**COMPUTER STUDIES JSS3 SECOND TERM**

 **{Copy into your note}**

**CONTENT**

**SPREADSHEETS**

**COMPUTER VIRUS**

**COMPUTER GAMES**

**SPREADSHEETS**

**DEFINITION OF SPREADSHEET**

1. Spreadsheet is an application software that tracks, analyzes, and charts numeric information.
2. A spreadsheet is an interactive computer application program for organization, analysis and storage of data in tabular form
3. Spreadsheet is a computer program or software which allows calculations to be carried out on several cells that have numbers

**Examples of Spreadsheet Packages**

1. iWork Numbers – Apple Office Suite
2. Lotus 1-2-3
3. OpenOffice – Calc
4. Lotus Symphony – Spreadsheets
5. Microsoft Excel
6. VisiCalc
7.SeaTable
8. AirTable
9.SmartSheet
10. LibreOffice
11. Google Sheets
12. Quip
13. JotForm Table
14. Zoho
15.EtherCalc
16. Stackby

**Application Areas of Spreadsheet**

1. Accounting.
2. Statistical calculations.
3. Preparation of student results.
4. Obtaining tax estimation
5. Preparation of daily sales

**FEATURES AND TERMINOLOGIES OF SPREADSHEET**

**1. Active Cell:** The active cell is the cell in the spreadsheet that is currently selected for data entry. The active cell reference is listed in the Name Box directly above the spreadsheet's column headings.
**2. Anchor Cell:** The anchor cell is the first cell that is highlighted in a range. When a range of cells is selected, they appear as highlighted in black. The anchor cell, however, remains white.
**3. Cell:**A cell is a rectangular area formed by the intersection of a column and a row.
**4. Cell Reference:** A cell reference is the name of the cell that is found by combining the Column Letter with the Row Number. For example the cell in Column "C" in Row "3" would be cell C3.
**5. Column:** Columns run vertically on the spreadsheet screen. An Excel spreadsheet contains 256 columns that are labeled with the letters of the alphabet.
**6. Data:** Data refers to the type of information that can be stored in the cells of a spreadsheet. Spreadsheet data types include values (numbers), labels, formulas and functions.
**7. Formula:** A formula is a spreadsheet data type that will calculate a result and display it in the active cell. A formula is written using cell references and must begin with an equal sign "=" to distinguish it from a label.
**8. Formula Bar:** The formula bar appears directly above the column headings of a spreadsheet and will display what has been typed into the active cell. For example, if you click on a cell that contains the formula =A3+C3, the cell itself will show the result of the formula.
**9. Function:** Functions are built-in formulas that are used to enter either commonly used or very complex formulas.
**10. Gridlines:** Gridlines are the horizontal and vertical lines on the screen that separate cells in a spreadsheet. Gridlines typically do not print unless the option is set in the layout options of the spreadsheet.
**11. Labels:** Labels refer to text that is typed into the cells of a spreadsheet. Labels have no numeric value and cannot be used in a formula or function.
**12. Name Box:** The name box appears to the left of the formula bar and displays the name of the current cell. Unless you define a cell or range of cells with a specific name, the name box will display the cell reference of the active cell.
**13. Range:** A range is a group of cells in a spreadsheet that have been selected.
**14. Rows:** Rows run horizontally on the spreadsheet screen. An Excel spreadsheet contains 16,384 rows which are labeled numerically.
**15. Sheet Tabs:** In Microsoft Excel, the sheet tabs appear below the worksheet grid area and allow you to switch from one worksheet to another in a workbook.
**16. Values:** Values are numeric data that is entered into a cell.
**17. Workbook:** A workbook is a collection of worksheets that are saved together in one file.
**18. Worksheet:** A worksheet is a single page in the workbook.

**BASIC OPERATIONS IN WORKSHEET**

**Starting Worksheet**
To start a worksheet, the MS Excel could be loaded first to the screen of the computer. A workbook will be displayed automatically as the default file name book1
**Data Entry**
This is the process of inputting data into the cells of the worksheet. There are three basic types of data in spreadsheet packages and they are:
a. Values or Numbers
b. Formula
c. Labels
**Editing Worksheet**
This is the process of customizing the worksheet so that it could ne neatly arranged on the pages when printing. Check spelling, preview layout, page setup and sheet setting, etc are parts of the editing process. The editing process gives the worksheet a befitting look.
**Saving**
This can easily be done using the Save As found on the file menu or by pressing ctrl + S keys simultaneously. A dialog box appears on your screen asking for the file name to be used and the location to save into.
**Retrieving or Opening Worksheet**
To retrieve or open a worksheet, click on office button on the menu and click on Open button from the file sub-menu or by pressing Ctrl + O keys together. A dialog box will be displayed asking you to choose the worksheet to be opened or retrieve.

**FORMATING WORKSHEET**

**a. Changing column width**
i. Pull down the Format Menu and select Column and then width
ii. Type the desired width in the space provided
**b. Changing Row Height**
i. Pull down the Format Menu and select Column and then width
ii. Type the desired height in the space provided

**Adding Formulae and Performing Calculations**
To tell the spreadsheet package that you will be entering a formula, you must start the formula with a particular symbol. Excel uses the sign = and lotus 1-2-3, uses the @, - or + signs.
The operators used in spreadsheet formulae include

|  |  |
| --- | --- |
| **Operators** | **Symbols** |
| Addition |  + |
| Subtraction |  - |
| Multiplication |  \* |
| Division |  / |
| Exponentiation |  ^ |

**Using Functions in Microsoft Excel**

**Sum Function**
The sum function adds up the total values of a group of cells, depending on which cells you choose. The general form is:
=SUM (First cell: Last cell)
**Average Function**
This will compute the average of the values of a group of cells depending on which cells you choose. The general form is:
=AVERAGE (First cell: Last cell)
**Count Function**
This function will count the number of entries in the range from first cell to last cells you choose. The general form is:
=COUNT(First cell: Last cell)
**Max Function**
The max function is used to find the largest value in a set of values in the row or column. The general form is:
=MAX(First cell:Last cell)
**Min Function** The Min function is used to find the smallest value in a set of values in a row or column. The general form is:
=MIN(First cell:Last cell)

**Printing Worksheet**

Printing a worksheet is not much different from printing a word processing document. To Print a Worksheet Click on office button, select print from the menu or by pressing ctrl + P keys simultaneously.

**Creating Graphs**

MS Excel gives options of creating charts from data entries in your spreadsheets. Charts like line graph, histogram, pie charts and bar charts could be created from the supplied data basically numeric data.
All charts are created in the same way by selecting range of cells within a worksheet called chart range after which one selects chart wizard option.
There are different parts of chart namely:
**a. Legend:** In a chart or graph in spreadsheet programs such as Excel, the legend is most often located on the right hand side of the chart or graph and can sometimes be surrounded by a border. The legend is linked to the data being graphically displayed in the plot area of the chart
**b. Axis:** As in normal mathematical operations every chart must carry axis i.e. axis X and Y, where X and Y stands for horizontal and vertical lines respectively which are displayed on data scale
**c. Data series:** These are set of numbers in either row or column.

**COMPUTER VIRUS**

**DEFINITION OF COMPUTER VIRUS**

1. A computer virus is a small software program that interferes with computer operation and spreads from one computer to another.
2. A virus is a self-replicating program that copies itself and that can infect other programs by modifying them or their environment such that a call to an infected program implies a call to a virus
3. Computer viruses are executable computer programs written by software developers to check piracy on some of their system and application software

**Brief History of Computer Virus**

Robert Thomas, an engineer at BBN Technologies developed the first known computer virus in the year 1971. The first virus was christened the “Creeper” virus, and the experimental program carried out by Thomas infected mainframes on ARPANET (Advanced Research Projects Agency Network). The teletype message displayed on the screens read, “I’m the creeper: Catch me if you can.” But the original wild computer virus, probably the first one to be tracked down in the history of computer viruses was “Elk Cloner.” The Elk Cloner infected Apple II operating systems through floppy disks. The message displayed on infected Apple Computers was a humorous one. The virus was developed by Richard Skrenta, a teenager in the year 1982. Even though the computer viruses were designed as a prank, they also enlightened how a malicious program could be installed in a computer’s memory and stop users from removing the program. It was Fred Cohen, who coined the term “computer virus” and it was after a year in 1983. The term came into being when he attempted to write an academic paper titled “Computer Viruses – Theory and Experiments” detailing the malicious programs in his work.

**Types of Computer Viruses**

**1. Boot Sector Virus:**
This type of virus infects the master boot record. It is challenging and a complex task to remove this virus and often requires the system to be formatted. Mostly it spreads through removable media.
**2. Direct Action Virus:**
This is also called a non-resident virus, when executed scans the disks for targets, infects them, and then exits (i.e. it does not remain in the memory after it is done executing).
**3. Resident Virus:**
Resident virus installs itself as part of the operating system when executed, after which it remains in the RAM from the time the computer is booted up to when it is shut down.
**4. Multipartite Virus:**
This type of virus spreads in multiple ways. It infects both the boot sector and executable files at the same time.
**5. Polymorphic Virus:**
These types of viruses are difficult to identify with a traditional anti-virus program. This is because polymorphic viruses alter their signature pattern whenever it replicates.
**6. Overwrite Virus:**
This type of virus deletes all the files that it infects. The only possible mechanism to remove is to delete the infected files and the end-user has to lose all the contents in it. Identifying the overwrite virus is difficult as it spreads through emails.
**7. Space filler Virus:**
This is also called “Cavity Viruses”. This is called so as they fill up the empty spaces between the codes and hence do not cause any damage to the file.
**8. Macro viruses:**
As the name suggests, macro viruses particularly target macro language commands in applications like Microsoft Word. The same is implied on other programs too.

**Examples of Viruses**

Some of the known viruses are:
a. Trojan horse virus
b. Sleeper
c. Logic bomb Alabama virus
d. Christmas virus
e. Jerusalem virus
f. Resident virus
g. Nonresident virus
h. Code Red
i. I love you
j. Creeper virus
k. Stone
l. November 17

**Sources of Virus**

These are the means through which viruses could be spread from one system to the other.
i. Infected memory devices
ii. E-mails attachments
iii. Internet downloads
iv. Computer network
v. Illegal duplication of software/cracked software
vi. Unsecured websites

**Virus warning signs**

Some of the virus warning signs are listed below
i. Slowing down response time
ii. Presence of tiny dots
iii. Wandering cursor across the screen
iv. Incomplete saving of files
v. Corruption of the system set-up instruction
vi. The appearance of strange characters
vii. Insufficient memory space in a hard disk when you have enough memory space
viii. Frequent system crash
ix. Unfamiliar applications or processes appearing on the background

**Virus Detection (Anti-Virus)**

Anti-viruses are also written programs by software developers to stop and curb the spread of the virus in a system. Antivirus software is a type of utility software used for scanning and removing viruses from your computer. Once an anti-virus is installed on a system, it will be hard for a virus to enter the system except if the antivirus is outdated. All antivirus can be updated on the internet.

**Examples of Antivirus Programs**

Computer Antivirus programs include:
i. Norton Anti-virus
ii. McAfee
iii. AVG
iv. Bitdefender
v. Panda Dome
vi. Trend Micro
vii. Malwarebytes
viii. Avira Prime
ix. Intego
x. TotalAV
xi. Bitdefender Total Security
xii. Dr Solomon’s Tool Kit
xiii. Penicillin
xiv. Avast
xv. Windows Defender
xvi. Kaspersky

**Computer Virus Preventive Measures**

Computer virus preventive measures include:
1. Install a good Computer Antivirus.
2. Timely update of the operating system.
3. Timely update of antivirus software
4. Installation of only trusted or licensed software
5. Exercise care when browsing the internet