Unit-5

Software Packages

1. Package:

Software package, in computing, a type of file format where software installation material is grouped together. A software package is a bundle of one or several files that either are necessary for the execution of a computer program, or add features for a program already installed on the computer or network of computers. Software packages can either be in a standardised package format to be installed by a program that is integrated with the operating system, or be a self-sufficient installer.

The term software package is also used in object-oriented programming to name a group of related classes of a program. In this, meaning of packages are especially useful to measure and control the inherent coupling of a program. Some most common packages that are mostly used are:

- Word Processor
- Electronic Spreadsheet
- Database Management System
- Desktop publishing

A. Word Processor

It is an application program designed to replace a typewriter. A word processor manages text-based documents. It allows the user to enter, edit, view, store and retrieve the text material. These text material may be letter, reports, or book etc. It is very easy to make corrections in the data which is written there. Editing in the documents like to insert or delete a word or sentences from the document can be done very easily.

In word processing, there is automatic flowing of text on to the next line as new text is inserted. It means, when an operator enters the character to the document and as soon they reached at the end of the line the word processor program automatically moves the text to the next line. This feature of the word processing is known as word wrap. Word wrap ensures that the text stays inside the designated document boundaries or margins. Word processing program also provides us certain features like boldface, italic, superscript, sub script etc. It also provide certain alignment like left, right, center.

Word processor vary from simple to the complex. An advanced word processor must contain all the features needed for entering, editing and formatting the text as well as support macros to simplify complex or routine task. It also include facility for spell checking (speling check), dictionary etc.WordPerfect from Word Perfect Corporation and Microsoft word are examples of fully featured word processor.

Advantages:

1. Faster preparation of text.
2. Easier correction of typographical errors.
3. Faster revisions in the document.
4. No need to retype the draft.
5. Final printed document is neat and clean.

The Word Processing Process includes:

- Entering text
- Editing text
- Formatting the document
- Proofreading the document
- Saving the document on disk
- Printing the document

a. Entering Text:

Entering text with a word processor is similar to using a typewriter and its contents stored in RAM. You must save your work periodically or you may lose it.

b. Editing Text:

Editing is the process of writing and refining a document.
Text can be searched, found, deleted, inserted, moved, copied, and pasted over again.

c. Formatting Text:

- *WYSIWYG* - "what you see is what you get".
- Text formatting commands allow you to control the format and style of the document.
- You can change the formatting of characters, lines and paragraphs, or entire documents.

Basic Features:

- Scrolling
- Copy-and-Paste
- Drag-and-Drop
- Tips
  - Don't press <Enter> at the end of lines
  - Use <Tab> instead of many spaces
  - Don't add manually page numbers, table of contents – they can be automated

- Formatting Characters:

Character size is measured in points. One point is 1/72 inch. A font is a size and style of typeface.

- Formatting Lines: This kind of formatting allows changes to be made to one or more **lines of text**. The amount of spacing between lines of text can be increased or decreased.

- Formatting Paragraphs:
- Justification involves adjusting left/right margins in the text.
- Four paragraph justification choices include:
  - Left
  - Right
  - Full
  - Centered

Other features:

- View modes, zoom
- Undo, Redo
- Margins
- Drawing a picture
- Tables
- Styles
- Subscripts and superscripts

Formatting the Document:

- Formatting flexibility including:
  - ➤ Style sheets
  - ➤ Headers, footers, and margins
  - ➤ Multicolumn tables
  - ➤ Incorporating graphics
  - ➤ Footnoting and hyphenation
  - ➤ Corrections features
  - ➤ HTML conversion

Word Processing enhanced features are:

- Outliners and Idea Processors
- Synonym Finders
- Digital References
- Spelling Checkers
- Grammar and Style Checkers
- Form Letter Generators

Spelling Checkers:

Most spell checkers offer several choices for words:
- Replace words
- Use an alternative
- Leave word alone
- Add word to the dictionary

Grammar and Style Checkers:

Grammar-and-style checking software analyzes each word in context, checking for errors of context and common grammatical errors and stylistic foibles.

The Desktop Publishing Story:
- Desktop publishing includes:
- –Writing text
- –Editing text
- –Producing drawings and other graphics
- –Designing a basic format
- –Typesetting text
- Desktop publishing includes:

–Arranging text and graphics on pages
–Typesetting and printing pages
–Binding pages into a finished publication.

Groupware:

•**Groupware** - Several people work on the same master document.

•Each person can monitor and make suggestions for improving the document. Electronic Dictation

•Speech-recognition software - using your voice to input words into a word processor. This software has improved, but still has many weaknesses.

Intelligent Word Processors:

•Word processors that use artificial intelligence to assist the user in creating, editing, and finalizing a document.

Shortcomings of word processors:

•WYSIMOLWYG (What You See Is More or Less What You Get)
•Slow at editing large documents (over 100 pages)
•Many of different non-ascii formats, difficult to exchange files
•Difficult to enter math formulas
•Word processors have many bugs
•Typesetting quality too low for professional publications
•Not enough control over layout
•Expensive

B. Electronic Spreadsheet

A spreadsheet is a rectangular table (or grid) of information, which is often used for giving financial information. The word came from "spread" in its sense of a newspaper or magazine item (text and/or graphics) that covers two facing pages, extending across the center fold and treating the two pages as one large one. The compound word "spread-sheet" came to mean the format used to present bookkeeping, ledgers.

One of the first commercial uses of computers was in processing payroll and other financial records, so the programs were designed to generate reports in the standard "spreadsheet" format, bookkeepers and accountants used it. The generally recognized inventor of the spreadsheet as a commercial product for the personal computer is Dan Bricklin. The spreadsheet or work sheet consists of rows and columns of cells. The rows are usually identified by numbers, and columns by letters. Each cell can hold a numeric value, text label or a formula that produces values contained in other cells.

Many people find it easier to perform calculations in spreadsheets than by writing the equivalent sequential program. This is due to two traits of spreadsheets.

- They use spatial relationships to define program relationships. Like all animals, humans have highly developed intuitions about spaces, and of dependencies between items.
- They are forgiving, allowing partial results and functions to work. One or more parts of a program can work correctly, even if other parts are unfinished or broken. This makes writing and debugging programs much easier, and faster. Sequential programming usually needs every line and character to be correct for a program to run. One error usually stops the whole program.

In a spreadsheet, however, a set of cells is defined, with a spatial relation to one another. In the earliest spreadsheets, these arrangements were a simple two-dimensional grid. Over time, the model has been expanded to include a third dimension also which is known as 3-D spreadsheet. Lotus 1-2-3 from Lotus Development Corp, Quattro Pro developed by Borland International and Microsoft Excel are examples of spreadsheet programs. Some of the problems associated with spreadsheets are:

- Lack of auditing. This makes it difficult to determine who changed what and when.
- Lack of security. Generally, if one has permission to open a spreadsheet, one has permission to modify any part of it. This, combined with the lack of auditing above, can make easy for someone to commit fraud.

- Lack of concurrency. Unlike databases, spreadsheets typically allow only one user to be making changes at any given time.

Advantage:

1. Support good design and accurate results.
2. Program can quickly
   - Edit and format data
   - Perform calculations
   - Create graphs
3. Perform "what-if" analyses by changing independent values in the spreadsheet.
4. Support simultaneous of multiple spreadsheet.
5. A significant savings of time.
6. The ability to create accurate graphic representations of data.

Uses:

- Financial planning
- Scientific data analysis
- Shopping lists

B.1 VisiCalc:

VisiCalc was the first computer spreadsheet *program*. It was released to the public in 1979, running on an Apple II computer. It was considered a fourth generation software program. Prior to this, companies invested time and money in doing financial projections with manually calculated spreadsheets, where changing a single number meant recalculating every single cell in the sheet. With VisiCalc, you could change any cell, and the entire sheet would be automatically recalculated. Dan Bricklin and Bob Frankston invented VisiCalc. While a master's student in business administration at Harvard Business School, Dan Bricklin joined up with Bob Frankston to help him write the programming for his new electronic spreadsheet. The two started their own company, Software Arts Inc., to develop their product. By the fall of 1979, an Apple II version of VisiCalc was ready, and the team started writing versions for the Tandy TRS-80, Commodore PET and the Atari 800. By October, VisiCalc was a fast seller on the shelves of computer stores at US $100. VisiCalc was soon sold to Lotus Development Corporation, where it developed into the Lotus 1-2-3 spreadsheet for the PC by 1983.
Bricklin never received a patent for VisiCalc. It was not until after 1981 that software programs were made eligible for patents by the Supreme Court. "I'm not rich because invented VisiCalc, but I feel that I've made a change in the world. That's a satisfaction
Money can't buy." - Dan Bricklin.

B.2 Lotus 1-2-3:

Made it easier to use spreadsheets and it added integrated charting, plotting and database capabilities. Established

spreadsheet software as a major data presentation package as well as a complex calculation tool. It was also the first spreadsheet vendor to introduce naming cells, cell ranges and spreadsheet macros. It is still one of the all-time best selling application software packages in the world. In 1985,Lotus Development acquired Software Arts and discontinued the VisiCalc program.

B.3 History of Excel:

Included toolbars, drawing capabilities, outlining, add-in support, 3D charts, and many more new features.
1. 1985, Version 1, for the Macintosh was released.
2. 1987, The first Windows version was labeled "2" to correspond to the Mac version.
3. 1990, This included a run-time version of Windows.
4.1992, The first "popular" version, included lots of usability features.
5. 1993, A major upgrade, included multi-sheet workbooks and support for VBA.

C. Database Management System

It is an application software that controls the data in the database, including overall organization, storage, security, data integrity.A database management system (DBMS) is a system or software designed to manage a database, and run operations on the data requested by numerous clients. Typical examples of DBMS use include accounting, human resources and customer support systems. A DBMS is a complex set of software programs that controls the organization, storage and retrieval of data in a database. The DBMS accepts requests for data from the application program and instructs the operating system to transfer the appropriate data.

When a DBMS is used, information systems can be changed much more easily as the organization's information requirements change. New categories of data can be added to the database without disruption to the existing system. Database servers are specially designed computers that hold the actual databases and run only the DBMS and related software.

Features Of DBMS

- **Persistence** - Attributes are permanently stored on a hard-drive or other fast, reliable medium until explicitly removed or changed.
- **Concurrency** - Many people may want to change and read the same attributes at the same time. For example, if you change the color attribute of car 7 to be "blue" at the very same time somebody is changing it to "red", then you may not see your change when you go to view the attributes of the car you thought you just changed. DBMS provide various tools and techniques to deal with such issues. "Transactions" and "locking" are two common techniques for concurrency management.
- **Security** - Often it is desirable to limit who can see or change which attributes or groups of attributes.

- **Computation** - There are common computations requested on attributes such as counting, summing, averaging, sorting, grouping, cross-referencing, etc can be done.
- **Meta-data Repository** - Meta-data is information about information. For example, a listing that describes what attributes are allowed to be in data sets is called "meta-information".

A DBMS can also format reports for printed output , and import and export data from other application programs by making use of standard file format. A data manipulation language is also provided to support queries against the database.

D. Desktop publishing Software

The use of computer with specialized page layout software to combine text and graphics into a single document that can be printed on a aser printer. The original document text is usually wrtten by using a word processor and the line art are prepared with a paint program, photographs can be incorporated as scanned images. All of these separate elements are then brought together in the page layout or desktop publishing program, where they can usually be imported directly as separate files. The software that handles page layout by combining the functions of a traditional typesetter and a layout artist is known as desktop publishing software.Hardware for desktop publishing may include a high speed personal computer with a large capacity hard dik and a full-pabe display, a scanner and a laser printer.

- A desktop publishing system is a system which combines a computer and suitable peripherals with software to produce attractive page layouts with pictures and text printed in a variety of typefaces.
- Desktop publishing package is the software that combines text and graphics manipulating capabilities for allowing users to format charts and pictures with text and haeadlines.
- Desktop publishing has become a common method of producing commercial-quality printed material.
- Today, many home and office desktop computers are equipped with software that is capable of desktop publishing tasks.
- These tasks include entering and editing text, creating graphics, composing or laying out pages, and printing documents.
- Elements of desktop publishing include high-quality printing, multiple fonts, graphics, typographic characters, columns, and other special formatting features.

ADVANTAGES:

- Creates documents such as letters, memos, reports, form letters, fliers, and research papers.

- ▪ Makes it easier to change words, to move words, and to format the way the words look on a page.
- ▪ Allows the user to see the document as it appears.
- ▪ Can check the document spelling.
- ▪ Can check for grammar mistakes within the document.
- ▪ Has a Thesaurus/Dictionary for word choices.
- ▪ Gives the user additional tools for word processing that typewriters do not have.

Typical DTP system:

● GUI computer(s)
● DTP software (also called page layout software)
● Laser or other high resolution printer(s)
● Other peripherals (like digital camera)

DTP Software:

☐ DTP software is precise.
☐ DTP software aggregates!
   ■ QuarkXpress® is the market leader.
   ■ Adobe InDesign is coming on strong.
   ■ Adobe PageMaker® has been discontinued.
☐ Apple Macintosh® is predominate platform.

SAVING FILES IN DESKTOP PUBLISHING:

When saving for the first time, you go to file Save As because the file must be named and a location to save to must be selected.

Once that is set up, you can just save and it will go where you set it up to go under the same name.

When you have completed that document and start a new document, you must Save As again to set up the new document.

E. DATA COMMUNICATIONS PACKAGES:

Data communication refers to the means and methods by which data can be transferred between processing locations. Data communication packages are programs that are designed to control communication between two computers.

The powerful features of a communication packages can be listed as:
(1) ability to upload
(2) ability to down load
(3) multiple data-capturing option
(4) switching between program modes
(5) multiple file-transfer protocols.

Methods:

- LANs
- MANs and WANs
    – Want to connect WANs
    – Internet
    – Telephony
    – Cell

LAN:

- Information sharing
    – Having users access the same files, exchange information via email, or use Internet
        - Ex: single purchase order database accessed by all users on the LAN
    – Results in improved decision making
- Resource sharing
    – Having hardware devices shared by all users
        - Printers, Internet connections
    – Having software packages shared by all users on a LAN

- – Results in reduced cost
- Purchase software on a per seat basis
  - – Install software on a server for all to use
  - – No need to have a copy on every computer on the LAN
  - – Reduces cost
  - – Simplifies maintenance and upgrades
  - – Example
    - LAN: a 30 client network
    - Purchase only a 10-seat license for a software program (instead of purchasing 20 copies of the same program)
    - Assumes that only 10 users would simultaneously use the software

MAN:

A metropolitan area network (MAN) covers a city or a region of a city. MANs have very high transfer speeds. MANs can recover from network faults very quickly (failover time). MANs are very often a ring topology (not a star-wired ring).Some MANs can be provisioned dynamically

A wide area network (WAN) covers multiple cities, states, countries, and even the solar system.

F. Other Pre-written Software Packages:

F.1 Graphics packages

Graphics packages are software products that convert numeric data into pictures, which are an ideal form of communicating ideas. They allow users to create, edit, display and print graphics image.

Features Of Graphic Packages:

1. Types of Graphics- the most commonly used graphics can be classified into 4 main categories.
   - Bar graph: it is the most popular graph. It uses a fixed scale to compare data in simple and compound relationships. Popular types of bar graphs are- single bar, two bar or cluster bars, stacked bars and 100 percent bars.
   - Line graphs: they show trends and emphasize the movement as well as the direction of movement over a period of time. For this type of graph, points are plotted on the graph and connected by lines. They are more appropriate when a lot of data points are to be graphed.
   - Pie graph: it shows the relationships of parts to a whole. The pie represents the whole amount while the segments represent percentages of the whole amount.
   - Scatter graphs: they show correlation between two sets of data. The correlation is positive if both sets of data increase at the same rate. It is negative if both sets of data decrease at the same rate and is zero if there is no relationship between the two sets of data.

2. Input options- Graphics packages offer different input options such as keyboard, mouse, light pen or digitizer tablets. Some graphics packages offer input options which digitize two or/and three dimensional printed images. These include scanners and video cameras.

3. Output options- All graphics packages display graphs on screen for viewing. Other output options are printer and plotter. The graph files can also be saved on the magnetic media.

These graphics images can range from simple ones- bar charts to very complex one.
1.   Design packages
2.   Paint packages
3.   Analysis packages
4.   Presentation Packages

1. Design packages:

Designers conceive new products by inventing ways to improve the existing products. They order their intentions by doing design work which involves drafting process. Design packages help designers to complete those tasks which are associated with hand drafting of designs more efficiently and easily. They are used to create, edit, make permanent prints and store the designs. Their medium is pictures and not text. They eliminate the need to manually erase or redraw a design. Design packages accept input data in graphics form.

Computer-added design is a term that refers to the integration of computers and graphics design packages to aid in automation of design and drafting process. A typical CAD installation includes a computer and a variety of inputs units.

2. Paint packages:

Paint packages can be used for creating drawings on the display screens, without the paint, canvas or brushes. These type of packages are used by individuals for amusement, artists for creating drawings or by businesses for creating forms, logos and letter heads.

A hand held mouse is the painting instruments that can be used to produce everything from lines to strokes. These packages also provide clip-art library of stored images which can be given dozens of colors and "spray-paint" patterns by the user to add texture and beauty to the selected images. User can combine his original brush strokes with outlines of sapes from the library. Example- MacPaint, a paint and draw program from Apple Computers.

3. Analysis packages :

Analysis packages transform numerical data into picture form that show relationships among the data, are easy to grasp and make more informed discussions. They are used to gain better understanding of the relationships, changes and trends that are buried in the data. Graphs that can be produced are bar charts, pie charts, line charts, and stacked bar charts, three dimensional and surface graphs. These are sometimes referred as presentation graphics programs but strictly speaking they do not always provide high quality presentation graphics.

Analysis packages are used by decision makers to get better understanding of the relationships, changes and trends that are hidden in the data, whereas presentation graphics are used to communicate messages to audiences.

4. Presentation packages:

Presentation packages have all the features found in analysis packages but they can also produce multiple three-dimensional images. They allow users to present the charts in other ways. For instance, a presentation package can explode a segment of pie chart so that it draws user's attention.
Example: Harvard graphics

G. Business Software:

1. Inventory Management System

2. Payroll System

3. Financial Accounting