ～

区分	業務内容	経験等	現状人数(1982年)	1985年までの養成目標数
ソフトウェア技術者	プログラマー	プログラムの製造を行う。	692	1,023人
	アナリスト・プログラマー	プログラムの製造、簡単なシステムの設計・分析及び既存システムのメンテナンス等を行う。	747	850
	システム・プログラマー	上級アナリスト・プログラマーで、高度なプログラムの製造及びシステムの設計・分析を行う。	-	(今後必要とされる分野)
	システム・アナリスト	システムの設計・分析を行う。	395	608
コンサルタント	データ・プロセッシング・マネージャー	計算機室長	346	251
	コンピューター・エンジニア	ハードウェア・メンテナンス技師	253	365
	システム・エンジニア	ハードウェア設計技師	124	250
	マーケティング・レプレゼンタティブ	コンピューター・セールスマネージャー	182	305
	コンサルタント	コンピューターシステムの新規導入に係るハードウェア及びソフトウェアのコンサルタント	72	138
	その他	-	46	143
	合計	合計	2,857	3,933

～ シンガポールにおけるソフトウェア研修センターの概要 ～

学 校 名	設 立 の 背 景	カ ー ス 名	内 容	略 称
Institute of System Science (ISS)	① シンガポール大学(NUS)とIBM社との共同設立	NUS Diploma Course in Systems Analysis	9ヶ月コース、50人	SAコース
	② 1981年10月設立	NUS Bachelor of Science in Information Systems (70%) / Computer Science (30%)	3年間コース、200人	IS/GSコース
Center of Computer Studies (CCS)	③ Ngee Ann Polytechnicと英国政府との共同設立	CCS Diploma in Computer Studies	2年間コース、高卒対象 240人 (BCS/NCB Part I 資格付与)	A/Pコース
	④ 1982年12月設立	CCS Advanced Diploma in Computer Studies	1年間コース、50人 (BCS/NCB Part II 資格付与) 1985年7月開講	AA/Pコース
Japan-Singapore Institute of Software Technology (JSIST)	⑤ 日本政府とシンガポール政府との共同設立	Analyst/Programmer Course	2年間コース、高卒対象 50人×2回	A/Pコース
	⑥ 1981年12月設立	System Analyst Course (モジュールI)	3ヶ月コース、大卒(情報処 理学科)、ユーズーSA育成	SAIコース
		⑦ System Analyst Course (モジュールII)	6ヶ月コース、SAIコース 修了者、ソフトウェアコースSA育成	SAIIコース
		⑧ Advanced Diploma for Analyst/Programmer Course	1年間コース、A/Pコース 修了者、25人×2回	AA/Pコース

Entrance Requirements

1. Analyst/Programmer Diploma Course
 - a) 'A' level pass in two subjects, one of which must be a Mathematics subject
 - b) A pass in General Paper or English Language (EL1 or EL2)
2. System Analysis Course (Module I) (3 months full-time)
 - a) A university degree or equivalent
 - b) Preference will be given to applicants with some working experience
3. Systems Analysis Course (Module II) (6 months full time)
 - a) A university degree or equivalent
 - b) Either a pass in the JSIST Systems Analysis Course (Module I) examination or a minimum of three years relevant working experience

Computer Hardware in the Institute:-

- * 2 NEC SYSTEM 450 CPUs (6MB each)
- * 64 CRT TERMINALS
- * 4 INTELLIGENT TERMINALS
- * 2 PORTABLE TELETYPEWRITER TERMINALS
- * 12 MAGNETIC DISK DRIVES
- * 4 MAGNETIC TAPE DRIVES
- * 2 LINE PRINTERS
- * 2 COLOUR GRAPHIC DISPLAY
- * 6 KEY-TO-FLOPPY DATA ENTRY EQUIPMENT
- * 2 OPERATOR CONSOLES
- * 1 CARD-PUNCH
- * 1 CARD-READER
- * 1 NEC SYSTEM 100/80 MINI-COMPUTER (256 KB)
- * 10 NEC PC8001 PERSONAL COMPUTERS



**JAPAN-SINGAPORE INSTITUTE
OF
SOFTWARE TECHNOLOGY**

A unit of the
Singapore Economic Development Board



World Trade Centre
1 Maritime Square #12-11
Telok Blangah Road
Singapore 0409
Tel: 2730777 Telex: RS26233

THE INSTITUTE

The project to establish the Japan-Singapore Institute of Software Technology was formally launched with the signing of the Record of Discussions by the Japanese and Singapore Governments on 18 December 1980. Under this agreement, the Government of Japan provides technical assistance to Singapore for the planning, establishment and operation of the Institute via a resident team of Japanese software experts for a period of five years. Twenty training awards are also provided for the Institute's local lecturers to be trained in Japan.

The aim of the Institute is to prepare trainees for careers in computer-based data processing, either as application programmers or as systems analysts both within the computer industry itself and in the commercial and public sectors.

COURSES

A variety of courses will be conducted to meet the different levels of technical skills needed in the industry. These courses are classified as follows:-

a) Analyst/Programmer Diploma Course

This is a 2-year course for GCE 'A' level holders. On completion of their training, they will work as Analyst/Programmers in computer installations.

Companies are encouraged to sponsor their employees to attend the Diploma Course. This course has the Skills Development Fund's in-principle approval for subsidy.

Other applicants may apply for bursaries from the Economic Development Board. Those who are granted bursaries will have to serve a three-year bond on completion of the course.

(b) System Analysis Course

This is a 9-month training programme which will train university graduates to become systems analysts. The programme is divided into 2 modules:-

Module I will prepare the trainees to work as Systems Analysts in a user environment.

Module II will upgrade the skills of the Module I graduates or EDP-professionals with a minimum of 3 years working experience. Module II graduates will be capable of designing and developing software packages and systems in their own fields of specialisation.

(c) Short-Term Courses

Such courses are aimed at both the working EDP professionals as well as the non-EDP professionals. Courses on state-of-the-art techniques in EDP and other computer-related topics will be offered.

Familiarization courses will also be conducted for the non-EDP professionals.



Interested in Becoming An

ANALYST / PROGRAMMER?

JSIST is equipped with a wide range of machines, from main frames to micro-computers. The equipment comprises:-

- 2 NEC System 450 CPUs (6 MB each)
- 64 CRT Terminals
- 4 Intelligent Terminals
- 2 Portable Teletypewriter Terminals
- 12 Magnetic Disc Drives
- 4 Magnetic Tape Drives
- 2 Floppy Disc Drives
- 2 Line Printers
- 2 Colour Graphic Display Units
- 1 X-Y Plotter
- 6 Key-to-Floppy Data Entry Machines
- 2 Operator Consoles
- 1 Card Punch
- 1 Card Reader
- 1 NEC System 100/80 Mini-computer (256 KB)
- 10 NEC PC8001 Personal Computers

Then join the
ANALYST/PROGRAMMER
DIPLOMA COURSE

at the

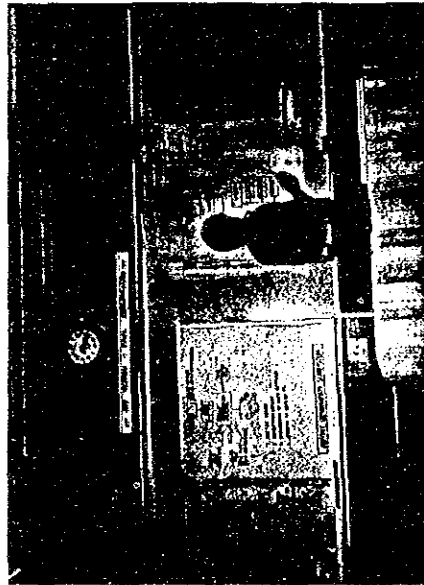
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A unit of the
Singapore Economic Development Board



THE COMPUTING FACILITIES



Minimum Entry Requirements

- Applicants must be Singapore citizens or permanent residents and should possess:-
- (i) G.C.E. 'A' level passes in two subjects, one of which must be a Mathematics subject;
 - (ii) a pass in General Paper or English Language (EL1 or EL2).

Sponsorship and Bursaries

Companies are encouraged to sponsor their employees to attend the Diploma Course. This course has the Skills Development Fund's in-principle approval for subsidy.

Other applicants may apply for bursaries from Economic Development Board. Those who are granted bursaries will have to serve a three-year bond on completion of the course.

For more information, please call 2730777
or write to:

THE JAPAN-SINGAPORE INSTITUTE
OF SOFTWARE TECHNOLOGY,
WORLD TRADE CENTRE,
1, MARITIME SQUARE #12-11,
TELOK BLANGGAH ROAD,
SINGAPORE 0409.

THE INSTITUTE

JSIST is an institute set up by the Singapore Government with the technical co-operation of the Japanese Government.

The aim of the Institute is to prepare trainees for careers in computer-based data processing either as analysts/programmers or as systems analysts in the industrial, commercial and public sectors.

THE DIPLOMA COURSE

Aim, Duration and Structure

The aim of this course is to groom people with G.C.E. 'A'-level qualifications into analyst/programmers who will be able to assist systems analysts in the designing and implementation of application systems.

This is a full-time course of two years' duration. There are two intakes of trainees each year, the first being in Jan/Feb and the second in Jul/Aug.

The training programme consists of lectures, tutorials, machine-practice sessions and project work. During the latter part of the second year, trainees will have to do a major project either in-house or with industry.

Syllabus

The curriculum for the Diploma Course comprises the following:-

- o Introduction to Computers and Data Processing
- o Introduction to Hardware
- o Introduction to Software
- o Introduction to File Processing
- o Information Processing Systems
- o Operating Systems
- o Program Design
- o Assembly Language
- o BASIC
- o COBOL
- o FORTRAN
- o PASCAL
- o PL/I
- o RPG II
- o Database Systems
- o Data Communications
- o Fundamentals of Systems Software
- o Application Packages
- o Systems Analysis/Systems Design
- o Mathematics
- o Operations Research
- o Business Organization
- o Management Accounting
- o Communication Skills
- o Project Work

(The Institute reserves the right at any time to amend the contents of the above curriculum to meet industrial requirements.)

Job Specifications of an Analyst/Programmer

The tasks of an Analyst/Programmer may include

- o providing technical assistance to the Systems Analyst/Project Leader in the designing of Systems and in the writing of program specifications
 - o estimating the time and resources required for the writing of programs
 - o helping to plan and to allocate work to the programmers, monitoring their progress and, should the need arise, helping to write programs
 - o ensuring that programs are produced on time, within the budget and to prescribed standards
- Some trainees might start off as programmers while others might be accepted as analyst/programmers. This would depend on the designation and the duties assigned by the organizations concerned.

Interested in Becoming A

SYSTEMS ANALYST?

THE COMPUTING FACILITIES

The tasks of a Systems Analyst may include:-

- o assuming responsibility for the planning and control of the project(s) assigned to him/her
- o carrying out a detailed investigation and collecting data on the system to be computerised
- o analysing the results of investigation
- o reviewing alternative solutions on the basis of the investigation and subsequent analysis
- o liaising with the user and identifying the preferred solution
- o preparing a full systems specification for the proposed system and presenting it to the user and the management for approval
- o liaising with the programming team and monitoring the work progress
- o ensuring that user requirements are properly identified and consistently observed in the development of systems
- o planning and controlling the implementation of the new system

J/SIST is equipped with a wide range of machine from main frame computers to micro-computers. The equipment comprises:-

- 2 NEC system 450 CPUs (12 MB)
- 64 CRT Terminals
- 4 Intelligent Terminals
- 2 Portable Teletypewriter Terminals
- 12 Magnetic Disc Drives
- 4 Magnetic Tape Drives
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Then join the

SYSTEMS ANALYSIS COURSE

at the

JAPAN-SINGAPORE INSTITUTE OF SOFTWARE TECHNOLOGY



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THE JAPAN-SINGAPORE INSTITUTE
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WORLD TRADE CENTRE,
1 MARITIME SQUARE, #12-11,
TELOK BLANGAH ROAD,
SINGAPORE 0409.

THE INSTITUTE

JSIST is an institute set up by the Singapore Government with the technical co-operation of the Japanese Government.

The aim of the Institute is to prepare trainees for careers in computer-based data processing either as analyst/programmers or as systems analysts in the industrial, commercial and public sectors.

THE SYSTEMS ANALYSIS COURSE

Duration and Structure

This full-time course comprises two modules, the first of which will last for three months and the second for six months. The commencement date of the course will be advertised in the press.

The training programme consists of lectures, tutorials and machine-practice sessions. The last three months of Module II will involve mainly project work.

Systems Analysis Course Module I

Aim

The aim of this module is to train and equip non-EDP professionals/graduates to function as Systems Analysts in an end-user environment.

Syllabus

The curriculum consists of the following:-

- o Introduction to Computers and Data Processing
- o Introduction to Hardware
- o Introduction to Software
- o Fundamentals of On-line Systems
- o COBOL
- o Database Systems
- o Application Systems
- o Operations Research
- o Communication Skills
- o Systems Analysis/Systems Design.

(The Institute reserves the right at any time to amend the contents of the above curriculum to meet industrial requirements.)

Minimum Entry Requirements

Applicants must be Singapore citizens or permanent residents and should possess a university degree or its equivalent. Preference will be given to applicants with some working experience.

Systems Analysis Course Module II

Aim

The aim of this module is to train and equip EDP professionals/graduates to function as Systems Analysts in a systems development environment.

Syllabus

The curriculum consists of the following:-

- o Communication Skills
- o Operating Systems
- o Software Engineering
- o Application Systems
- o Distributed Processing Systems
- o Systems Analysis/Systems Design
- o Project Work

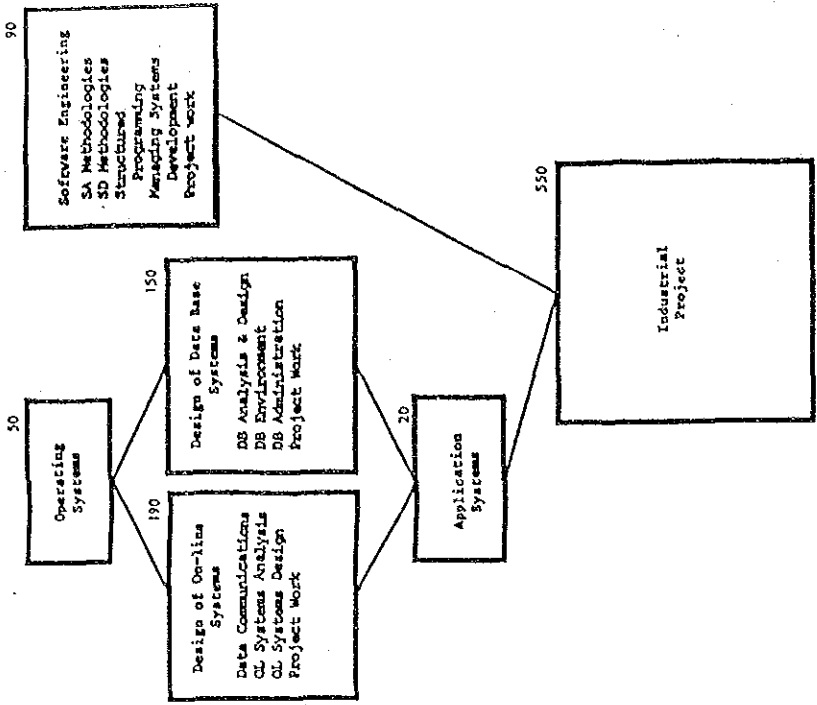
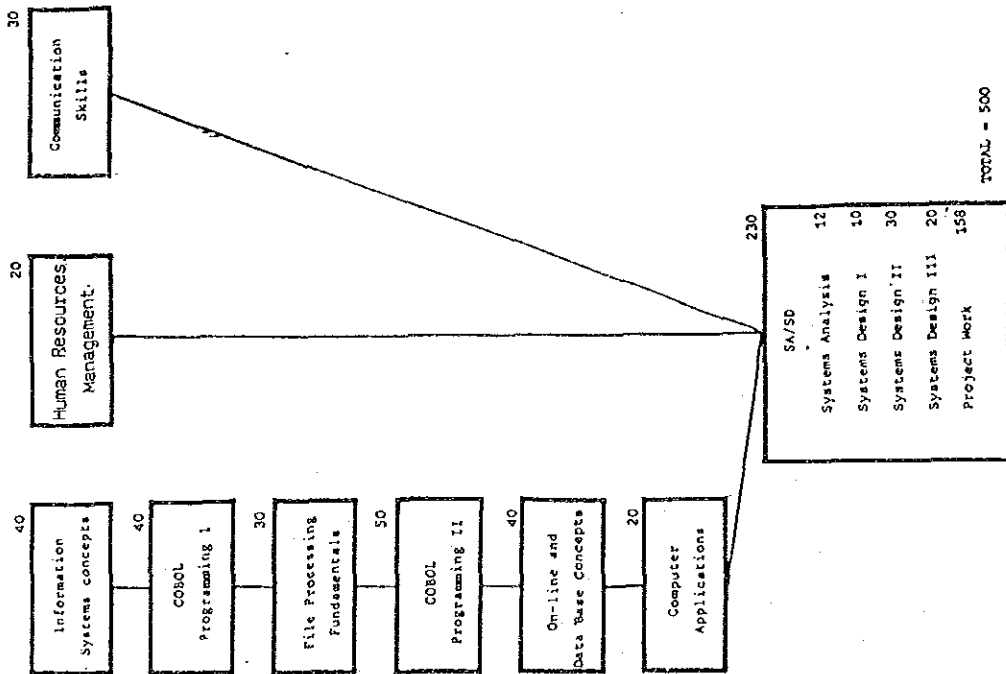
(The Institute reserves the right at any time to amend the contents of the above curriculum to meet industrial requirements.)

Minimum Entry Requirements

Applicants must be Singapore citizens or permanent residents and should possess:-
(i) a University degree or its equivalent;
(ii) either a pass in the JSIST Systems Analysis Course (Module I) examination or a minimum of three years' relevant working experience.

AMENDED SYLLABUS FOR CERTIFICATE
IN SYSTEMS ANALYSIS

AMENDED SYLLABUS FOR DIPLOMA
IN SYSTEMS ANALYSIS



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THE STRAITS TIMES, TUESDAY, JANUARY 14, 1986.

HOME



Japan signs second 5-year pact on computer training

JAPAN signed a second five-year agreement with Singapore yesterday to provide advanced training for computer programmers and analysts.

This second phase of technical co-operation will help meet the increasing demand for trained manpower for Singapore's computerisation effort, said a statement from the Economic Development Board yesterday.

Under the agreement, the Japanese government will help the Japan-Singapore Institute of Software Technology (JSIST) here to work out the syllabus for an advanced diploma in software technology. Twelve Japanese experts will come in April to

help the JSIST run the advanced course, while 14 staff members of the institute will be sent to Japan for training.

The Japanese will also donate about 400 million yen (\$4.16 million) worth of equipment to the institute.

The Record of Discussion, which sets out the terms of co-operation, was signed yesterday between EDB Chairman Philip Yeo and the leader of the Japanese government team, Dr Kazuo Nakazawa.

Mr Yeo said the objective of this second agreement was to provide opportunities for computer professionals to upgrade themselves through further training.

The final details of the agreement were worked out last week between EDB officials and the seven-member Japanese government team, which arrived on Jan 8.

This technical assistance programme is the first of its kind that the Japanese government has extended to any country, said Mr Kenzo Oshima, a director of the Japanese Foreign Affairs Ministry's Economic Co-operation Bureau.

The first intake of 25 trainees for the advanced diploma course for analysts/programmer will start in April. From 1988, two batches of 25 students each will be taken in for the course.

Under the first phase of the technical co-operation programme, from December 1980 to December last year, the Japanese government helped the institute to start a diploma course for A-level students in computer analysis and programming. To date, 142 students have graduated from this course.

Dr Ho Tattin, JSIST's Deputy Director, said students who attended the diploma course and had at least two years' working experience were eligible for the advanced training.

Students taking the advanced course will have to spend three months with companies for practical experience.



Putting their seals on the pact... Dr K. Nakazawa, leader of the Japanese team, and Mr Philip Yeo, EDB Chairman, sign the Record of Discussion. Mr Lin Cheng Ton, EDB Divisional Director (Manpower), looks on.

(仮 訳)

日本政府第2次5ヶ年コンピュータ研修協力文書に署名

昨日、日本政府は「シ」国政府との間で、当国のコンピュータプログラマー／アナリストに上級コースの研修を行うための第2次5ヶ年協力文書に調印した。今回の第2次の技術協力は、当国のコンピュータ化の動きに要する訓練された人材への需要の増加に対応する一助となるものであると昨日EDBより発表された声明は述べている。今回の協力文書のもとで、日本政府は、日本・シンガポールソフトウェア技術研修センター（J S I S T）がソフトウェア技術 Advanced Diploma コースのシラバスの開発を行うのに援助することになっている。

4月に日本人専門家12名が来星し、J S I S Tの Advanced Diploma コースの実施に協力するとともに、J S I S Tからも14名のローカルスタッフが日本での研修に派遣される予定になっている。また、日本政府は、J S I S Tに約4億円（S \$ 4.16百万）相当の機材も供与する予定である。

昨日、技術協力の細目を取り決めたR/Dが EDB Chairman Philip Yeo 氏及び日本政府チームリーダー中澤式仁氏の間で署名された。Yeo 氏は、今回の第2次協力の目的は当国のコンピュータ技術者により高度の研修を通じて能力向上の機会を与えるためであると述べた。技術協力の最終的な細目の決定作業は先週EDB関係者と1月8日来星した7名よりなる日本側チームの間で行われた。今回の技術協力計画は、日本政府が外国へ協力したのものとしてはこの種の分野では初めての例であると外務省経済協力局の大島技術協力課長は語った。第1回A/Dコースの訓練生25名は来年12ヶ月間の研修を開始する予定である。1988年からは25名／回の訓練生が年2回受入れられ研修することになっている。

1980年12月より昨年12月までの第1次技術協力においては、日本政府はJ S I S TがAレベル卒業生を対象にA/P Diploma コースを実施するのに協力し、現在までに142名の訓練生が卒業した。A/P Diploma コースの卒業生で少なくとも2年間の実務経験を有することが、A/Dコースの入学資格として必要であるとJ S I S T Dr. Ho 副所長は語った。A/Dコースの訓練生は実務経験を積むため3ヶ月間企業内で研修を行うことになっている。

2. 沖縄国際センター S/Eコース概要

INFORMATION ON GROUP TRAINING COURSE
IN
INFORMATION PROCESSING PERSONNEL
(SYSTEM ENGINEER)

情報処理要員養成 (システム・エンジニアコース)

Preface

The importance of human resources development is widely recognized. Convinced of its importance, the Government of Japan established the Japan International Cooperation Agency (JICA) in 1974 as its sole agency for the integration and implementation of Japan's technical cooperation with developing countries, with the aim of expanding and increasing the effectiveness of Japan's development cooperation as well as responding to increasingly diversified requests from developing countries for technical cooperation, particularly in the area of human resources.

JICA conducts such activities as training programme, expert dispatch programme, equipment supply programme, dispatch of Japan Overseas Cooperation Volunteers and development survey programme, with extensive cooperation from Japan's governmental organs, local government bodies and universities and private enterprises in Japan.

JICA's training programme has been regarded as one of its core activities ever since the Agency's establishment. Under the training programme, which comprises both group training courses and individual training, JICA today accepts more than 4,000 overseas participants every year for training in Japan.

Around 200 group training courses are offered to developing countries to meet their needs in the area of human resources development. Information Processing Personnel (System Engineer) is one of the group training courses to be conducted in Japanese fiscal year 1986 (April 1, 1986 - March 31, 1987).

A. Information on the Training Course

A-1 Rationale

The success or failure of the DP system development will be depend on the system planning, design, management and operations.

With the advancement of the information processing system, engineers with an advanced designing technology and team leaders with an advanced technology and management abilities are needed.

It is necessary for the system engineers and team leaders to learn and get the most advanced designing technology and management abilities and make an effective and practical application of them.

A-2 Aims

The purpose of the course is to introduce participants, who are presently or will be system engineers, the latest designing technology and the fundamentals of project management techniques through lectures, workshops and observation tours.

A-3 Objectives

By the end of the training period, the participants are expected to be able to:

- (1) Understand the stages from the system planning to designing and development of systems, using estimative and evaluatory methodology.
- (2) Design and develop on-line system under a given conditions.
- (3) Perform as a leader of system development team.

A-4 Training Institution

The course will be held at:

Okinawa International Centre (OIC)
Japan International Cooperation Agency (JICA)
1143-1, Maeda, Urasoe-shi, Okinawa-ken,
901-21 Japan
Tel.: 0988-76-6000

Okinawa International Centre is one of the affiliated organizations of the Japan International Cooperation Agency. Its major role is to serve as a central base of "training and lodging" during the technical training at national or prefectural laboratories, research institutes, universities and private corporations. This centre is for overseas participants, especially those from the ASEAN countries. The centre dedicates itself to the mission of developing human resources in these countries, and is designed to receive many participants each year.

The training courses cover a field of agriculture, forestry, public health and sea transportation making full use of Okinawa's geographical and climatic characteristics.

Other courses such as information processing personnel, audiovisual technology and Japanese language, etc. are also available. These courses are held in this centre to help the developing countries achieve more economic and social advancement.

A-5 Orientation Programme

General Orientation is organized at Okinawa International Centre (OIC) of JICA for five days prior to technical training to assist participants in

understanding Japan adjusting themselves to the way of life, and thus to facilitate effective training.

The contents of the programme are:

- a. Japanese Politics and Administration
- b. Japanese Economy and Okinawa
- c. Japanese Economic Cooperation: Okinawa and ASEAN
- d. The land and people of Japan: The Situation of Okinawa
- e. The aspects of the Japanese language: The characteristics of the Okinawa Dialect
- f. Education in Japan
- g. Japanese Culture and Okinawa
- h. Tour around the mainland Okinawa

Okinawa International Centre (OIC) JICA
 1143-1 Maeda, Urasoe-shi, Okinawa-ken
 901-21 Japan
 Tel.: (0988) 76-6000

A-6 Curriculum

The following subject will be covered in the course:

Items	Subjects	Contents	Number of days
General Items	General Orientation	Japanese politics, administration and economy, The land and people of Japan, The aspects of Japanese language, education and culture, General information on Okinawa.	5
	Course Orientation	Explanation of the details of the programme including introduction of lectures.	0.5
	Discussion	Discussion based on the participants' country report	0.5
	Homeroom		2
	Research		2.25

Items	Subjects	Contents	Number of days
General Items	Enrollment Check and Final Test		1
	Opening and Closing Ceremony		0.75
	Report Making		1
Basic Subjects	Operating System Outline	Explains the task management, job management, virtual storage/page management and data management.	4
	Online Database	Explains the concept of CODASL type database, relational database and distributed database.	1
	Programming Language Outline	Outlines the programming languages and their tendency.	0.5
	Computer Architecture	Outlines the mainframe architecture.	0.5
	Advanced Computer Technology	Introduces the outlines of advanced computer technology. Such as hardware, software, system architecture, computer network and computer utilization.	1
	Special Lecture	The professors, researchers, or engineers who are active in the forefront of the computer field in Japan give lectures on advanced computer technology or trends.	1
	Case Study	Introduces actual system development cases and promotes full understanding of system planning and DP division management through the cases.	1
System Design Technology	System Development Outline	Explains the contents, products, a and environments of each development stage according to general development schedules and clarifies relations between stages.	0.5

Items	Subjects	Contents	Number of days
System Design Technology	System Analysis	Explains the system analysis technologies and reinforces them through the exercise.	2.5
	System Estimation	Estimates the system performance and capacity of main storage, using queuing theory.	4
	System Evaluation	Explains how to write a system simulation language for system performance evaluation	1.5
	Data Communications Network Design	Explains the data communications network components and teach how to design a network through the exercise.	4.5
	Reliable System Design	Explains the RASIS and measurements of reliability and teach how to calculate them through the exercise.	1.5
System Design Technologies	Software Production Technology	Explains the software productivity, documentation and software utilization.	1
	Program Design Methodology	Explains the modularization technique used as the key to programme structure design based on composite analysis as well as its documentation technique.	3
	Test Planning	Explains the test planning and management during the test stages.	1
Management Subjects	Project Management	Explains the preparation of system development plan, manpower estimation and cost management.	1.5
	DP Division Management	Explains DP division management, containing equipment management, data management and computer use management.	1
Programming	VSAM COBOL Programing	Explains the concept of VSAM data set and VSAM data set manipulation by COBOL.	3

Items	Subjects	Contents	Number of days
Programming	Data Communication Programming	Explains the basic functions required to create an on-line programme using COBOL, and how to define screen formats.	3
Usage	TSS (Time Sharing System) Usage	Explains the usage of a series of TSS commands from programming to debugging.	1.5
	OS (Operating System) Usage	Explains the usages of JCL and Cataloged Procedure that are the basic functions of an OS. For OS theory, refer to "OS outline".	3
	System Operation	Explains the basic function of operating system and the operation from system initiation to termination.	1
	System Generation	Explains the concept, procedure and macro instruction on system generation, and system parameter and system maintenance.	3
Workshop and Exercise	Exercise on TSS Usage Exercise on OS Usage Exercise on VSAM COBOL Programming Exercise on Data Communication Programming Exercise on System Operation Exercise on System Generation Exercise on System Evaluation		16.5

Items	Subjects	Contents	Number of days
Workshop and Exercise	System Development Workshop (including presentation)	Strengthens effective design and programming techniques through a series of work according to given requirement and masters how to progress a project through group work.	30
Observation tour	Computer Manufacturers, Computer System centres, Research Institutes, etc.	Observes computer manufacturing facilities, advanced computer systems or showrooms.	9
Total			114

(The curriculum may be subject to minor changes.)

A-7 Methodology

The course will be conducted in the form of:

Lecture/discussions, problem-solving, open forums, film shows, comparative study, field trips, workshops, etc.

A-8 Training Aids

Computer Equipment for Training

(1) Host computer (FACOM M360R)

Central processing unit: Large scale computer

Main storage unit: 12MB

Peripheral units: Magnetic tape units, Magnetic disk pack units, Magnetic disk units, Laser printers, Line printer, A floppy disk unit, Consoles

(2) Terminals

Business graphic display unit: 36 units

Personal computer (MICRO 16S): 22 units

Graphic display unit (with XY plotter): 2 units

Mini-computer (U1200): 1 unit

(3) Network Configuration

Display units and personal computers are connected to the host computer through optical fiber. (Local area network)

A-9 Language

The course will be generally conducted in English, or through interpretation of Japanese into English.

A-10 Certificate

Participants who have successfully completed the course will be awarded a certificate by JICA.

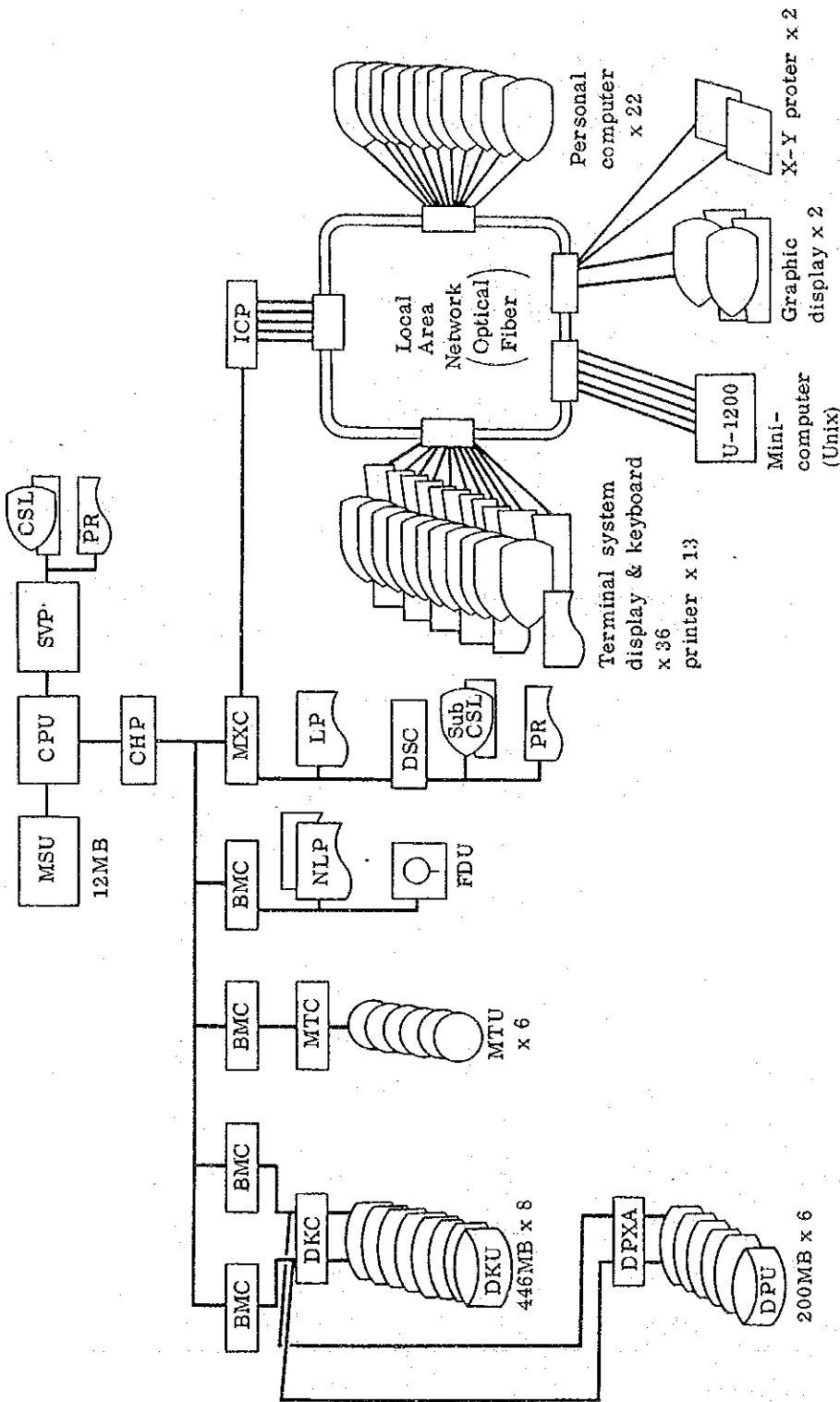
Climate

The monthly mean temperature, humidity and precipitation in Okinawa are as given below. Participants are advised to prepare appropriate clothing.

Month	T max.	T min.	H.	P.
January	18.6°C	12.7°C	70%	119.6 mm
February	19.1	13.9	73	117.9
March	20.9	15.6	75	143.9
April	23.9	18.6	79	168.1
May	26.5	21.4	83	248.9
June	28.8	24.0	86	292.6
July	31.0	25.9	81	192.6
August	30.6	25.6	82	260.1
September	29.9	24.9	79	166.4
October	27.0	22.0	75	186.2
November	24.0	15.1	72	141.7
December	20.8	15.8	70	116.5

T: Temperature
H: Humidity
P: Precipitation

O. I. C System Configuration



- | | | | | | |
|-------|---------------------------|--------|------------------------------|-------|--|
| CPU : | Central Processing Unit | SVP : | Service Processor | MTU : | Magnetic Tape Unit |
| MSU : | Main Storage Unit | CSL : | Console | NLP : | Laser Printer |
| CHP : | Channel Processor | DKC : | Disk Controller | LP : | Line Printer |
| BMC : | Block Multiplexer Channel | DKU : | Disk Unit | DSU : | Display Subsystem Controller |
| MXC : | Byte Multiplexer Channel | DPXA : | Disk Pack Cross Call Adaptor | PR : | Printer |
| | | DPU : | Disk Pack Unit | ICP : | Integrated Communication Control Processor |
| | | FDU : | Floppy Disk Unit | | |

