

## **UNIT 2            COMPUTER SOFTWARE (2)**

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### **1.0        INTRODUCTION**

In unit 2, we discussed, in detail, the operating system as the executive manager of the computer, its peripheral devices and the users. In this unit, we shall look at other types of software such as utility programs and the application programs.

### **2.0        OBJECTIVES**

At the end of this unit you should be able to:

- conclude our discussion of system software with language translators
- discuss different categories of utility programs and application programs in greater detail.

### **3.0        MAIN CONTENT**

#### **3.1        Language Translators**

A programming language is a set of notations in which we express our instructions to the computer. At the initial stage of computer development, programs were written in machine language conducting the binary system i.e. 0 and 1. Such programs were hard to write, read, debug and maintain. In an attempt to solve these problems, other computer languages were developed. However, computers can run programs written only in machine language. There is therefore the need to translate programs written in these other languages to machine language. The suites of languages that translate other languages to machine language are called language translators. The initial program

written in a language different from machine language is called the source program and its equivalent in machine language is called object program.

Three examples of classes of language translators are assemblers, interpreters and compilers.

1. **Assemblers:** An assembler is a computer program that accepts a source program in assembly language program and reads and translates the entire program into an equivalent program in machine language called the object program or object code. Each machine has its own assembly language, meaning that the assembly language of one machine cannot run on another machine.
2. **Interpreters:** An interpreter is a program that accepts program from a source language, reads, translates and executes it, line by line, into machine language.
3. **Compilers:** A compiler is a computer program that accepts a source program in one high-level language, reads and translates the entire user's program into an equivalent program in machine language, called the object program or object code.

The stages in compilation include:

- Lexical analysis
- Syntax analysis
- Semantic analysis
- Code generation

For each high-level language, there are different compilers. We can therefore talk of COBOL Compilers, FORTRAN Compilers, BASIC Compilers, etc. A compiler also detects syntax errors, that is, errors that arise from the use of the language. Compilers are portable, i.e. a COBOL Compiler on one machine can run on a different machine with minimum changes.

### 3.3 Utility Software

This is a set of commonly used programs in data processing departments, also called service or general-purpose programs. They perform the following operations.

- **File Conversion:** This covers data transfer from any medium to another, making an exact copy or simultaneously editing and validating. For example, copying from a hard disk to a diskette.
- **File Copy:** It makes an exact copy of a file from one medium to another or from an area of a medium to another area of the same medium.

- **Housekeeping Operations:** These include programs to clear areas of storage, writing file labels and updating common data. They are not involved in solving the problem in hand. They are operations that must be performed before and after actual processing.

### 3.3 Application Software

Application software is a set of programs designed to solve problems of a specific nature. It could either be supplied by the computer manufacturer, or in some cases, the users produce their own application program called user programs. Hence, application software could be subdivided into two classes, namely; generalized software and userdefined software.

Under generalised software, we have as examples: Word Processing Programs e.g. Word Perfect, Word Star, Microsoft Word. Also included are Desktop Publishing e.g. Ventura, PageMaker, CorelDraw, likewise the Spreadsheet program e.g. LOTUS 1,2,3, Excel, Super-Q. Under the user-defined, software, we could have some user-defined packages for a particular company or organisation, for accounting, payroll or some other specialised purposes.

- **The Word Processor:** A word processor is used to create, edit, save and print reports. It affords the opportunity to make amendments before printing is done. During editing a character, word, sentence or a number of lines can be removed or inserted as the case may be. Another facility possible is spell checking. A document can be printed as many times as possible. Word processors are mainly used to produce letters, mailing lists, labels, greeting cards, business cards, reports, manuals and newsletters. Examples are: WordPerfect, WordStar, Display Writer, Professional Writer, LOTUS Manuscript, Ms-Word, LOCO Script and MM Advantage II etc.
- **The Spreadsheet:** This is an application mainly designed for numerical figures and reports. Spreadsheets contain columns and rows, in which numbers can be entered. It is possible to change numbers before printing is done. Other features of spreadsheets are the ability to use formulas to calculate, use sum and average function, ability to perform automatic recalculation, and the capacity to display reports in graphical modes. The spreadsheet is used for budgets, tables, cost analysis, financial reports, tax and statistical analysis. Examples are: LOTUS 123, Supercalc, MS Multiplan, MS-Excel, VP Planner etc.
- **Integrated Packages:** They are programs or packages that perform a variety of different processing operations using data that is compatible with whatever operation is being carried out. They perform a number of operations like word processing, database management and spread sheeting. Examples are: Office

Writer, Logistic Symphony, Framework, Enable, Ability, Smart Ware II, and Microsoft Works V2.

- **Graphic Packages:** These are packages that enable you to bring out images, diagrams and pictures. Examples are PM, PM Plus, Graphic Writer, Photoshop.
- **Database Packages:** These are software for designing, setting up and subsequently managing a database. (A database is an organised collection of data that allows for modification, taking care of different users view). Examples are Dbase II, III, IV, FoxBASE, Base Data Perfect, Paradox III, Revelation Advanced and MS-Access.
- **Statistical Packages:** These are packages that can be used to solve statistical problems, e.g. Stat Graphical, and SPSS (Statistical Packages for Social Scientists).
- **Desktop Publishing:** These are packages that can be used to produce books and documents in standard form. Examples are PageMaker, Ventura, Publishers, Paints Brush, Xerox Form Base, News Master II, and Dbase Publisher.
- **Game Packages:** These are packages that contain a lot of games for children and adults. Examples are Chess, Scrabble, Monopoly, Tune Trivia, Star Trek 2, California Game, Soccer Game, War Game, Spy Catcher and Dracula in London.
- **Communication Packages:** Examples are Carbon Plus, Data Talk V3.3, Cross Talk, SAGE Chit Chat and Data Soft.

There are so many packages around, virtually for every field of study but these are just to mention a few of them. Advantages of these packages include that they are quicker to and cheaper implement, time saving, minimum time for its design, they have been tested and proven to be correct, they are usually accompanied by full documentation, and are also very portable.

### **User Programs**

This is a suite of programs written by programmers for computer users. They are required for the operation of their individual business or tasks. An example is a payroll package developed for the salary operation of a particular company.

## **4.0 CONCLUSION**

Apart from the operating systems, we need program translators for us to be able to program and use the computer effectively. Since computers do not understand natural languages, there is the need to have language translators such as assemblers, interpreters

and compilers. Utility programs such as file conversion and scandisk, on the other hand, enable us to maintain and enhance the operations of the computer. Application and user programs such as word processors, spreadsheet and the like help us to perform specific tasks on the computer. These have been discussed in this unit.

## **5.0 SUMMARY**

In unit, we have discussed the following:

- Language translators such as the assembler, interpreters and the compilers.
- Utility programs such as file conversion, file copy programs, and house keeping programs such as scandisk.
- Application programs such as word processors, spreadsheets and statistical packages.

## **6.0 TUTOR-MARKED ASSIGNMENT**

You have just been appointed as a consultant to a firm that is about to procure computing hardware and software. Recommend different categories of application packages that would be necessary for the smooth operations of the firm. Justify the need for each item recommended.

## **7.0 REFERENCES/FURTHER READING**

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