JAPAN INTERNATIONAL COOPERATION AGENCY

DEPARTMENT OF THE INTERIOR AND LOCAL GOVERNMENT
THE REPUBLIC OF THE PHILIPPINES

THE STUDY ON THE
PROVINCIAL WATER SUPPLY, SEWERAGE AND
SANITATION SECTOR PLAN
IN
THE REPUBLIC OF THE PHILIPPINES
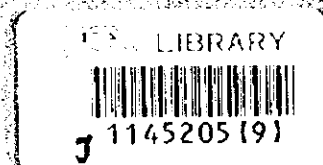
VOLUME III – [4]

DATA REPORT

PROVINCIAL WATER SUPPLY, SEWERAGE AND
SANITATION SECTOR PLAN
FOR THE PROVINCE OF

DAVAO ORIENTAL

OCTOBER 1998

NIPPON JOGESUIDO SEKKEI CO., LTD.

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No.	Title	Year	Source	G	C	R	P	M	B
I.	**GENERAL**								
1.	The Philippine National Development Plan Program Master Planning	1998	NEDA		■				
2.	Report and Recommendation of the President to the Board of Directors on Proposed Loans to the Republic of the Philippines for the Rural Water Supply and Sanitation Sector Project	May 1996	ADB		■				
3.	Report and Recommendation of the President to the Board of Directors on a Proposed Loan to the Republic of the Philippines for the Regional Municipal Development Project	Aug. 1995	ADB		■				
4.	Long Term and Medium Term Sector Dev't. Planning Workshop No. 3	1995	DILG		■				
5.	Philippine Agenda - A National Agenda for Sustainable Development for the 21st Century	1997	PCSD		■				
6.	Updated Medium-Term Philippine Development Plan 1996 - 1998	Dec. 1995	NEDA		■				
7.	Water Supply, Sewerage and Sanitation Master Plan of the Philippines 1988 - 2000	1988	NEDA		■				
8.	Catalogue Products and Services	1993	NAMRIA		■				
9.	The Philippines in 1995: Our Time Has Come	June 1995	OP		■				
10.	Australian Development Corporation with the Philippines - Philippine Program Profile (Section C.3)	July 1997	LGU						
11.	Social Reform Agenda Policy Directives		Social Reform Council Secretariat		■				
12.	The Study on the Davao Integrated Dev't Program Master Planning	Dec. 1997	DIDP				■		
II.	**SOCIO-ECONOMIC**								
1.	Socio-Economic Profile (Davao Oriental)		PPDO					■	
2.	Data Encoding and Processing and Population Projection Workshop No. 2	1994 - 1995	DILG		■				
3.	Census-Based National and Regional Population Projection Volume I	1995	NSO		■				
4.	Report No. 1-P: Population by Province, City/Municipality and Barangay Southern Mindanao 1995 Census	1995	NSO				■		

No.	Title	Year	Source	G	C	R	P	M	B
5.	Report No. 2-37P: Socio Economic and Demographic Characteristics Davao Oriental 1995 Census	1995	NSO				■		
6.	Philippine Statistical Yearbook	1997	NSCB		■				
7.	NSO Census by Province, Male, Female and Age Bracket	1995	NSO POPCEN			■			
8.	Geographic Coding and Urban and Rural Classification (Region XI)	1990	NSO POPCEN			■			
9.	Total Population, Household Population and Number of Households by Province, City/ Municipality and Barangay	1995	NSO Census		■				
III.	**WATER SOURCE**								
1.	Master Plan Study on Water Resources Management in Republic of the Philippines Vol. I	Jan. 1998	NWRB		■				
2.	Master Plan Study on Water Resources Management in Republic of the Philippines Vol. II	Jan. 1998	NWRB		■				
3.	Philippine Water Resources Data Volume II Streamflow and Lake or River Stage	Jan. 1980	NWRC		■				
4.	Philippine Water Resources Data Volume II Streamflow and Lake or River Stage	June 1991	DPWH-BRS		■				
5.	Master Plan Study on Water Resources Management in the Republic of the Philippines	July 1997	NWRB		■				
6.	Topographic Maps 1:250,000 Davao Oriental	Reprinted in 91, 93 and 96	NAMRIA				■		
7.	Rapid Assessment of Water Supply Sources Davao Oriental	1982	NWRB				■		
8.	Groundwater Resources Investigation Report Davao Oriental	Unpublished	NWRB				■		
9.	Water Resources Summary Data (Volume 1 and 2)	1970	Southern		■				
10.	Individual Well Inventory Davao Oriental	1990	NWRB				■		
11.	Groundwater of the Philippines	June 1980	NWRC		■				
12.	LWUA Water District Database	1997	LWUA		■				
13.	Road Network Map Davao Oriental						■		
14.	Well Inventory		NWRB		■				
15.	Well Inventory	1998	DPWH-DEO				■		
16.	Well Drilling Record	1998	DPWH-DEO				■		

No.	Title	Year	Source	G	C	R	P	M	B
IV.	**WATER SUPPLY**								
1.	Assessment of the Domestic WS and Sanitation Sector of Southern Mindanao Volume II	Aug. 1996	NEDA			■			
2.	Assessment of the Domestic Water Supply and Sanitation Sector of Southern Mindanao Vol. III	Aug. 1996	NEDA			■			
3.	Technical Assistance to the Republic of the Philippines for the Water Supply and Sanitation Sector and Study	July 1997	ADB		■				
4.	Working Group on Urbanization (WG/U) of the Water Supply and Sanitation Collaborative Council (WSCC)	Sept. 1993	WSCC-WG/U	■					
5.	Water Suppy Feasibility Study Methodology Manual (LWUA-Mala Columbus)	1996	LWUA		■				
6.	Overview of Water Pricing Policies and Structures in the ESCAP Region	1996	UN						
7.	Report and Recommendation of the President to Board of Directors on a Proposed Loan to the LWWA in the Republic of the Philippines for the Small Towns Water Supply Sector Project	Sept. 1996	ADB		■				
V.	**ENVIRONMENTAL SANITATION**								
1.	Trainer's Training Kits for Sanitation	Mar. 1996	UNDP/DILG		■				
2.	Ecological Alternatives in Sanitation	Aug. 1997	SIDA	■					
3.	The Code Sanitation of the Philippines	1976	DOH		■				
VI.	**INSTITUTIONAL**								
1.	General Primer - Local Government Code of 1991	1991	DILG		■				
2.	The Barangay and the Local Government Code	1994	DILG		■				
3.	NEDA Board Resolution No. 4 (S. 1994)	1994	NEDA		■				
4.	Implementing Rules and Regulations of NEDA Board Resolution No. 4 (S. 1994), Clause (G)	Nov. 1997	NEDA		■				
5.	NEDA Board Resolution No. 5, S-94	1994	NEDA		■				
6.	NEDA Board Resolution No. 5, S-96	1996	NEDA		■				
7.	NEDA Board Resolution No. 5, S-89	1989	NEDA		■				
VII.	**COMMUNITY DEVELOPMENT**								
1.	Community Development Manual First Water Supply, Sewerage and Sanitation Sectors Projects (FW4SP)		DPWH/DILG/ LWUA/DOH		■				
2.	BWSA Formulation Operations Manual Community Development Manual First Water Supply, Sewerage and Sanitation Sectors Projects (FW4SP)		DPWH/DILG/ LWUA/DOH		■				

No.	Title	Year	Source	G	C	R	P	M	B
3.	Institution Building for Decetralized Implementation of Community-Managed Water Supply and Sanitation Projects		DILG		■				
4.	Institution Building for Decentralized Implement-ation of Community-Managed Water Supply and Sanitation Projects	June 1997	DILG		■				
5.	Guidebook for Community Managed WATSAN Project		UNDP/PHI		■				
6.	A Manual for Training Trainers in Participatory Techniques	1990	PROWWESS/ UNDP		■				
7.	Interception Report for Special Assistance for Projects Sustainability for the Rural Water Supply III Project	1997	SAPS Team		■				
8.	Interim Report for Special Assistance for Projects Sustainability for the Rural Water Supply III Project (SAPS)	1997	SAPS Team		■				
9.	Participatory Action Planning for the Development of Two PSF Project	1994	UP						
10.	Water and Sanitation for All: A World Priority Achievements and Challenges	1995	IRC International Water & Social Center		■				
12.	Community Organizers' Manual, Part I	1990	CSWCD-UP/DCD/ DOPI						
13.	A Handbook on Community Development	1975	UP		■				
14.	Achieving Success in Community Water Supply and Sanitation Projects		UNDP	■					
15.	Handbook on Community Organizing for Water Sanitation		DILG		■				
16.	Draft Final Report for Special Assistance for Projects Sustainability for the Rural Water Supply III Project	Feb. 1997	SAPS Team		■				
17.	A Manual on Community Participation in Water Supply and Sanitation (RWSSP)				■				
18.	Achieving Success in Community Water Supply and Sanitation Projects	1980	WHO	■					
19.	Community Development Manual	Nov. 1995	PIC		■				
VIII.	**GENDER**								
1.	Sourcebook for Gender Issues at the Policies Level in the Water and Sanitation Sector	Oct. 1996	IBRD/WB	■					
2.	Gender Issues Sourcebook for Water and Sanita-tion Projects	Jan. 1995	IBRD/WB	■					
3.	Toolkit on Gender in Water and Sanitation Series No. 2	Aug. 1996	UNDP	■					

No.	Title	Year	Source	G	C	R	P	M	B
4.	Domestic Shallow Well Water Supplies the Family Handpump Scenario	Feb. 1990	UNDP	■					
5.	United Nations Decade for Women	1976-1985		■					
6.	Gender Mainstreaming		NCRFW		■				
7.	Regional Memorandums	Feb. 1997	DILG			■			
8.	Philippine Plan for Gender Development	1995-2025	NCRFW		■				
9.	Philippine Country Report on Women	Sept. 1995	NCRFW		■				
10.	A Primer on the GAD Focal Point	1996	NCRFW		■				
IX.	**FINANCIAL**								
1.	Annual Investment Plans Davao Oriental		PPDO				■		
2.	Family Income and Expenditures Survey Vol. I	1994	NSO		■				
3.	Family Income and Expenditures Survey Vol. II	1994	NSO		■				
4.	DILG Memorandum Circular 96-263	1996	DILG		■				
5.	Presidential Decree 1914 (MDF)	1984	OP		■				
6.	Joint Circular No. 6-87	Aug. 1987	DBM		■				
7.	Davao Oriental Accomplishment Reports, 1993-1996	1993-1996	PPDO				■		
10.	Statement of Income- Expenditures of Municipalities		PPDO						■

Legend:

ADB - Asian Development Bank
BRC - Bureau of Research and Standards
BRS - Bureau of Regional Standard
CSWCD - College of Socio Work and Community Development
DCD - Department of Community Development
DEO - District Engineer Office
DILG - Department of Interior and Local Government
DOH - Department of Health
DOPI - Development Options Philippines, Inc.
DPWH - Department of Works and Highways
IBRD - International Bank for Reconstruction and Development
LGU - Local Government Unit
LWUA - Local Water Utilities Administration
MDF - Municipal Development Fund
NAMRIA - National Mapping & Resource Information Authority
NCRFW - National Commission in the Role of Filipino Women
NEDA - National Economic Development Authority
NSCB - National Statistical Coordination Board
NSO - National Statistics Office
NWRB - National Water Resource Bureau
NWRC - National Water Resource Council
OP - Office of the President
PCSD - Philippine Counsel for Sustainable Development

PHI - Philippine Island
PIC - Project Implementation Consultants
POPCEN - Population Census
PPDO - Provincial Planning and Development Office
PROWWESS - Promotion of the Role of Women in Water, Environmental and Sanitation Sources
RDC - Regional Development Council
SIDA - Swedish International Development Cooperation Agency
UN - United Nations
UNDP - United Nations Development Project
UP - University of the Philippines
WATSAN - Water and Sanitation
WB - World Bank
WHO - World Health Organization
WSCC-WGU - Water Supply & Sanitation Collaborative Council-Working Group on Urbanization
G - Global
C - Central Government Level
R - Regional Government Level
P - Provincial Level
M - Municipal Level
B - Barangay Level

1.4 Acknowledgements

Table 1.4.1 List of Persons and Institutions Who Participated in the Preparation of PW4SP

Name	Position	Office
Provincial Sector Planning Team:		
1. Ms. Milagros B. Rabanes	Provincial Planning & Dev't. Coordinator	Provincial Planning & Dev't. Office
2. Mr. Ernesto G. Garay	Water Resource Engineer	- do -
3. Mr. Benjamin A. Burgos, Jr.	Training Officer	- do -
4. Mr. Eugenio B. Gudes	Computer Programmer	- do -
5. Mr. Mario A. Carrasco	Sanitary Engineer	Provincial Health Office
6. Mr. Edgar M. Fernandez	Water Supply Engineer	Provincial Engineering Office
7. Mr. Felix R. Ancheta	Provincial Director	Provincial Office - DILG
Water Supply and Sanitation - Project Management Office:		
1. Mr. Orville M. Roque	Program Manager	WSS-PMO, DILG
2. Ms. Ellen I. Pascua	Asst. Program Manager	- do -
3. Mr. Rogelio B. Ocampo	Chief, Planning Division	- do -
5. Ms. Fe Crisilla M. Banluta	PW4SP Project Officer	- do -
6. Ms. Susan Mangoda	Area Coordinator	- do -

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1.2.2	Scope of Sector Planning				
1.2.3	Financing of Sector Plan				
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3.2.2	Land Use	- Current land use	T3.2.1 Current Land Use		
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8.3.2 School Enrollment Projection	(1) Methodology for school enrollment projection by municipality - Determine school age population - Determine participation rate of total school enrollment and participation rate of public school enrollment - Establish future participation rate of total school enrollment and participation rate of public school enrollment	T8.3.2 Projected Public School Enrollment and Number of Public Utilities by Municipality	T8.3.6	Projected School Enrollment by Municipality by Target Year	

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8.4	Types of Facilities and Implementation Criteria					
8.4.1	Water Supply	- Classification of service level by urban and rural area - Optimum number of persons to be served by type and n level of service - Limited utilization/application of Levels I & II systems - Rehabilitation/replacement of Level I facilities	T8.4.1 T8.4.2 T8.4.3	Potential Water Source for Urban Water Supply Groundwater Productivity Standard Specifications of Level I Wells	T8.4.1 Rapid Evaluation of Un-tapped Spring for Use in Urban Water Supply F8.4.1 Typical Structure of Level I Well Facility	
8.4.2	Sanitation	(1) HH toilets: One sanitary toilet per house-hold is considered. Type of facility is dependent on the existing or planned water supply level of community (2) School and public utilities toilets - Future assumption on the number of public schools/utilities toilets - Standard DECS coverage based on a 1:50 facility-student ratio will be followed and the standard designs of RESP will be adopted.				

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10.2 Assumptions for Cost Estimates	(1) Unit Cost of facilities Establish unit cost (per capital/HH or facility) by type and level of service based on: - Existing standard unit costs of sector agencies concerned (DPWH, LWUA and DOH) - Typical standards development for PW4SP (i.e., deep wells by different depths)	T10.2.1 Unit Cost of Facilities by Type and Service Level	T10.2.1 Price of Major Materials by Facility	
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11.5.1 Project Components	- Level 1 WaterSupply and Sanitation System in the rural area (5th and 6th class municipalities)	T11.5.1	New Cost Sharing Arrangement between NG and LGU's	T11.5.1	Available IRA for GOP-Assisted Level 1 Water and Rural Sanitation Project for Eligible Municipalities	
11.5.2 Project Requirements	- Arrangement to meet NEDA requirements	T11.5.2	Cost Sharing for the Project (Case 1) 1997 price level	T11.5.2	Available IRA for GOP-Assisted Urban Sanitation Project for Eligible Municipalities	

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ANNEX I User's Guide for Computer-Aided Planning

1. INTRODUCTION

The PW4SP Data Management User's Guide explains the procedure of encoding data and generating tables and figures for the PW4SP. The Guide consists of the following sections.

- Section 2: hardware and software required to successfully run the PW4SP Data Management System
- Section 3: the concept of the microcomputer architecture and an overview of hardware configurations
- Section 4: fundamentals to operate the system with internal architecture
- Section 5: basic concept of sofware operation
- Section 6: a complete list of data files and worksheets in the PW4SP Data Management System
- Section 7: data linkages
- Section 8: the procedure of updating the PW4SP
- Section 9: standard report format

2. SYSTEM REQUIREMENTS

The following are the basic requirement to successfully run the PW4SP data management.

Hardware:

Computer:	80486 CPU at 66 MHz
RAM:	8 MB (minimum)
Hard Disk:	200 MB (minimum)
Floppy Drive:	3.5 inch, High Density
	5.25 inch, High Density
Monitor:	VGA Monitor
Printer:	80 column
	(Can handle A4 size paper).
Mouse:	Any brand which supported
	by MS-Windows
Miscellaneous:	500 watts Automatic Voltage
	Regulator and Surge Protector

Software:

Operating System:	DOS Ver. 6.22
Windows Environment:	MS-Window Ver 3.11
Spreadsheet:	MS-Excel Ver 5.0
Word Processing:	MS-Word Ver 6.0

3. MICROCOMPUTER SYSTEM

All computers, whether large or small, basically operate on the same fundamental principles. The hardware and software of a mainframe computer and a microcomputer have the same components and fulfill the basic functions necessary to any computer system.

The computer is seen as a powerful tool that can enable us to expand the horizons of our knowledge. It allows processing of large volume of data or complex pattern of information that would otherwise be difficult to organize and understand. Moreover, it allows for an easily manipulation of data.

There are two major components of a microcomputer: the hardware and the software. These two components complement each other in order to fulfill their basic function.

A microcomputer hardware is made up of several components based on the functions they perform in the system and how they interact with the other components.

The principal elements of a computer system are:

- Central Processing Unit (CPU)
- Main Memory (RAM)
- Secondary Storage Devices (disk, drives, magnetic tapes, etc.)
- Input/Output Devices (terminals, printers, etc.)

The CPU does the actual computing. It is capable of simple arithmetic and logical operations, such as addition and data comparison, that are executed at exceedingly high speed. The power of a computer directly stems from the speed and accuracy with which the CPU can carry out computations and move information around. The main memory of the computer is usually referred to as *Random Access Memory* or RAM. This part of the computer contains the programs and information that are currently being processed by the CPU. Secondary storage devices, such as magnetic disk, is capable of holding large amount of data. Programs and data are normally stored on these secondary devices and could be retrieved when needed. They are then loaded into the RAM and executed. The results of the processing can then be written into the secondary storage device or sent to an output device such as the monitor or printer. Peripheral devices or Input/Output (I/O) devices allow the user to put data into a computer or receive output from a computer. A terminal is a peripheral that contains both a keyboard for input and a monitor for output. Other peripherals include printers and plotters.

The diagram below presents the basic hardware component of a microcomputer system.

```
                    ┌─────────────────────┐
         ┌─────────►│ Central Processing Unit│◄──────────┐
         │          │      (CPU)          │              │
         │          └─────────────────────┘              │
         ▼                    ▲                           ▼
┌──────────────┐              │                  ┌──────────────────┐
│ I/O Terminal │              ▼                  │ Secondary Storage│
└──────────────┘    ┌────────────────────┐       └──────────────────┘
    ▲      │        │ Random Access Memory│               ▲
    │      │        │      (RAM)         │               │
┌──────────┐        └────────────────────┘               │
│ Keyboard │                                      ┌────────────┐
└──────────┘                                 ◄───►│ Hard Disk  │
           │                                      └────────────┘
┌──────────┐                                      ┌────────────┐
│ Monitor  │◄─┐                              ◄───►│Floppy Drive│
└──────────┘  │                                   └────────────┘
┌──────────┐  │
│ Printer  │◄─┘
└──────────┘
```
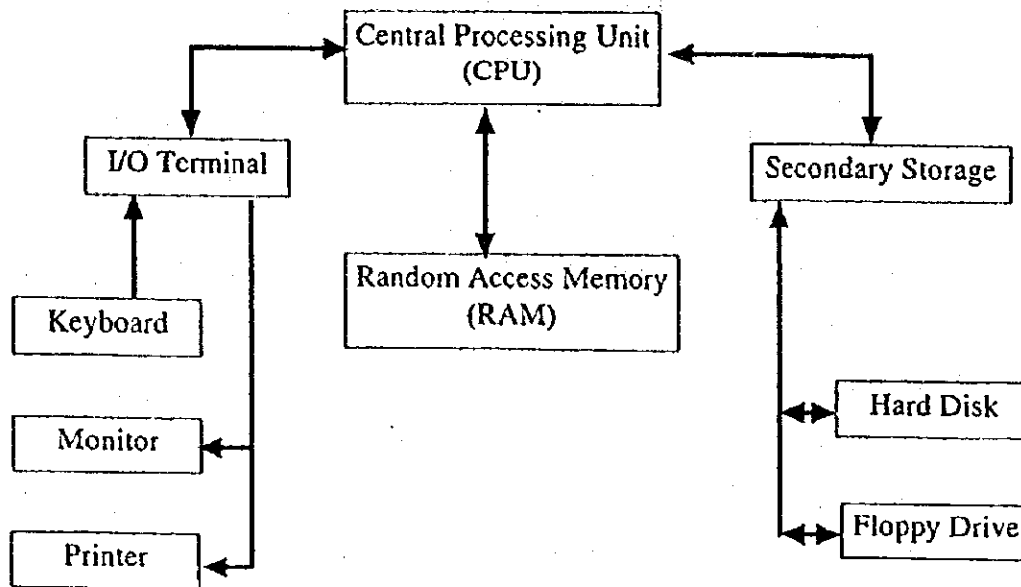
Floppy Drive is the most common type secondary storage used in personal computer today. It acts as an external drive from which the users insert the floppy disk to store and retrieve information. The floppy disk comes in three sizes: 3.5 inches, 5.25 inches and 8 inches. It is characterized by thin circular plastic sheets coated with iron oxide so that magnetic patterns recorded on it can be retained. The surface is similar to a magnetic tape used to record music. The disk is contained in a square cardboard envelope in which it spins. The 3.5 inches diskette is contained in a hard plastic case with a metal shutter that protects the magnetic media. A floppy disk can store from 80 kilobytes to 1.44 megabytes of data. Floppy disk system is slower and has less storage capacity than hard disk system, but its lower cost makes it a popular choice for personal computer.

Hard disk is made of magnetic metal, and can either be removable or non-removable. The most common type of hard disk found in personal computer today is non-removable. This disk typically holds from 10 megabytes to 1.5 gigabytes of information. Each megabyte is equivalent to 1,048,576 characters of information, or roughly 1,800 single-spaced typewritten pages; hence, this is a very efficient way to store large volume of information.

Keyboard is an external device that acts as a primary interface between the human operator and the computer. The keyboard has 3 basic components: the typewriter keyboard which is composed of alphabet characters; the calculator pad which is composed of numeric characters; and the function keys which serve as special macro key for various softwares.

Monitor is the screen or video display peripheral and serves as the main output device on a personal computer. It is used to display text and graphics information and is available in a variety of sizes and types. Monitors can be divided into two broad groups: those designed to display text information; and those designed to display graphics information, such as charts or picture. Within the graphics group, there are color or monochrome (single color) displays. A high quality graphic color monitor is capable of showing high resolution pattern and is recommended for application in MS-Window, Excel, or AutoCAD.

Printer is another common peripheral found in personal computer system. The 2 common type of printers are dot matrix and laser printer. The dot matrix printer produces its image by printing a group of dots that forms the image of a character or symbol. Several methods are used to create the pattern of dots. The most common are impact, thermal, and ink-jet technologies. The laser printer produces its image by means of electrophotograph similar to the principle of photocopy machine.

4. OPERATING SYSTEM

An operating system is a set of control program that manages the computer's resources and create a well-defined software environment for computer applications. Computer hardware by itself can perform little useful work. A computer requires a software to be able to communicate and do useful work. The first layer of software in a computer system is the operating system. This is *what starts*, or *boots up*, the machine helps in pulling itself up by its own bootstraps and establishes a predetermined set of conditions so that applications can be run. When the computer is turned-on or the reset button is pressed, the control is pass to a set of control programs found in the ROM, a firmware store in computer chips. These programs perform several tasks: (1) to check if hardwares are functioning correctly; (2) to load a set of control program from the disk to the memory; and (3) to pass control to a routine which will accept the user input. At this point, the operating system is loaded and the user can execute an application program such as MS-Windows, MS-Word, or Excel.

An operating system by itself has two levels of functionality. The first level is seen by the user running the applications and utilizing system commands and utilities. At this level, each operating system has its own set of command used to accomplish frequently performed tasks such as copying files, renaming files, and formatting disks. Normally, frequently-used functions are included in the operating system as system commands. The second is at the programming level. All operating systems contain a set of pre-packaged routine which performs the "primitive" functions necessary in almost all applications. Such functions, like

sending a character to the screen, reading and writing information from a disk file, and accepting input from the keyboard are common to nearly all programs. This level of functionality gives the programmer a set of standardized routines to perform this task.

Operating systems, such as DOS or UNIX contain many useful utilities and provide a rich set of function, which simplify the programmer's job writing application and controlling the hardwares.

5.   SOFTWARE

The operating system alone renders the computer nearly useless, unless the user is capable of directly communicating to the hardware. In order to use the computer system, a software. is needed. Various softwares are available for different purposes, such as MS-Word for word processing, Excel for spreadsheet and Foxpro for programming.

5.1.   MS-WINDOWS

MS-Windows is a popular software that duplicates the function performed by DOS at the system level. Most of the commands are represented by descriptive figures called *icons*. Navigating around the windows is through a pointing device called mouse. To execute a command, the user only need to bring the mouse pointer to the desired command described by the icon and press the right button. The execution starts without typing any single character in the keyboard, unlike the DOS convention that needs typing a series of characters comprising the filename. In windows, the computer screen is referred to as the *desktop*. When working, the application and documents must be in the windows. The windows on the desktop must also be arranged. If an application is left for a while, the windows are shrunk to an application icon, and still, the application keeps running on the background. When an application is shrunk, the windows place their application icon at the bottom edge of the desktop until it is again restored to window size.

With windows, several powerful applications can be run simultaneously. For example, switching from a word processing application to a spreadsheet, and then to database application with a few simple moves while quitting one application and restarting another, can easily be done.

Two Kinds of Windows

Application windows contain running applications. The name of the application, the associated document, and the application's menu bar appear at the top of the application window. Application windows can be positioned anywhere within the desktop borders.

Document windows appear only with application that can open two or more documents at one time inside the same workspace. For example, with Windows File Manager, one can open a number of directories at the same time. Each directory appears in a separate document window (called a directory window) in the File Manager workspace.

Parts of a Windows

Each application and some documents the user choose to work on, open as separate windows. Every window has some common elements, however, not all windows use all the items.

The elements as illustrated below are the tools for working with the window and the application or document within the window.
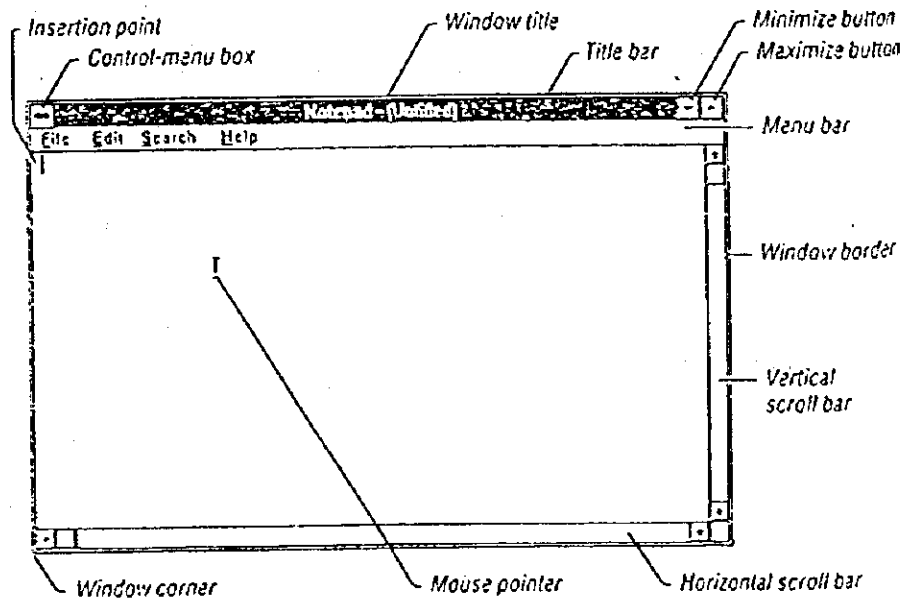
The *Control-menu* box located in the upper-left corner of the window is the most useful menu when the use of a keyboard is preferred. The Control-menu commands can resize, move, maximize, minimize and close windows, and switch to Task List.

The *title bar* shows the name of the application or document. If more than one window is open, the title bar of the active window has a different color or intensity compared to the other title bars.

The *window title*, depending on the type of window it appears, can be the name of an application and the name of the document, or a placeholder. In such case, "untitled" normally appears.

The *menu bar* lists the available menus. Most applications have a File menu, an Edit menu, and a Help menu as well as other menus unique to the application.

The *Scroll bar* can move the parts of the document into view when the entire document will not fit in the window. With the bar, unseen portion of the lists and other information that is too long to fit in the allotted space can also be viewed.

The *Maximize and Minimize buttons* enlarge the active application window to fill the entire desktop or shrink the window to an icon. Document windows enlarge just to fill the application workspace and not the entire desktop. After enlarging the window, the Maximize button changes to a Restore button. Restore button can be used to return the window to its previous size.

The *Window border* is the outside edge of a window. It can lengthen or shorten each side of the border.

The *Window corner* can be used to shorten or lengthen two sides of a border at the same time.

The *Workspace* is where most of the work with an application are done. For example, the content of the documents appears in the workspace when starting a wordprocessor. Hence, an application can allow the opening of more than one document window within this workspace.

The *selection cursor* shows where the user is in an individual document. It marks the place in the text or graphics where the user begins typing or drawing. The arrow-shape mouse pointer appears if you have a mouse installed. It is used to indicate items the user wants to select with mouse.

Starting Windows

At the DOS prompt, type *win* and press ENTER.

When starting windows, the Program Manager window is automatically opened with the Main Group window opening inside it and other window groups represented as group icons located at the lower edge of the Program Manager window as show in the illustration in below.
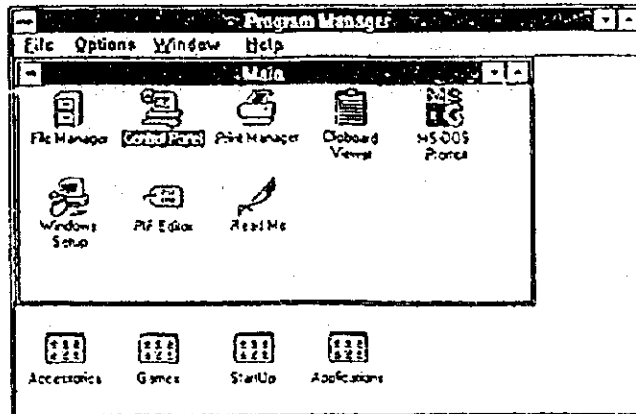
Quitting Windows

Mouse
1. Quit any application that are currently running.
2. Click Program Manager's File menu to open it.
3. Click *Exit Windows*.
   The *Exit Windows* confirmation dialog box appears.
4. Click *OK* to exit windows.

Keyboard
1. Quit any application that are currently running.
   Press ALT-F to open Program Manager's File Menu.
2. Press X (the underlined letter in Exit).
   Or use arrow key to move the highlight to *Exit Window*
   and the press ENTER.
3. The *Exit Windows* confirmation dialog box appears.
4. Press ENTER to choose OK and exit windows.

Starting Window Application

To make starting application easy, Window offers three methods:

Choose a program item from a group window in Program Manager.

Choose a program file from the appropriate directory window in File Manager.

Choose the Run command from the File menu in Program Manager or File Manager.

As long as an application belongs to a group, the easiest way to start is to choose from the group window. If a document is included with the application, it will be loaded into the application workspace.

Mouse   1. Open the Program Manager window, if not already open, and open the group window that contain the application you want to start.
                    2. Double-click the icon for the application.

Keyboard   1. Open the Program Manager window, if not already open, and open the group window that contain the application you want to start.
                    2. Use the arrow keys to move the highlight to the icon for application.
                    3. Choose Open from the File menu and press ENTER.

Starting Applications from File Manager

You start an application from File Manager by opening the program file from a directory window. You can execute an application program file having .COM, .EXE, .PIF, or .BAT filename extension. If the application can run in a window environment, the window will appear in front of any File Manager windows that are open.

Mouse   1. Start File Manager and open the directory window that contain the program file.
                    2. Double-click the filename.

Keyboard   1. Start File Manager and open the directory window that contain the program file.
                    2. Use the arrow keys to move the highlight to the icon for application.
                    3. Choose Open from the File menu and press ENTER.

Starting Applications with the Run Command

The Run command is a handy way to start applications that you want to run only occasionally or have not yet added to a group. You can open a document at the same time you start the application. Unless the program file is in your current path, you need to know the exact directory location and name of the program file before you can start the application.

1. Choose Run from the File menu in Program Manager or File Manager.

The Run dialog box appears.
2. Type the pathname and the exact filename of the program file, including the extension if there is one.
3. If you want the application to shrink to an icon as soon as it starts, make sure the Run Minimized check box contain an X.
4. Choose OK or press ENTER.

5.2. MS-EXCEL

Excel is a spreadsheet type of software package that operates under the MS-WINDOWS operating system. The primary document in Excel is called a *workbook*. The workbook is similar to a ledger that stores information and each workbook is made up of *sheets*. The sheet is virtually divided into *column* and *row*; the column run horizontally and denoted by an alphabet starting with A and the row run vertically and denoted by number starting from 1. The intersection of column and row is called *cell*. The cell is the basic component of worksheet that accept different data types. The most common data types are character, number, date, logical value and formula.

Standard Toolbar

The standard toolbar that normally appears at the top of screen helps select options. Such options can open workbook, print and save worksheet, and ask for help. The following is a list of the individual icons and their respective functions.
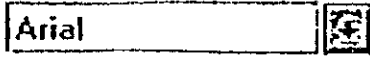
Excel's Standard Toolbar

| Button	Name	Function
	New Workbook	Creates a new workbook
	Open	Opens a document
	Save	Saves the active workbook
	Print	Prints the active workbook
	Print Preview	Shows the active document in print preview mode

Excel's Standard Toolbar

Button	Name	Function
	Speller	Checks the spelling of the document
	Cut	Cuts the selection to the Clipboard
	Copy	Copies the selection to the Clipboard
	Paste	Places the Clipboard contents at the insertion point
	Format Painter	Copies and pastes formats for cells and objects
	Undo	Undoes the last action or command
	Repeat	Repeats the last action or command; this is the same as the redo feature in Word 6
	AutoSum	Inserts the SUM function and shows sum range
	Function Wizard	Starts the Function Wizard
	Sort Ascending	Sorts selected rows in ascending order
	Sort Descending	Sorts selected rows in descending order
	ChartWizard	Activates the ChartWizard
	Text Box	Inserts text or text box
	Drawing	Turns the drawing toolbar on or off
100%	Zoom Control	Sets the view of the document
	Tip Wizard	Turns the TipWizard toolbar on or off
	Help	Displays Help

Excel's Formatting Toolbar

Button	Name	Function
Arial	Font	Sets the font for the selection
10	Font Size	Sets the font size for the selection
B	Bold	Boldfaces the selection
I	Italic	Italicizes the selection
U	Underline	Underlines the selection
	Align Left	Left-aligns the selection
	Center	Centers the selection
	Align Right	Right-aligns the selection
	Center Across Columns	Centers the selection across columns
$	Currency Style	Changes the selected cells to default currency style
%	Percent Style	Changes the selected cells to default percent style
	Comma Style	Changes the selected cells to default comma style
	Increase Decimal	Adds one decimal place to the number format
	Decrease Decimal	Removes one decimal place from the number format
	Borders	Enables you to select a border for the selection
	Color	Sets the color for the selection
	Font Color	Sets the color for the selected font

Basic Part of Excel Screen

Menu bar

Toolbars

Workbook
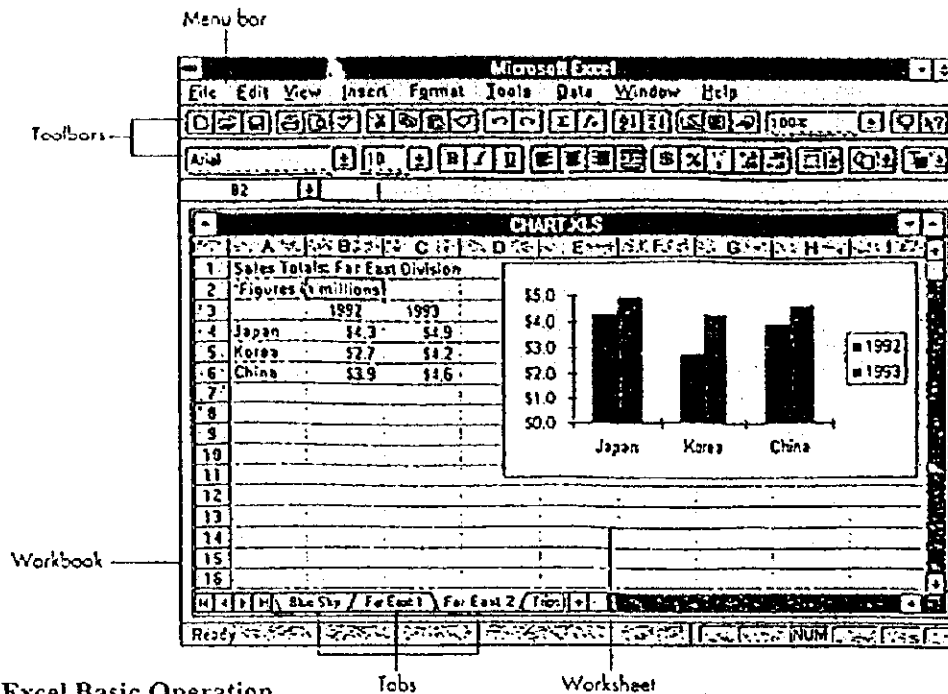
MS-Excel Basic Operation

Tabs   Worksheet

Following the description of the basic operation, the mouse is used as a pointing device instead of a keyboard. The word *click* means the user must press the left button of the mouse; double click means two successive clicks; and *enter* means the user must press the Enter key in the keyboard. Basic operation dealt only to the routine necessary to update the PW4SP data base.

Creating a New Worksheet

When you enter Excel. it opens up to a new workbook, by default it contain 16 worksheets. You can use any of the worksheets. Even if there is an open workbook. you can still open another by moving the mouse pointer in the New icon (upper left of the screen below the menu bar). Click on it.

Saving the Workbook

1. Move mouse pointer to File menu and click on it to bring the File menu option.
2. From the option available. Select Save.
3. If the document your saving is new. The Save As dialog box appear. In the File Name box type the name of the workbook.

Enter Data in a Cell

1. First select the *cell* by moving the mouse pointer and clicking the right button. This routine place the insertion point in the active cell, which is highlighted on-screen with border around it.

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2. You can start entering the data from your keyboard or numeric keypad.
3. To confirm the input, you can press ENTER or move the mouse pointer
   to the Formula bar and click the Check icon.

Editing Cell Contents

1. Double-click the cell containing the data you want to edit.
   To edit in the formula bar, click in the formula bar. In case the formula
   bar is not displayed, choose Formula Bar from the View menu located
   at the top row of screen.
2. Edit the cell contents.
3. To confirm the modification made in the cell, click the Check icon in the
   formula bar or press ENTER. To cancel edits, click the X icon in the
   formula bar or press ESC.

Clearing Cells

1. Select a cell or range of cells that you want to clear.
2. From the Edit menu, choose Clear, and from the option available,
   you the choose All, Contents, Formats, or Notes.
   Shortcut: Press DEL.

To clear cells by dragging

1. Select a cell or range of cells that you want to clear.
2. Move the mouse pointer in the *fill handle* (lower right corner),
   drag the fill handle toward the area of cell or range, then the selected
   area will become gray.
3. Release the mouse button.

Copying Cells

1. Select the cells containing the data you want to copy.
2. From the Edit menu, choose Copy.
3. Select the upper-left cell of the paste area.
   Beware that any values or formula in the paste area will be replaced.

Undo Command

1. To undo your last command, click the Undo button.
   From the Edit menu, choose Undo.

Creating Border around Cell

1. Choose the Cell menu from Format menu.
2. Choose the side you want put the border, and then choose type of border.
3. Click OK button.

Deleting Rows and Columns

1. Select the row or column
   To delete more than one row or column, extend the selection to include
   all the rows or columns you want to delete.

2. From the Edit menu, choose delete (Entire rows or column)
3. Click OK button

Inserting Rows and Columns

1. Select the row or column
   To insert more than one row or column, extend the selection to include
   the number of rows or columns you want to insert.
2. From the Edit menu, choose Insert (Entire rows or column)
3. Click OK button.

Selecting a Sheet or Sheets

To select a single sheet, click the sheet tab.

To select two or more sheets

1. Click the sheet tab for the first sheet you want to select.
2. If the sheets you want to select are adjacent, hold down the SHIFT key
   and click the tab for the last sheet.
   If the sheets you want to select are non-adjacent, hold down the CTRL key
   and click the other sheet tabs.

Ungroup Selected Sheets

1. Move the mouse pointer to the sheet tab. Click the left button of the mouse.
2. While the mouse pointer still on the sheet tab, click the right button and
   choose the Ungroup Sheets.

Inserting Worksheet

1. Select a sheet or sheets in the workbook.
2. From the Insert menu, choose Worksheet.
   The new sheet or sheets will be inserted to the left of the sheet tab you select.
   Shortcut: SHIFT+F11

Deleting Worksheet

1. Select a sheet or sheets in the workbook.
2. Move the mouse pointer to the sheet tab, and click the right button.
3. Choose Delete, and click the OK button.

Moving Worksheet Within the Workbook

1. Select the sheet or sheets you want to move.
2. Drag the selected sheet tab along the row of tabs.
   A black triangle indicates the place where the sheets will be inserted.
   All selected sheets will be inserted.
3. Release the mouse button.

Alternate Method

1. Select the sheet or sheets you want to move.
2. From the Edit menu, choose Move or Copy Sheet.
3. In the Before Sheet box, select where you want sheets to be inserted.
4. Click the OK button.

Moving Sheets to Other Workbook

1. Open the workbooks you want to move sheets *to* and *from*.
2. Select the sheet or sheets you want to move.
3. From the Edit menu, choose Move or Copy Sheet.
4. In the To Book box, select the destination workbook.
5. In the Before Sheet box, select where you want the sheet or sheets inserted.
6. Click OK button.

Alternative Method

1. Open the workbooks you want to move sheets *to* and *from*.
2. From Window menu, choose Arrange and choose horizontal.
   In the desktop, two workbooks will open in screen split the workarea horizontally.
3. Select the sheet or sheets you want to move.
4. Hold-down the CTRL key and the right button of the mouse.
   A paper icon and black triangle indicate that you made the move routine active.
5. Drag the mouse pointer to the other workbook and select where you want
   the sheet or sheets inserted.
6. Release the mouse button.

Copying sheets within a workbook

1. Select the sheet or sheets you want to copy.
2. Hold down the CTRL key and mouse left button, and then drag the selected
   sheet tab along the row of tabs. A black triangle indicates the place where
   the copied sheet will be inserted.
3. Release the mouse button and then the key.

Alternative Method

1. Select the sheet or sheets you want to copy.
2. From the edit menu, choose Move or Copy Sheet.
3. In the Before Sheet box, select where you want the copied sheet inserted.
4. Select the Create A Copy check box.
5. Click the OK button.

Copying sheets to other workbook

1. Open the workbook you want to copy to and from.
2. Select the sheet or sheets you want to copy.
3. From the Edit menu, choose Move Or Copy Sheet.
4. In the To Book box, select the destination workbook.
5. In the Before Sheet box, select where you want the copied sheet inserted.
6. Select the Create A Copy check box.
7. Choose the OK Button.

Printing your Work

1. From File menu, choose Page Setup to display the Page Setup dialog box.
2. On Page Setup dialog box, their are four option available
   Page tab controls page orientation, scaling, page size, print quality, and starting page number for the selected sheet.
   Margin tab controls page margins and the header and footer margins, and center the sheet on the page vertically, horizontally or both.
   Header/Footer tab controls page the headers and footers for the selected sheet. headers and footers are descriptive text that print at the top and bottom of every page in your sheet. You can add, delete, edit, format, and position headers and footers, and view them as they will print.
   Sheet tab specifies which areas of the sheet you want to print, and controls the print titles, page order, and draft quality. Also controls whether gridlines, cell notes, and row and column heading print. The Sheet tab is displayed if the active sheet is a worksheet or macro sheet.
3. On the Print What, their are three option available.
   Selection option prints only the selected cells in the selected sheets. Nonadjacent selections are printed on separate pages. Selecting this overrides any print areas you have defined for the selected sheets using Print Area option on the Sheet tab of the Page Setup dialog box.
   Selected Sheets option prints the area of each of the currently selected sheets, with each print area starting on a different page. If no print area is defined on a separate sheet, the entire sheet is printed.
   Entire Workbook option prints the entire print area of all sheets in the active workbook. If a sheet does not have a print area, that entire sheet is printed.
4. On the Copies box, specifies the number of copies to print.
5. On the Page Range, their are two option available.
   All option print all the pages in the selected sheets.
   Page(s) option print the range of pages specified in the From and To boxes. Page numbers you selected in the From and To boxes affect which cells will be printed, not the numbering of the pages upon which they are printed. To change the numbering of printed pages, specify a number in the First Page Number box of the Page tab in the Page Setup dialog box.
6. The user have option to see the appearance of the print by clicking the Print Preview button.
7. Printer Setup option give the user an option to select among the available printer drivers.
8. Click the *OK* button to proceed printing.

5.3.   MS-WORD

MS-Word is word processing type of software. This is analogous of converting your computer into typewriter machine. You have page in which you type characters, you have a ruler that show where you are as you type across the page. You have tabs stops and margin settings. The insertion point moving across the page even acts like the print head moving across the page.

MS-Word offer more advance features that you need to create from simple to complex type of document. When you start Word you will notice almost the identical appearance with that of MS-Excel. Most of the command are represented in terms of icon, in the middle of the workspace were you enter your text and other object included in your documents.

Starting Word

From the MS-Window environment, you can double-click the MS-Word icon in the MS-Office program group. In some case the MS-Office administrator is automatically loaded at start-up of Windows environment. The MS-Office administrator menu icons are located in the upper right side of the screen. You can start MS-Word by clicking the icon.

Quiting Word

1. Move mouse pointer to File menu and click. File sub-menu will appear.
2. From the File sub-menu, move mouse pointer to Exit option and click.
   The MS-Word environment will normally terminate. In some cases, if some active documents has not yet been save. MS-Word give the user's option to save the documents.

Standard Toolbar

The standard toolbar which normally shown at the top of screen helps you select the option, from this toolbar. The user's can open new document, open existing document, print and save document, and ask help to farther understand some function or procedure to accomplish desired task. Using the toolbar speed-up the desire task instead of using the menu (located at the top of the screen). The following shows the list of standard toolbar icons and their function.

Standard Toobar Icons

Icon	Name	Description
	New	Creates a new file based on the Normal template
	Open	Displays the Open dialog box so that you can select an existing file to open
	Save	Saves the current document
	Print	Prints the current document
	Print Preview	Activates Word's print preview features
	Spelling	Initiates a spelling check

Standard Toobar Icons

Icon	Name	Description
	Cut	Cuts selected material to the Windows Clipboard
	Copy	Copies selected material to the Clipboard
	Paste	Pastes material from the Clipboard into your document
	Format Painter	Copies the formatting of a selection to the text you specify
	Undo	Undoes the commands you select from the list presented
	Redo	Redoes the commands you select from the list presented
	AutoFormat	Formats your document automatically
	Insert AutoText	Inserts an AutoText entry
	Insert Table	Inserts a table into your document
	Insert Excel Worksheet	Inserts an Excel worksheet into your document
	Columns	Formats your document using columns
	Drawing	Opens the drawing application and enables you to draw a picture in your document
	Insert Chart	Inserts a chart into your document
	Zoom Control	Scales your view of the document by the percentage you select
	Help	Activates context-sensitive help

MS-Word Basic Operation

Opening and Existing Document

1. Click the Open Folder icon (normally second from the left) to bring up the open dialog box.
2. In the Open Dialog box, select the file you to open from File Name combination box.
3. Click the OK button.

Changing the Format of the Text

1. Click the arrow button to the right of the *font* box to bring the list of available font.
2. Scroll through the list box by clicking on the scroll bar, and select a font by clicking on it.
3. Begin typing. The text will appear in the font you just selected.

Changing the Font Size

1. Click the arrow button to the right of the *font size* box to bring the list of available size.
2. Scroll through the list box by clicking on the scroll bar, and select a size by clicking on it.
3. Begin type. The text will appear in the font size you size selected.

Choose a Style

Perform any of the following procedures to change a font style:
- Click on the button labeled B to set the *bold* feature on.
  You also can press Ctrl+B from the keyboard.
- Click on the button labeled I to set the *italic* feature on.
  You also can press Ctrl+I from the keyboard.
- Click on the button labeled U to set the *underlined* feature on.
  You also can press Ctrl+U from the keyboard.
- Click on the button labeled B and I to set both *bold and italic* features
  You also can press Ctrl+B followed by Ctrl+I from the keyboard.

Setting Special Effects

You can use a variety of special text effects:
- Strikethrough
- Superscript
- Subscript
- Hidden
- Small caps
- All caps

To set any of these features, use the following procedure:

1. Open the **Format** menu and select the **Font** item.
2. If the **Fonts** tab is not on top, click on it.
3. In the *Effect* group box, select the check box that represent the special effect you want to turn on.
4. Click the OK button.
5. Begin typing. Your text appears with the special effect you selected.

Setting the Indentation

1. Open the **Format** menu and select the **Paragraph** item.
2. If the **Indents** and spacing tab is not on top. click on it.
3. In the indentation group box, use the **Left** and **Right** spin boxes to set the indentation from the left and right margins. Click on the arrow buttons until the measurement is correct, or select the text in the body by highlighting it with the mouse and then type exact measurement you want.
4. To set first line or hanging indentation, open the **Special** drop-down list box by clicking on its arrow, and select the appropriate item. Use the **By** spin box to set the measurement for the first line indentation or the hanging indentation.
5. Click the OK button. Your current paragraph takes on the indentation you just set. Each subsequent paragraph you create takes on this pattern, unless you reset the indentation using the dialog box.

Setting Line Spacing

1. Open the Format menu and select the Paragraph item.
2. If the Indents and Spacing tab is not on top, click on it.
3. In the Spacing group box, use the Before and After spin boxes to set the distance in points from the previous paragraph and from the following paragraph. Click on the arrow buttons until the measurement is correct, or select the text in the box by highlighting it with the mouse and then type the exact measurement you want.
4. To set line spacing within the paragraph, open the Line Spacing drop-down list box by clicking on its arrow, and select the appropriate item. Then use the At spin box to set the measurement for number of lines or distance between lines, whichever is active.
5. Click the OK button. Your current paragraph takes on the line spacing you just set. Each subsequent paragraph you create takes on this pattern, unless you reset the line spacing using the dialog box.

Copying and Inserting Text

1. Highlight the text by dragging the mouse pointer over the text to be selected.
2. Move pointer to Copy icon and click on it.
3. Move mouse pointer to the place were you would like the insertion take place.
4. Move mouse pointer to Paste icon and click on it. Alternatively, you can press the right button of the mouse to bring the menu option., select the paste by click on it.

Undoing and Redoing

If you do make a mistake, you can undo it by selecting the Undo option from the Edit menu. This procedure undoes the last change you made to the document. Word always will add the name of the operation you are about to undo as the second word of the Undo menu item. If you cannot undo anything, this option change to Can't Undo and is dimmed.

Overstriking Text

There are times, however, when you want to type over existing text. To switch to this editing mode, press the Insert key in the keyboard. When you type, the characters you type replace any characters to the left of the insertion point. To turn off the overstrike mode, press the Insert key again.

Deleting Text

Use mouse pointer to highlight the desire text and press the Del key from the keyboard.

Insert File

1. Move mouse pointer in the location were you would like the insertion take place.
2. From the Insert menu, select File option.
3. From the File name combination box, select the file you would like to insert. Click the OK button.

Creating the Header or Footer

1. From the View menu, choose Header and Footer.
2. The Header and Footer toolbar appear, click the switch between Header and Footer button. The header and footer areas are enclosed by a nonprinting dashed line.
3. Do one or more of the following:
   Text - You can type the text within the dashed line that surround the header or footer area.
   Page Number - Click the icon.
   Current Date - Click the icon.
   Current Time - Click the icon.
4. To return to the document, choose the Close button on the Header and Footer toolbar, or double-click the main text area

Previewing the Document

1. From the File menu, choose Print Preview.
   While in the print preview mode, you can perform the following options.
   a) You can print the document by click the Print button.
   b) You can switch the magnifier on and off by clicking on the magnifier button.
   c) You can switch to a one page view by clicking the One Page button.
   d) You can switch to view multiple pages by clicking on the Multiple Pages Button and dragging across the grid that appears, releasing the mouse button when you have the multiple-page view you want to use.
   e) You can zoom in or out on your document by adjusting the zoom percentage in the Zoom Control drop-down list box.
   f) You can switch the view of the ruler on and off by clicking on the View Ruler button.
   g) You can squeeze a small amount of text on the final page into the the outer pages by clicking on the Shrink to Fit button.
   h) You can expand the preview screen to show only the page, the toolbar, and the status bar clicking on the Full Screen button.
   I) You can exit the preview mode by clicking on the Close button.

Printing your Document

1. From the File menu, choose Print option.
   A Print dialog box appear.
2. In the Print What drop-down list box. This option enables you to print the document or several items ancillary to the document, such as Summary Info, Annotation, Style, Autotext Entries, and Key Assignments.
3. Use the Copies box to enter the number of copies to print.
4. Use the Page Range option to determine how much of the document to print. You can print All the document, the Current Page, or selected Pages.
5. Check the Collate Copies check box to finish the first set of copy before printing the second copy.
6. When all it set correctly, close all the dialog boxes you have open, and click OK button, the printing process begin.