Class IX

ANSWER KEY

Computer Applications

Unit 1: Basics of Information Technology

1. Basics of Information Technology

Unsolved Exercise

Part A

A. 1. Data 2. Platter 3. Kernel 4. Nibble 5. Pixels 6. MHz

B. 1. i 2. iv 3. iii

C. 1. Douglas Engelbart 2. nine 3. 120 mm
4. Arithmetic Logic Unit, Control Unit, Memory Unit 5. Magnetic

Part B

A. 1. i. **Mobile Application:** Mobile Application is commonly known as Mobile App. It was introduced by Apple for its mobile phones. Mobile application is specifically meant for use on handheld wireless computing devices such as smartphones and tablets. Mobile App is OS specific, i.e., Android, Apple, etc. It will work only with particular mobile for which it has been developed.

ii. **Kernel:** Kernel is the core part of an OS, that does all the major activities (such as memory allocation, CPU time, scheduling, etc.) for the operating system.

Kernel helps in initialization (booting) function, such as checking memory. It allocates and de-allocates memory space which allows software to run.

iii. **File system:** Operating System facilitates for proper file system that helps to organize and obtain grouped information or execution from a data storage device in a systematic manner, i.e., 'File System' is the basic structure and concise format to arrange the set of information with their names.

iv. **Device Driver:** A device driver is a form of software that enables a hardware device to be compatible with the computer. It activates the specific hardware device that can be easily interpreted by the CPU resources. Device drivers are operating system specific and hardware dependent computer programs, which may automatically get activated whenever that hardware device is attached to the computer.

v. **Biometric Devices:** These devices use the physical characteristics of a living being to authenticate its identity. These devices are capable of scanning hand prints, finger prints,

IMPRINT 1

retinal information, facial features etc. to compare with a sample and grant access to an individual to a particular device or information. Example: Used in phones for security and used for attendance tracking in offices.

vi. **Barcode:** A Bar Code Reader is a popular scanning device which reads the bar codes. Bar code comprises of adjacent vertical black bars of different width. A barcode stores information about a product, eg: its price, weight, manufacturing details etc. Bars are code that represent different numbers.

vii. **Chat Sites:** Chat Sites is a feature of Internet that enables instantaneous transmission of messages from the sender to receiver on Internet. Many chat applications enable transfer of audio chat, video calling, sharing desktops, etc. apart from the standard text chat. Chatting is widely used for the personal as well as commercial use. Unlike email, chatting takes place in real-time and the response from the participants are spontaneous. If the receiver is online, message is received concurrently while it is sent.

viii. **Social Network:** Social network refers to a network of several people interacting through computing device around the world on the internet. It is the network of people who form communities among themselves to share sentiments, relationships, ideas, topics of common interest, etc. These people may be linked to each other because of some common association or a platform (like, students of same school, member of same club, associate of same trade, etc.), that they may have shared in the past or are planning to join in future.

2. i. New Technology File system
   ii. Light Emitting Diode
   iii. Magnetic Ink Character Recognition
   iv. Power on Self Test
   v. Computer-aided Design
   vi. Desktop Publishing
   vii. Extended File System
   viii. File Allocation Table
   ix. Wireless Fidelity
   x. Worldwide Interoperability for Microwave Access
   xi. Radio Frequency
3. BIOS is stored in ROM and it operates when the computer is switched 'ON'. It contains a set of essential softwares that test the setup of hardware devices during startup. It helps to start the operating system and supports the transfer of data among the hardware devices.
4. Radiowave, Microwave, Infrared
5. No, A computer is an instruction driven device that accepts data, processes it and produces the desired results in the form of information.

6. RAM is a volatile memory i.e. when a computer is switched 'OFF' or the power supply is interrupted, all the information stored in it gets disappeared or lost.
7. Cache Memory is a part of CPU and is used when there is swapping of information between the primary memory and the ALU.
8. An antivirus is a utility software that helps the computer to be free from virus. Moreover, it notifies when any program gets infected and contaminate other files. In addition, it also scans the computer and provides protection against malware. It also scans the system in real time for any threats and eliminate them. Examples of antivirus software are McAfee, Quick Heal, Avast, etc.
9. i. Impact printer prints the contents by striking the printer head or needle on an ink ribbon which rolls through the cartridge to make a mark on the paper.

   Non-Impact printer prints the output without touching or striking the ribbon on paper or on the film. This kind of printer prints by using thermal, chemical, electrostatic, laser beam or inkjet technology. Usually non-impact printer has a greater resolution and is faster as compared to impact printer.

   ii. It is a wireless connectivity that takes place through radiowaves. It enables to exchange information between devices like mobile phones, laptops, personal computers, printers, etc. over a private short range network. The network connection takes place through bluetooth dongle or inbuilt bluetooth transmitter present in the mobile or other computer devices. The connectivity through bluetooth consumes less power, and consists of low-cost transceiver microchips.

   Wi-Fi (Wireless Fidelity) is a network of wireless connection that takes place through radio frequency(RF). Wi- Fi uses the same radio frequency as Bluetooth, but with more power, resulting into a stronger connection.

   Wi-Fi is sometimes called 'Wireless Ethernet'. Wi-Fi is supported by many applications and electronic gadgets including video game consoles, home networks, PDAs, tablets, mobile phones, I-Pad, I-Pod, etc.

   iii. The physical components, which can be touched or felt are called the hardware components, whereas the components which cannot be touched or felt, such as instructions, data etc. form the software component of the system. Keyboard, Mouse etc. are hardware & MS Word, Windows etc. are software.

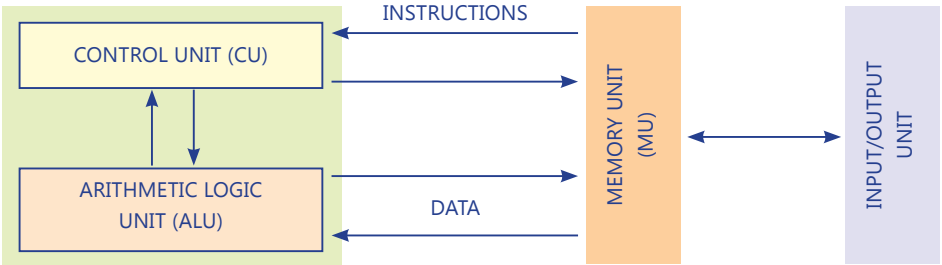
   iv. It holds the information temporarily, during the ongoing operation of a computer. When a computer is under operation, the data or instructions come into its memory for instant access from the secondary memory. During the course of the execution of instructions, some intermediate results may be produced which are stored in the RAM.

   It stores a set of pre-defined instructions for the internal operations of a computer. It is also referred as 'non-volatile' memory or 'firmware'.

   Once the user switches 'ON' the computer, the computer automatically does a series of sequential tasks like POST (Power On Self Test), RAM Test, etc. before the user starts his work.

B. 1. The functional elements of a CPU can be divided into three parts:

- Arithmetic Logic Unit (ALU)
- Control Unit (CU)
- Memory Unit (MU)



- **Arithmetic Logic Unit (ALU):** An ALU performs mathematical calculations (addition, ubtraction, multiplication, division, etc.) and logical comparisons (greater than(>), less than(<), equal to (=), not equal to(!=), etc.). 'Logical Operation' refers to a comparison between two phrases that results in 'TRUE' or 'FALSE' value. It receives the coded data and manipulates them to produce information in machine code and then send to the Control Unit.
- **Control Unit (CU):** A control unit co-ordinates and directs the operation of the hardware devices. It also co-ordinates the flow and execution of the data and instructions, that are fed into the computer's memory. CU functions in a F-D-E-S (Fetch-Decode-Execute-Store) cycle. It fetches the instruction and data from the memory unit & decodes them and passes to the ALU for further processing. It also directs the ALU to execute the instructions and performs the required operations on the data.
- **Memory Unit (MU):** A memory unit or main storage or the internal storage stores the data, instructions, intermediate and the final results that are ready for the output. All instructions or data are stored in the memory unit before being used by the ALU or the CU.

2. A set of organized programs meant for specific purpose is known as 'Software'. Software is an intangible part of a computer which provides intelligence to the computer. Software can be broadly classified as:

- Application Software
- System Software

Application Software: Application Software refers to programs which are designed to accomplish particular type of tasks to meet a user's specific needs. Application software can be classified into two categories:

- General Purpose Application Package
- Specific Purpose Application Package
- Customised Package

An application software enables a user to manage his/her specific type of task easily and properly. This type of program is specifically developed for the users who want to automate their work and generate reports as per the need. It is also called customized software or tailor made software. For example: Accounting management system, reservation system, payroll system, inventory control system, billing system, etc.

Software which is designed especially for a specific purpose to fulfill, the requirement of a particular individual or an organization is called a 'Customised Software'. It is also called a 'Tailor Made software'. For example: Inventory Management System, Fee collection system, etc. It is developed according to the personal need of a user.

3. Network refers to an inter-connected group of people, object, companies, computers, etc. For example, interconnected telephones create telephone network. A computer network is a link between two or more computers that are connected for the purpose of sharing of information and resources among themselves.

   Advantages of Networking:

   - **Sharing of files:** Networking is an effective way of sharing files among different nodes (connected computer). For example, in a school, if the result file is there on a network system, then the examination department, the Class teachers, the Principal; all can share and access the data of the same result file from their own systems (i.e., nodes).
   - **Sharing of Resources:** Networking helps in sharing of common hardware devices. For example, a printer can be connected to a computer in a network that can be shared by different nodes which are connected within the same network.
   - **Delivery of Information:** Networking helps in quick delivery of information. In conventional system, sending letter from one place to another takes several days but one can send the same letter or other files instantly through a network.
   - **Low cost of data transfer:** With the help of a network, data or information gets transferred at a very low cost. Networking has considerably reduced the cost of transfer of information from one node to another.

4. A computer is a wonderful electronic machine and it has many significant features which make it a multipurpose device. The special characteristics that make it such a popular and useful machine are:

   - **Speed:** A computer works at a very high speed. It can execute millions of instructions in a second. Its speed is measured in Hertz i.e., Hz (KHz, MHz, GHz, etc.). A modern computer can perform calculations in 'Nano Second' or 'Pico Second'.
   - **Accuracy:** A computer performs its tasks accurately. It performs calculations without making mistakes and produces information in accordance to the data entered.
   - **Reliability:** A computer is a reliable device, it does not fail to produce accurate results. It works exactly as per the given instructions. It can even work in severe conditions, where human beings cannot work.

- **Versatility:** A computer is versatile in nature i.e., it can work on various kinds of inputs and can produce multiple kinds of outputs like sounds, graphics, texts, animations, etc. It is a single machine capable of performing hundreds of different tasks.
- **Storage Capacity:** A computer has a very huge memory. It can store large volumes of data in a small sized hardware device, which can be retrieved as and when required. The unit of storage of data is known as Byte.
- **Diligence:** A computer is free from problems such as tiredness, monotony or lack of concentration that humans face. It can work for many hours at a stretch. It can perform the same task repeatedly on a similar or dissimilar data without any error, tiredness or boredom.
- **Logical Ability:** A computer is capable of comparing all types of data, like numeric or non-numeric and it can even take logical decisions as per the given instructions.
- **Flexibility/Multitasking:** During its operation, a computer can perform multiple tasks at the same time. It allows the user to switch from one application to another at any point of time.
- **Transfer of Data:** We can also transfer data from one computer to another through external storage devices like Pen Drive, CD, DVD, Blu-ray disc or via networks.

5. It includes communication that takes place with the help of a solid or wired medium like:
   - **Ethernet Cable:** Ethernet is a data link technology for local area network. It was invented by an electrical engineer named 'Robert Metcalfe' from United States. Ethernet cable refers to CAT5, CAT6 cable which is connected to an Ethernet card to a computer
   - **Co-axial Cable:** It consists of a single conductor surrounded by a circular insulation layer and a conductive shield. Such cables have a transmission rate of 100 Mbps with a bandwidth up to 400 Mhz.
   - **Fiber Optics:** This type of cable is used mainly in larger networks in which the data are transferred through electromagnetic waves. One fiber of such cable can support over 30,000 telephone lines at a time.
6. Components of Multimedia are:
   - **Text:** It refers to contents that can be read or typed on the screen.
   - **Audio:** It includes speech, audio effects, ambient sound and music.
   - **Video:** It includes images moving at a specific rate with some audio.
   - **Graphics:** It includes drawings, paintings, scanned images, photographs and video.
   - **Animation:** It refers to display of images in sequence or in whirling motion or changing interface in two or three dimensions.

C. 1. Specific Purpose Application Package
2. Compiler

Unsolved Exercise

Part A

A. 1. Firewall 2. Password 3. Cyber Stalking
4. Virus, Worms, Trojan Horse, Spyware 5. Antivirus
6. Quick Heal

B. 1. iii 2. iii 3. ii

C. 1. Internet 2. Antivirus, Antispyware 3. Cookies 4. Password 5. Privacy
6. CERT-In 7. spammer 8. Booting 9. Keylogger

Part B

A. 1. i. Indian computer emergency Response Team
ii. Law Enforcement Agency
iii. Master Boot Record
iv. Blue Screen of Death

2. i. **Privacy:** Privacy in Information Technology refers to personal control over one's own files and documents. It also refers to the right and ability to keep control over the information that one reveals or uploads over the internet and to have a control over the selection of viewers or users who can access that information.

ii. **Cyber Safety:** Cyber safety is a measure to prevent or safeguard from cybercrimes or cyber attacks. It enables us to keep our personal information or data intact & secure and also protects organizations or individuals from unauthorised access or manipulation of information.

iii. **Identity Protection:** 'Identity Protection' refers to safety practices to prevent theft of personal information such as personal profile, bank account details, address details, family details and also to prevent from obtaining credit card benefits, ordered goods, passports, driving licenses, etc. by other person.

iv. **Secure Transaction:** A digital certificate represented by a golden lock in the web browser's address bar signifies that the website is secure. Web addresses that start with 'https' also signify that the website is secure.

v. **Spyware:** Spywares are programs which infect and collect information of the computer without the owner's knowledge or consent. A spyware generally infects a computer system by getting transmitted through internet, websites, webpages, e-mails or through network of computers. It intrudes into a computer and quietly steals the data of the computer. In other words, it refers to a kind of software which can track the activities of a computer system and report to the users. Keylogger is an example of a spyware.

vi. **Password:** A password can be termed as a key of codes that protect our valuable content, documents or files. It helps us to keep many of our belongings or documents secure or secret. We can safeguard our belongings by restricting their access to others through locks that can be opened only through password.

3. • Identity Protection Protect Username and Password,
   - Do not share Personal Information
   - Secure Online Transactions
   - Avoid using Unsecured Wi-Fi
   - Don't Accept Unknown Invitation
   - Use Antivirus and Antispyware Software
   - Clear Browser Cookies Frequently
   - Install Firewall
   - Never Install Software from Unknown Sources
4. Firewall could be either a software or hardware that helps in keeping a network secure. It analyzes the network traffic (flow of data) and determines whether the traffic should be allowed or not in the network. It also blocks unauthorised users to access data on the system. It can even keep a check on malware attacking the system.
5. Cyber stalking refers to the crime of using the Internet, e-mail, or other types of electronic communications to harass or threaten other people by following them online.

   Cyber stalking involves sending harassing, absurd and nasty text messages, unethical videos and embarrassing pictures on social media or through mails. It also includes, faking someone's profile or making a fake profile with wrong intentions and trying to befriend someone for immoral purposes.
6. Cybercrime includes many types of criminal activities, which can be broadly divided as:
   - Crimes that target computer networks or devices viz., viruses and malware attacks.
   - Crimes that use computer networks to facilitate other criminal activities viz., cyber stalking, fund transfers, identity theft, etc.
7. Malware refers to infectious programs that hampers the functioning of a computer system. It is unwanted software which is designed to damage a computer system. Some common types of malware are virus, worms, trojan horse, spyware, etc.
8. A computer virus is a type of unwanted computer program which is developed by miscreants with an intention to infect the files of a computer, to corrupt a database or to hamper the functioning of a computer system.
9. Worms are the computer programs or algorithms which are alien to the host computer and are designed to purposely slow down the functioning of a computer. Worms replicate inside the system and thus occupy a huge memory space in the storage device. Worms spread more commonly in computers that are connected on network. Examples of worms are Linux. Ballpit, B!gen3, Morris worm, W32/Nimda worm, Mydoom, Sasser etc.

10. Trojans are infectious programs which silently infect the computer and corrupt the files of a host computer. Such programs often accompany computer games, but unlike worms they don't replicate themselves. They are active inside the computer when the user is busy interacting with the entertaining programs or with interface like computer games. Some examples of Trojan are Linux.Wifatch, Infostealer.Kronbank, etc.
11. Spam refers to an unwanted and unsolicited message which is received in the inbox of a person's e-mail account or in newsgroups. The one who sends the spams is called a 'Spammer'. Generally, spams are sent with an intention to advertise products and services.
12. A program file infecting virus is a type of malware that infects the executable files of a program with the intention of causing permanent damage or making the program useless. A file-infecting virus overwrites the code or inserts infected code into the source of an executable or program file. When such programs are executed, such virus is activated and damages the files.
13. i. Mydoom, Sasser ii. Infostealer.Kronbank, Linux.wifatch
    iii. OneInstaller, CiaDoor iv. Polyboot.B, Stones
    v. Avast, McAfee vi. Windows, Mac
    vii. OraNge3$, 30RaNgE# viii. Worms, Spyware

B. 1.
- Identity Protection Protect Username and Password,
- Do not share Personal Information
- Secure Online Transactions
- Avoid using Unsecured Wi-Fi
- Don't Accept Unknown Invitation
- Use Antivirus and Antispyware Software
- Clear Browser Cookies Frequently
- Install Firewall
- Never Install Software from Unknown Sources

2. Following are the tips for choosing a password:
- Keep the length of the password of at-least 8 characters long, including a combination of numbers and symbols.
- Avoid keeping passwords based on repetition, letters or number sequences.
- Use a combination of upper-case and lower-case letters.
- Avoid using the same password for multiple purposes.
- Avoid using a piece of information about yourself that is publicly known to others as a password.
- Avoid keeping names of loved ones, relatives, friends, etc. as passwords.
- Having a strong password is important to safeguard oneself.
- Examples of strong password: aniKR@87@18, Esd{@37

3. Cybercrime is a new trend of criminalization in our society. Governments across the globe are very strict against cybercrimes. In India, CERT-In (Indian Computer Emergency Response Team, Department of Electronics and Information Technology and Ministry of Communication & Information Technology) issues guidelines for preventing cyber-crimes on regular basis.

   CERT-In responds to the incidents that are related to computer or data security breaches. It takes the following measures in the area of cyber security:

   - It does collection, analysis and dissemination of information on cyber incidents.
   - It forecasts and alerts about cyber security probable incidents.
   - It provides emergency measures for handling cyber security incidents.
   - It issues guidelines, advisories, vulnerability notes related to information security practices, procedures & prevention.

4. Confidentiality refers to keep the data or information secret and allowing only authorized people to access the information. The same information can be confidential for some individuals whereas non confidential for another set of individuals. The following data generally come under confidential category:

   - Medical history or records
   - Date of birth
   - Contact details
   - Income status
   - Itinerary, celebration photographs of family or friends

5. If you find any such situation of cyber stalking, then inform the stalker that you want him/her to stop all such communications immediately. To take action against the stalker, you should:

   - **Keep Evidence:** Do not delete any email or other messages of the stalker and also keep a printout of the same.
   - **Save all records:** If there is any written threat by the stalker then keep it as a record. If the threats have been verbal only, then keep a record of the date, time and circumstances of those threats.
   - **Contact stalker's ISP:** If Internet Service Providers (ISP) have concrete proof that any of their users has been using their service for harassing others, then they should immediately stop providing services to such people.
   - **Keep Records:** Keeps a record of all the complaints that you have made to an ISP or agency and also safely keep their official reports for future use.

6. CERT-In responds to the incidents that are related to computer or data security breaches. It takes the following measures in the area of cyber security:

   - It does collection, analysis and dissemination of information on cyber incidents.
   - It forecasts and alerts about cyber security probable incidents.
   - It provides emergency measures for handling cyber security incidents.

- It issues guidelines, advisories, vulnerability notes related to information security practices, procedures & prevention.

7. Victims of cybercrime can report to CERT-In, if he/she encounters any of the situations given below:
   - Attempts (either failed or successful) to gain unauthorised access to a system or data.
   - Making changes to system hardware, firmware, or software characteristics without owner's consent.
   - Email related security issues, spamming, mail bombing, malware attack, etc.
8. There are certain symptoms that hint that a computer has been infected by malware & virus, like:
   - **Slowdown:** Fall in speed of processing of computer.
   - **Pop-ups:** Appearance of unexpected pop-ups on the system.
   - **Crash:** Frequent crashing of system or BSOD (Blue Screen of Death).
   - **Running Out of Storage Space:** Occupying huge space of storage.
   - **Loss of File:** Abrupt deletion of files of a computer system.
   - **Unusual activity of messages or programs:** Automatic opening or closing of a program, abrupt restarting of a computer and opening of strange or unknown windows during the process of booting.
   - **Unusual Network Activity:** Unusual network activity such as excessive transfer of data even when all the applications are closed.
9. **Spyware:** Spywares are programs which infect and collect information of the computer without the owner's knowledge or consent. A spyware generally infects a computer system by getting transmitted through internet, websites, webpages, e-mails or through network of computers. It intrudes into a computer and quietly steals the data of the computer. In other words, it refers to a kind of software which can track the activities of a computer system and report to the users. Keylogger is an example of a spyware.

   To prevent the attacks of spyware:
   - Use anti-spyware (software)
   - Avoid exploring the error dialogs on internet
   - Avoid using free deal offers on internet
10. i. How to Report Incidents to CERT-In:
    - Visit the website www.cert-in.org.in.
    - Click on the 'Incident Reporting' link.
    - Double click on the 'Security Incident Reporting Form' link & download the incident reporting form.
    - Fill the relevant details in the form and send it to CERT-In through:

Email: incident@cert-in.org.in

Or Fax: +91-11-24368546

Or Post: Indian Computer Emergency Response Team (CERT-In), Ministry of Electronics and Information Technology, Government of India, Electronics Niketan, 6 CGO Complex, Lodhi Road, New Delhi 110003, India.

ii. You can report incidents such as bug in a system (which bypass security measures such as Firewall Bypass) at www.cert-in.org.in.

- Click on the 'Vulnerability Reporting' link.
- Double click on the 'Reporting of a vulnerability' link & download the vulnerability reporting form.
- Fill the relevant details in the form and send it to CERT-In through:

  E-Mail: vulnerability@cert-in.org.in

  Or Fax: +91-11-24368546

  Or Post: Indian Computer Emergency Response Team (CERT-In), Ministry of Electronics and Information Technology, Government of India, Electronics Niketan, 6 CGO Complex, Lodhi Road, New Delhi 110003, India.

C. 1. Web address must start with 'https'

2. Using Antivirus and Antispyware

3. Working with Word Processor

Unit 3: Office Tools

Unsolved Exercise

Part A

A. 1. Spelling & Grammar 2. Bullets and Numbering 3. Fields

4. Symbol 5. Autoformat

6. Page Style option – Borders tab

B. 1. ii 2. ii 3. iv

C. 1. .odt 2. Clipboard 3. Character spacing

4. Page Margin 5. marks 6. AutoSpellcheck

7. Cell 8. merged 9. splitting

Part B

A. 1. Format Paintbrush

2. To insert a table in a document, follow the given steps:

Step 1: Position the insertion point where the table has to be inserted.

Step 2: Click on 'Table' drop-down button from the standard toolbar.

Step 3: Click and hover the mouse pointer across the grid to select the desired number of columns and rows.

Step 4: Release the mouse button. The table will be created.

3. 0.5"
4. To insert a symbol, follow these steps:

   Step 1: Place the cursor where the symbol has to be inserted and select 'Special Character' option from 'Insert' menu. A dialog box titled 'Special Characters' with various symbols appears on the screen.

   Step 2: Click on the required symbol.

   Step 3: Click on 'OK' button to insert the selected symbol.
5. Track changes feature in 'Writer' helps a user to keep a record of formatting, text insertions, deletions and comments made by multiple editors. A final document can then be created by accepting or rejecting the proposed changes.

B. 1. A word processing package is software that provides methods and mechanisms to type text and create documents. It allows editing, modifying, printing and saving the contents electronically making our work much easier.

The important features of word processor that make it useful are:

- **Editing:** In a word processor, editing of a document can be easily done without making the document messy. There is no need to retype the whole document while doing alterations.
- **Interface:** A word processor provides layout i.e., interface which makes it convenient to type document without using paper or stationery.
- **Navigation between pages:** A user can easily switch from one page to any other page of a document instantly in a word processor to view or to edit it.
- **Formatting:** A word processor provides various options for formatting the text, for e.g., the user can change the look of the document by changing its font colour, size, style, appearance, etc.
- **Graphics:** In a word processor, graphical pictures can be added in the document. Various tools to draw figures are also present in many word processors.
- **Spelling and Grammar:** Word processor can detect the spelling and grammatical mistakes in a document and provide suggestions to rectify them.
- **OLE:** In a word processor, there is an Object Linking and Embedding feature that helps to link or embed various objects in a document from outside. These objects can be charts, equations, cliparts, pictures, etc.
- **Mail Merge:** In word processor, multiple copies of the same document can be generated which can be sent to different recipients or destinations or addresses using mail merge feature.

- **Auto Complete:** Auto Complete feature of a word processor helps in automatic typing of certain words, phrases, symbols, etc. Such words may be frequently used words or may be some special words like name, phone number, etc. which has been frequently used in the document.
- **Find and Replace:** Word processor helps to search a word or phrase in the document and also helps to replace a particular word or phrase in the entire or a part of the document.

2. Margin is the gap between the edge and beginning of text i.e., the outer boundary of the text in a document beyond which the contents of the document do not flow. Normally, in a document, the default margins are 0.79" on top and bottom and 0.79" on the left and right.
   - **Left margin:** The space between the text and the left edge of the page is referred as the 'Left margin'.
   - **Right margin:** The space between the text and the right edge of the page is referred as the 'Right margin'.
   - **Top margin:** The space between the text and the top edge of the page is referred as the 'Top margin'.
   - **Bottom margin:** The space between the text and the bottom edge of the page is referred as the 'Bottom margin'.
3. Header and Footer is the mark of identification or reference of the text which is displayed on every page of a document. Header or Footer contains information such as page numbers, date, logo of a company, title or file name of the document, etc. Header is the repetitive text that is printed at the top of every page whereas footer is the repetitive text that is printed at the bottom of every page in a document. By default, header or footer is printed at 0.5" gap from the edge of the page.

   To add Header or Footer:

   Step 1: Select 'Header' or 'Footer' option from the 'Insert' menu. A sub-menu displaying the option 'Default' appears on the screen.

   Step 2: Click on the 'Default' option.

   Step 3: A rectangular box appears at the top of the document with a blinking cursor inside it. Type the text on it, say 'ORANGE EDUCATION'.

   Step 4: Click the mouse button outside the rectangular area.
4. Line spacing is the vertical gap between different lines of text in a paragraph. It is measured in lines or in points. It can be set to single spacing, 1.5 lines spacing.

   Different options of Line spacing are:
   - **Single:** It provides single line spacing, according to the point size of the font. It is the default line spacing that exists in a normal document.
   - **1.5 lines:** It provides one and a half line size spacing, according to the point size of the font.
   - **Double:** It provides double line spacing, according to the point size of the font.

- **At least:** It sets minimum spacing between the lines. This option is useful if there are fonts and lines of different sizes in the paragraph.
- **Proportional:** It allows to enter a percentage value in the box for line spacing, where 100% corresponds to a single line spacing.
- **Leading:** It sets the height of the vertical space that is inserted between two lines.
- **Fixed:** It sets the line spacing to exactly match the value that is entered in the box. This can result in cropped characters.

5. To insert date and time in OpenOffice Writer, follow the given steps:

   Step 1: Place the cursor where the current date and time has to be inserted.

   Step 2: To insert Date and Time, select the option 'Fields' from the 'Insert' menu.

   Step 3: Click on 'Date' to insert the system date or click on 'Time' to insert the system time in the document.

   Step 4: Inserted Date and Time appears as shown below.

6. Combining two or more adjacent cells in the same row or column is known as merging of cells.

   Step 1: Select the adjacent cells.

   Step 2: Select 'Merge Cells' option from the 'Table' menu.

   Division of cells into two or more sub-cells is known as splitting of cells. To split the cells follow these steps:

   Step 1: Place the cursor in the cell that has to be split.

   Step 2: Select 'Split Cells' from the 'Table' menu. 'Split cells' dialog box appears on the screen.

   Step 3: For splitting of cell into desired number of columns, specify how many cells the cell is to be split.

   Step 4: For splitting of cell into rows, a cell must be split horizontally. Specify this detail under 'Direction'.

   Step 5: For splitting of cell into columns, a cell must be split vertically. Specify this detail in this dialog box as shown.

   Step 6: Click on 'OK' button.

7. To insert mathematical expressions, follow these steps:

   Step 1: Select 'Object' from the 'Insert' menu and choose the option 'Formula' from the sub-menu. Formula window appears on the screen.

   Step 2: Right click on the 'Edit window'.

   Step 3: Select the desired formula type.

   Step 4: Edit Window

   Step 5: 'Elements' dialog box appears with several options. Select the desired expression say 'a>b'. The expression will appear as '<q> > <q>' in the document and appears as

'<?> > <?>' in the 'Edit' window. Edit the given expression as per the need in 'Edit and Element' window.

Step 6: After inserting the expression erase the right and left angular bracket and click any where in the document window to close the Edit window.

C. 1. Mathematical Expression

2. Character spacing, Line spacing and Paragraph spacing

4. Working with Presentation

Unsolved Exercise

Part A

A. 1. Shape 2. Notes and Handouts 3. Slide sorter view 4. .odp

5. Spelling & Grammar

B. 1. iv 2. i 3. iv

C. 1. Watermark 2. Template 3. Slide show 4. Bitmap 5. Drawing

Part B

A. 1. i. Title Slide

ii. Title

2. To create a new presentation with an empty presentation:

Step 1: Select 'Empty presentation' from 'Presentation Wizard' and click on the 'Next' button.

Step 2: Select a slide design.

Step 3: Set the output medium.

Step 4: Click on 'Preview' check box to see the preview.

Step 5: Click on 'Create' button.

3. It has options which help to insert new slides and different types of contents (table, picture, object, chart, animation, page number, date and time, etc.)

To activate it, click on 'Insert' menu or Press 'Alt+I' keys.

4. Open Office Impress, MS PowerPoint, Adobe Director, 3-D Studio, etc.

5. To automatically check the spellings and grammatical mistakes in the text of a presentation.

B. 1. To make a presentation with the help of Template:

Step 1: Click on 'From template'.

Step 2: Click on 'Next' button.

Step 3: Select a slide design for the presentation being created.

Step 4: To see the preview, check the 'Preview' button.

Step 5: Select desired output medium

Step 6: Click on the 'Next' button.

Step 7: Select 'Effect/Speed' of slide transition and set the presentation type as (Default/ Automatic).

Step 8: In case of 'Automatic' enter the 'Duration of page' and 'Duration of pause'.

Step 9: Click on the 'Next' button.

Step 10: A wizard screen asking for description of presentation appears on the screen.

Step 11: Enter basic details of presentation.

Step 12: Click on the 'Next' button.

Step 13: Select the pages to be used in the presentation and click on the 'Create' button.

2. i. **Workspace:** It is the basic layout or working area where the content of a slide is entered. It has five tabs: Normal, Outline, Notes, Handout and Slide Sorter.

   ii. **Edit menu:** It has options which perform basic operations related to editing or modifying the contents of a presentation. To activate it, click on 'Edit' menu or Press 'Alt+E' keys.

   iii. **'Display Grid' command of Standard Toolbar:** Specifies the setting for the configuration grid on a document and helps to determine the exact position of objects.

   iv. **'Bullets & Numbering' command of Formatting Toolbar:** To add/edit format of bullets.

   v. **Presentation Toolbar:** It generally lies besides the standard tool bar to the right side of the screen. The buttons found on this bar are: slide, slide layout, slide design and slide show.

3. A placeholder is a box with a dotted boundary in a presentation that provides you with an area to add text/image/charts/graphics etc. to a slide.

   To enter text using a placeholder, follow the given steps:

   Step 1: Click in the text boxes to start typing. If the text takes more than one line, Impress automatically wraps the text to the next line.

   Step 2: To end typing, click outside the text box.

4. Bitmap enables to select picture from a range of existing pictures like: sky, water, marble, leaves, etc. It can be previewed by clicking on any one of the bitmap pictures.

   Step 1: On the 'Background' tab, select 'Bitmap' option.

   Step 2: Choose the desired bitmap.

   Step 3: Click on 'OK' button.

   To apply same background to each slide, click on 'Yes' button in the 'Page Settings' dialog box.

5. • **Inserting Header and Footer:** Header and Footer is the information of a page which is separated from the main body of the text and appears at the top and the bottom of the page. To make the presentation more effective and informative, the user can write

the topic name, date & time, slide number and the event name for which the slides are presented. The user can display the slide number as the footer. Header is visible only in Notes and Handout view.

- **Background:** Applying In 'Impress', different types of coloured backgrounds can be applied to the slides. To change the background of one or more slide(s), select a slide from the slides list on the left side.

C. 1. Background

2. Slide show

5. Effects in Presentation

Unsolved Exercise

Part A

A. 1. Slide show 2. Handouts 3. Area chart
4. Chart wizard 5. Insert

B. 1. i 2. iv 3. i

C. 1. Organised, interesting 2. Charts 3. Ctrl, P
4. Slide layout 5. Column chart

Part B

A. 1. Handouts are thumbnails of all the slides printed together. By default, thumbnails of six slides are accommodated in a sheet of A4 size paper.

2. 'Notes' view allows you to add reference or notes for your help to the slides in a presentation. In the notes view, the slides are displayed in a reduced form towards the upper side of the slides. At the bottom, a text box appears in which reference to the slide can be added.

3. One can set the timings of the slides that appear during a presentation in two ways:
   - Setting the time manually
   - Rehearse Timings

4. Slide layout refers to the basic look or the frame of types of slides in which contents can be added. In 'Impress', there are various types of predefined layouts for creating slides which can be used for creating a new presentation. Some frequently used layouts are Title Slide, Content, Title-Only, Blank Slide, etc. In the task pane area, there are different layouts. These layouts contain different placeholders to place different types of content.

5. The presentation can be viewed in six different modes, i.e., Normal, Outline, Notes, Handout, Slide Sorter and Slide Show View.

B. 1. i. **Custom Animation:** This feature enables to set timings between the display of the content or objects of the slides and also enables to apply different whirling effects to animate the object.

ii. **Slide Transition:** Slide Transition sets the style of appearance of slides in a presentation. It is the effect applied when a slide changes to another during on-screen presentation or slide show.

2. Presentation is a way of systematic display of information. It includes pictures, texts, graphics, audio, videos and animated objects which are organized and presented in a proper sequence.

   Various ways in which we can add multimedia features in a presentation are:

   Inserting Pictures: To insert pictures in slides, follow the given steps:

   Step 1: Select the option 'Pictures' from Insert Menu.

   Step 2: Click on 'From File' option.

   Step 3: Locate the picture.

   Step 4: To view the picture before inserting, click on 'Preview'.

   Step 5: Click on 'Open' to insert the picture.

   Adding movie or sound into the presentation: To add movie or sound into the presentation, follow the given steps:

   Step 1: Select the option 'Movie and Sound' from Insert menu. 'Insert Movie and Sound' dialog box appears on the screen.

   Step 2: Locate the source of movie/sound to insert.

   Step 3: Click on 'Open' to insert the selected movie/sound. The sound effect gets applied to the presentation, whose icon appears on the slide.

   Inserting Media:

   Step 1: Click on the drop-down button of 'Slide Layout' option from the standard toolbar. A drop-down menu appears on the screen.

   Step 2: Select the 'Title, Content' slide layout.

   Step 3: Click on 'Insert picture' option.

   Step 4: Select the desired picture.

   Step 5: Click on 'Open' button. The selected picture will be inserted in the slide.

3. Types of Charts: There are different types of charts. Some of them are:
   - **Line Chart:** Line chart is used to view information that is shown by lines at equal intervals. It depicts the change in data over a period of time.
   - **Column Chart:** A column chart represents the data over a period of time in columns. Each column rises from X-axis and indicates the value of a data. The measurement values are shown vertically as Y-axis.
   - **Bar Chart:** A bar chart represents the data in horizontal columns. The measurement of values are organized horizontally. Stacked bar chart is a variation of bar charts.

4. To apply the transition effect:

   Step 1: Select the slide to which the transition is desired.

Step 2: Select the 'Slide Transition' option.

Step 3: Click on any of the transition effect.

Step 4: Set the speed of display (Slow, Medium, Fast) and sound effect.

Step 5: Repeat the above steps to apply such effects in other slides.

OR

To apply the same transition to all the slides in the presentation, click on 'Apply to All Slides'. The duration of time for the display of a slide can be set either automatically or the slides can be advanced manually using a mouse.

C. 1. Tips for effective presentation are:

- Prepare well about the topic of the presentation.
- Cover most important points in the beginning.
- Be aware of who is going to be the audience – teacher, students, parents, businessmen, etc.
- Rehearse and practice well for the presentation.
- Keep the slides simple.
- Use limited words on slides.
- Use photographs and pictures of high resolution and quality.
- Use relevant charts.
- Use accurate data from reliable sources.
- Choose appropriate fonts.
- Choose eye-catchy colour combination.
- Keep the formatting clean and simple.
- Suitably align the objects on the slides.
- Practice well using the timer.
- Don't speak too fast, let the audience understand and think what you want to convey.
- Use voice modulation for emphasising different parts of the presentation.
- Do not use too much animation and transitions.
- Use professional graphics instead of clipart.
- Customise the templates according to your requirements.
- Interact with the audience in between the presentation.

2. Handouts

6. Working with Spreadsheet

Unsolved Exercise

Part A

A. 1. 65, 536 2. A selected cell is an active cell 3. Ctrl + S
4. Navigator 5. Ctrl + Y 6. AutoFill

B. 1. iii 2. iii 3. ii

C. 1. 1024 2. Text Orientation 3. AutoFill
4. Function 5. .ods

Part B

A. 1. User can hide worksheet(s) of a workbook which can be displayed later. To hide a worksheet, follow these steps:

Step 1: Select the sheet(s) to be hidden.

Step 2: Select the option 'Sheet' from the 'Format' menu. Click on the 'Hide' option.

2. Adding a Sheet: 'Calc' workbook opens with three sheets by default. But the user can add more sheets, if required. To add new sheets in the workbook, follow these steps:

Step 1: Right click on 'Sheet' tab and select 'Insert Sheet' option. 'Insert Sheet' dialog box appears.

Step 2: Set the position where the new sheet is to be added in the workbook.

Step 3: Specify the number and the name of sheet to be created.

Step 4: Click on the 'OK' button. A new worksheet will be added before the active sheet.

3. It is a feature in spreadsheet package like 'Calc' in which a certain kind of predefined series of data such as name of months of a year, serial numbers, etc. are automatically generated once the user feeds the initial data.

To print series of months of the year:

Step 1: Type the initial data (month name) of the series in one cell.

Step 2: Select the cell. An AutoFill handle (a small black plus sign) appears at the bottom-right corner of the selected cell.

Step 3: Click the Auto Fill handle tool and drag it over the range of cells to fill the defined series, then release the mouse button. The series of months will be displayed. (The given series is displayed because it is predefined/stored as a custom list)

4. Different types of data that can be entered in a cells:

- **Numeric Data:** 'Numeric Data' consists of digits (0–9), 'e' (Exponential), decimal (.) and numeric operators like +,-,/,*,%,$. Numeric data or values are aligned towards the right side in a cell. The numbers or values on which formulae are applied to perform mathematical operations are called OPERANDS.

- **Alphanumeric or Text Data:** Alphanumeric data are the data which are textual in nature. It refers to the data which is a combination of alphabet, spaces, digits and/or other characters. Alphanumeric data is mentioned within double quotes " ". In Calc, alphanumeric data are aligned (by default) towards the left side of the cell and are generally not meant for calculation.
- **Date and Time:** 'Calc' displays date as sequential numbers known as Serial Values. The time is displayed as fractional part (it is considered as a part of a day). Date and Time are values and therefore can be added or subtracted and can be included for other calculations. They are aligned (by default) towards the right side of the cell.
- **Formula:** A formula is an expression which helps to perform arithmetical calculation and also executes nonarithmetical tasks. It consists of the operands and the operators which operate upon the data. A formula always starts with an '=' sign.

5. • **Wrap Text:** This option wraps the text in multiple lines to accommodate it automatically within the column width by increasing the row height.
   • **Shrink to fit Cell size:** This option reduces the font size of the contents to accommodate it within the column width.

B. 1.

Function	Result
OR	Produces true if any condition enclosed in bracket is true, otherwise it will produce false. Eg. =OR(5>3; 4<5;4>15) will display true. =OR(3>6; 2<1) will display false.
AND	Produces true if all the conditions enclosed in bracket is true otherwise it will display false. Eg.=AND(5>3; 4<5; 4>15) will display false. (As one of the condition is false) =AND(5>3; 4<5) will display true. (As all of the conditions are true.)

2. An operator is a symbol that performs certain mathematical or logical operations. In a cell, the calculation takes place in the order of precedence of operators (in a similar way as BODMAS in mathematics).

Operator	Description
:	Reference operator (as in A2:A20)
-	Negation operator
*,/	Multiplication, Division
*	Text Concatenation

Operator	Description
, ;	Argument Separator
^	Exponent
+, -	Addition, Subtraction
>,<,>=,<=,<>	Comparison operator

3. In a worksheet, if the user does not want to show columns or rows that contain some part of data on the screen, it can be hidden with the help of 'Hide' feature. Individual cell can't be hidden in the spreadsheet. To hide a column:

Step 1: Select the column to be hidden.

Step 2: Right click on the column header.

Step 3: Select the option 'Hide'.

4. i. **Formula Bar:** 'Formula Bar' lies below the formatting toolbar. It displays the content of the active cell. Formula that perform different calculations in cells are entered and displayed here. It is denoted by 'fx'.

   ii. **Operands:** The values or variables involved in an operation.

   iii. **Sheet Tab:** It lies below the active sheet of the screen. The names of the worksheets appear in the sheet tabs at the bottom of the workbook. We can click on the specific sheet tab to open it.

   iv. **Formatting Cells:** Formatting a cell includes changing the contents of cell with respect to appearance i.e., changing Text, Styles, Alignment, Font, Font style, Font size, Border, Patterns, etc. of a cell or the contents of a cell.

C. 1. Wrap Text 2. AutoSum

7. Data Analysis

Unsolved Exercise

Part A

A. 1. = A2 + A3 2. =C4/(A3 * A5) 3. =MIN(B3 : B7) 4. =COUNT(D6 : D30)
5. = 5 ^ 4

B. 1. ii 2. iv 3. i

C. 1. Cell referencing 2. Absolute 3. Chart 4. Sorting
5. #REF!

Part B

A. 1.

Function	Result
OR	Produces true if any condition enclosed in bracket is true, otherwise it will produce false. Eg. =OR(5>3; 4<5;4>15) will display true. =OR(3>6; 2<1) will display false.
AND	Produces true if all the conditions enclosed in bracket is true otherwise it will display false. Eg.=AND(5>3; 4<5; 4>15) will display false. (As one of the condition is false) =AND(5>3; 4<5) will display true. (As all of the conditions are true.)

2. An operator is a symbol that performs certain mathematical or logical operations. In a cell, the calculation takes place in the order of precedence of operators (in a similar way as BODMAS in mathematics).

Operator	Result
:	Reference operator (as in A2:A20)
-	Negation operator
*,/	Multiplication, Division
*	Text Concatenation

Operator	Result
, ;	Argument Separator
^	Exponent
+, -	Addition, Subtraction
>,<,>=,<=,<>	Comparison operator

3. i. Occurs when a wrong type of argument or operand is used.

   ii. Occurs when a cell reference is not valid.

4. In a worksheet, if the user does not want to show columns or rows that contain some part of data on the screen, it can be hidden with the help of 'Hide' feature. Individual cell can't be hidden in the spreadsheet. To hide a column:

   Step 1: Select the column to be hidden.

   Step 2: Right click on the column header.

   Step 3: Select the option 'Hide'.

5. i. It is the set of values which the user wants to plot in the chart.

   ii. In a 3-D chart, the base area or the plane in X-Y axis is called the floor and the vertical area, i.e., planes is X-Z and Y-Z axis are called walls.

B. 1. Formulas can be applied on a large data set to perform various mathematical operations such as addition, subtraction, division, multiplication and many more.

Different type of cell referencing used in Calc:

i. **Formula With Cell Addresses:** Each cell in the worksheet has a unique address that is formed by the intersection of its Column and Row, for example, 'A10'. Here, 'A' is the Column name and '10' is the Row number.

Calculations are performed on cells on the basis of Cell Addresses mentioned, while writing the formula. The formula thus applied displays the result of the calculations done on the data stored in the mentioned cell addresses.

ii. **Formula With Cell Names:** In 'Calc', Formula can be applied in reference to cell names. For doing so, first define the name of the cell or the range of cells.

For naming a cell, click on the cell and type the name for that cell in the name box, and press Enter. Name can be used directly in a formula.

iii. **Formula With In-Built Functions:** Functions are in-built formula in 'Calc', which can be used to perform arithmetical and non-arithmetical tasks. In 'Calc' there are more than 375 in-built functions which can be applied directly or as part of a formula. For Example: A formula, say =A1+A2+A3+A4+A5 can be written using the 'SUM' function along with cell range as: =SUM(A1:A5).

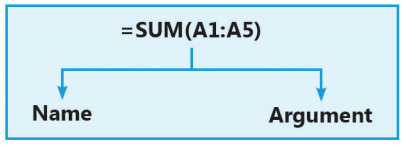
2. The identification or address of a cell in a formula is known as a 'Cell Reference'. There are three types of referencing in 'Calc'.
   - Relative Referencing
   - Absolute Referencing
   - Mixed Referencing

   i. **Relative Referencing:** It is based on the position of the cell in which the formula is typed with respect to the cell address of the formula. When we copy or move the formula to other cells, the reference (cell address) automatically changes according to the relative position of cells in consideration.

   ii. **Absolute Referencing:** It is applied when a user does not want to change the value while copying the formula with cell address to another cell. To apply an absolute cell reference, a '$' (dollar) sign is prefixed before the row number and/or the column name in the cell address. (i.e. $ sign fixes the value).

   iii. **Mixed Referencing:** This type of cell referencing is the combination of absolute and relative referencing. While applying mixed referencing, either the row number or the column name of the cell address in the formula is fixed. The cell references such as $F5 or F$5 are examples of mixed referencing. $F5 means that the column F is absolute and row 5 is relative while F$5 means that the column F is relative and row 5 is absolute.

3. A function contains 'Name' and 'Argument'.



'Name' is the function that signifies the nature of operation. 'Argument' specifies the values or the range of cells on which the specific operation is being applied and is always enclosed within the opening and closing parenthesis (i.e., Name refers to the operator and Argument refers to the operand).

4.

Errors	Reasons
####	Occurs when the cell contains a number, data or time that is wider than the cell width or when the cell contains a date and/or time formula that produces a negative result.
#VALUE	Occurs when a wrong type of argument or operand is used.
#NAME	Occurs when 'Calc' does not recognize text in a formula.
#NUM	Occurs when there is a problem with a number in a formula or function.
#REF!	Occurs when a cell reference is not valid.
#DIV/0!	Occurs when a formula is divided by zero.

5. It is a visual or graphical representation of data from a worksheet which is very useful for instant analysis and decision making.

   There are different types of charts. Some of them are:

   - **Line Chart:** Line chart is used to view information that is shown by lines at equal intervals. It depicts the change in data over a period of time.
   - **Column Chart:** A column chart represents the data over a period of time in columns. Each column rises from X-axis and indicates the value of a data. The measurement values are shown vertically as Y-axis.
   - **Bar Chart:** A bar chart represents the data in horizontal columns. The measurement of values are organized horizontally. Stacked bar chart is a variation of bar charts.
   - **Pie Chart:** A pie chart represents the data or value of each item in proportion or percentage to the consolidated or the sum value of all items. Pie chart displays single type of data item and is beneficial when the user wants to emphasize value of a significant item. Pie charts help to compare how each value relates proportionally to the whole.
   - **X-Y (Scatter) Chart:** X-Y (Scatter) chart displays the relationships among the numeric values of several data series. This chart shows uneven intervals or clusters of data and is commonly used to represent scientific data.
   - **Area Chart:** An area chart is a version of a line or column graph. It is useful to emphasize on volume of changes of data. Area charts have better visual impact than a line chart.

C. 1. Spreadsheet or Calc

2. This error occurs when the cell contains a number, date or time that is wider than the cell width or when the cell contains a date and time formula that produces a negative result.

3. =AVERAGE(B2 : B7)

8. Scratch

Unit 4: Scratch or Python

Unsolved Exercise

Part A

A. 1. New Sprite 2. (0, 0) 3. Script Area
4. Green 5. .sb2, .sb3

B. 1. iii 2. i 3. iii

C. 1. 480, 360 2. full 3. Sprite
4. Duplicate 5. Choose sprite from library

D. 1. i.—(iii) 2. ii.—(v) 3. iii.—(i) 4. iv.—(ii) 5. v.—(iv)

Part B

A. 1. i. **Stage Toolbar:** The stage toolbar is located above the stage. It contains the following tools:

Buttons	Command Name	Purpose of the Button
	Select and duplicate	It helps to make duplicate copy of the objects.
	Delete	It helps to delete the objects.
	Grow sprite	It helps to increase the size of the sprite.

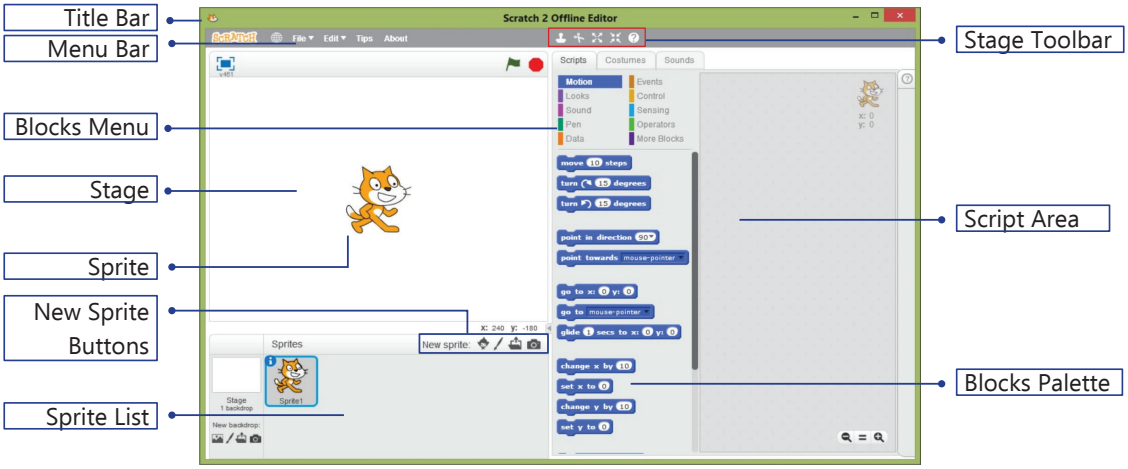
ii. **Sprite List:** It displays the thumbnail list of all the sprites that have been used in the currently opened project. The name of each sprite appears below its thumbnail.

If we right click on the thumbnail, it displays the mentioned options:

- Info: It opens the information panel related to the sprite.
- Duplicate: It makes a copy of the sprite.
- Delete: It removes a sprite from the project.
- Save to local file: It saves the sprite.
- Hide: It hides the sprite.

2. Animation is the display of sequence of images in order to create extraordinary illusions. It includes computer generated imagery (CGI) and multimedia features. This has resulted in creation of more convincing illusions.
3. It is a small graphic object that moves on the stage. The default sprite is a 'cat', which can also be changed as per our wish. The sprite moves, plays music and executes other functions as per our instructions.
4. Script area contains the scripts. A script is a collection of graphics/blocks that are assembled in a particular order that executes from the top to the bottom.
5. It displays the information about a sprite such as its name, coordinates: x-y position, direction in degree (0°=up, 90°=right, 180°=down, -90°=left), lock state, rotation style, etc. Here, you can set the name of sprite, its direction, lock or unlock and the rotation style of the sprite.
6. A script is a collection of graphics/blocks that are assembled in a particular order that executes from the top to the bottom.

7.



B. 1. To open an existing project, follow these steps:

Step 1: Select 'Open' from the File menu. 'Open Project' window appears.

Step 2: Navigate to the location where the projects are saved.

Step 3: Select the project to be opened from the list and click on the 'OPEN' button. The chosen project opens on the Scratch window screen.

Step 4: To view the animation, click on the green flag from the stage toolbar. Green Flag button is used to run a program in scratch. Stop button stops the execution of the current project.

2. A sprite can be made bigger or smaller. To resize a sprite:

Step 1: Click on 'Grow sprite' / 'Shrink sprite' button.

Step 2: Place the mouse pointer on the sprite in the stage area and keep on clicking till the required size is obtained.

3. To draw a sprite, say a clone or joker in the paint editor.

Step 1: Click on the 'Eyedroper' tool.

Step 2: Select the desired colour.

Step 3: Select 'Ellipse' tool.

Step 4: Drag to draw the face of image.

Step 5: Select 'Ellipse tool' and drag to draw the eyes.

Step 6: Select 'Line tool' and drag to draw nose, mouth and hat.

Step 7: Change the foreground colour and fill the colour in hat using the 'Fill Tool'.

Similarly, draw the body of the image by performing the following steps:

Step 1: Draw the body of the image using 'Ellipse tool'.

Step 2: Draw the collar of the costume using 'Line tool'.

Step 3: Draw the pockets on the costume using 'Rectangle tool'.

Step 4: Fill the colours of your choice using 'Fill tool'.

Step 5: Select the 'Ellipse tool' and draw the buttons on costume.

Step 6: Click on 'Stamp tool' and copy the button. Drag the copied button to place it on the costume.

Step 7: Use 'Select tool' and move the toy on the left side of editor screen.

Step 8: Type 'Hello Scratch...' on the screen using 'Text' tool.

Step 9: Move it to the desired location by dragging with the help of 'Select tool'.

C. 1. 1. Erase Tool in Paint Editor window

2. To choose a sprite from the scratch library:

Step 1: Click on 'Choose sprite from library' button of 'New sprite' section.

Step 2: The 'Sprite Library' dialog box appears. Select the category from the left pane. A list of sprites related to the selected category appears.

Step 3: 'Select the desired sprite and click on 'OK'. The selected sprite appears on the stage area.

9. Animation in Scratch

Unsolved Exercise

Part A

A. 1. Untitled 2. Loop 3. Pen
4. Motion 5. Stop the execution of script

B. 1. ii 2. i 3. i

C. 1. Pen 2. Motion 3. Events
4. Stop [all] 5. Control

Part B

A. 1. i. **Motion block:** This block enables the sprite to move.

Move 10 steps: This command moves the Sprite by a specified number of steps in the forward direction. To move the sprite in the backward direction, we need to give a negative step value.

Turn command: This block is used to turn the Sprite in Clockwise/Anti clockwise direction.

ii. **Pen block:** In Scratch, the Pen commands make the sprites act as if it were writing instrument. The Pen colour, shade and size can be changed. To apply the pen programming blocks:

- Click on 'Pen' block in the blocks menu.
- Drag the programming blocks from the 'Block palette' and keep it in the 'Script Area'.
- Set the values as per requirement.

Following are the commands that are found under the Pen block:

- Pen Down: This block draws a line on the stage, in the direction in which the Sprite moves.
- Set Pen Size: This block helps set the thickness of the pen.
- Change Pen Color: This block changes the color of the pen.

iii. **Control block:** This block contains two main programming blocks; 'Conditional block' and 'Loop block'. Conditional blocks are if-else blocks. They check the correctness of the condition as per the value given by the user. If the value is 'true', then it will execute the blocks that are snapped within, otherwise it will execute the blocks that are kept outside the Conditional block. The Loop blocks are used to repeat an action. The forever programming block represents an infinite loop.

2. Sensing block contains the programming blocks that enables to read the instructions given from input devices.

   Some of the sensing blocks commands are:

   - Ask () and Wait: This command ask desired question to which an answer is required.
   - Reset Timer: This command reset the timer back to 0.
   - Turn Video (): This command turned the video on.
   - Set Video Transparency to ()%: This command set the transparency of the video to desired percent.

3. In Scratch, the Pen commands make the sprites act as if it were writing instrument. The Pen colour, shade and size can be changed. To apply the pen programming blocks:

   - Click on 'Pen' block in the blocks menu.
   - Drag the programming blocks from the 'Block palette' and keep it in the 'Script Area'.
   - Set the values as per requirement.

   Following are the commands that are found under the Pen block:

   - Pen Down: This block draws a line on the stage, in the direction in which the Sprite moves.
   - Set Pen Size: This block helps set the thickness of the pen.
   - Change Pen Color: This block changes the color of the pen.

   To delete a script or programming block:

   - Click and drag the script or programming block to be deleted from the 'Script Area'.
   - Place it back to the 'Blocks Palette'.

   The selected script or programming block will be deleted.

To undelete or retrieve back the script or programming block:

- Click on 'Undelete' option from the 'Edit' menu.

The last deleted script or programming block will be attached back to the mouse pointer.

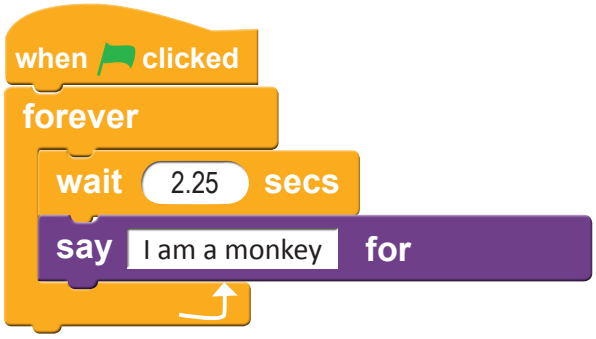
- Position it on the script area wherever it is required.

B. 1. Conditional blocks are if-else blocks. They check the correctness of the condition as per the value given by the user. If the value is 'true', then it will execute the blocks that are snapped within, otherwise it will execute the blocks that are kept outside the Conditional block. The Loop blocks are used to repeat an action. The forever programming block represents an infinite loop.

2. Sensing block contains the programming blocks that enables to read the instructions given from input devices. Let us consider the following programming blocks to see the effect of sensing programming blocks.

   - Insert two sprites from the new sprite buttons; say Lion as 'Sprite 2' and Monkey as 'Sprite 3'.
   - Click on 'Sprite 2' in the sprite list and keep the programming blocks as given in the image.

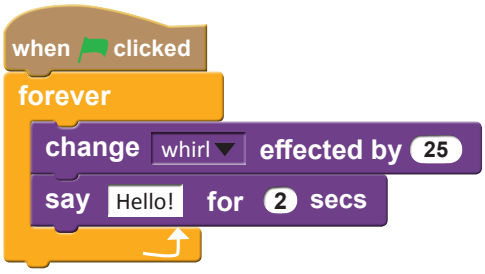
   - Click on 'Sprite 3' in the sprite list and keep the programming blocks as given below.



   - Click the 'Green' flag.

     When 'a' key is pressed, the two sprites will interact with each other.

3. Looks blocks contains the programming blocks that control the look of a sprite and display graphical effects. Let us see the effects of 'Looks' block in the given example.



The programming blocks of Looks block (displayed in magenta colour) will change the look of the sprite by changing its colour each time the loop is executed and the sprite will display a message 'Hello!'.

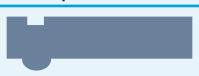
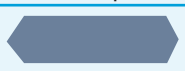
4. XY Plane is a standard two-dimensional coordinate plane that can be used to identify the given position of an object. A coordinate system in a two-dimensional plane has two perpendicular axes or lines (the x-axis and y-axis).

   The x-axis is the horizontal line on the coordinate plane. It enables LEFT-RIGHT movement.

   The y-axis is the vertical line on the coordinate plane. It enables UP-DOWN movement.

   The point on the plane represent the distance from perpendicular lines that intersect at a position known as 'Origin'. The complete plane area on which a point is determined by both X and Y positions is called XY Plane. The position in the XY plane is depicted as (x, y). In a screen, the 'X' position can range from 240 to –240. Here, 240 is the rightmost position of the sprite; whereas –240 is the leftmost position. 'Y' position can range from 180 to –180. 180 is the highest point and –180 is the lowest point.

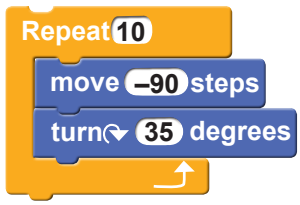
5. There are six types of programming blocks in different shapes and each of them helps the user to define steps of animation related to the selected button. It also provides an interface to input the value of movement or looks of sprite in a project.

Block Name	Shape	Function
Hat Block	 Rounded top and bumped bottom	This block enables to begin every script. It is shaped in such a way that we can place blocks below it.
Stack Block	 Notch at the top and bumped bottom	This block enables to place the other blocks above and below it.
Boolean Block	 Hexagonal shaped	This block is the condition block which has either of the two values; 'True' or 'False', so it helps to take a decision.

Block Name	Shape	Function
Reporter Block	 Rounded edges	This block is the value block that can holds numbers and strings.
C-Block	 C shaped	This block loops the other blocks within it. It is also called as Wrap Block. This block is also used to repeat an action.
Cap Block	 Notch at the top and flat bottom	This block stops the functioning script. It is shaped in such a way that no other block can be placed below it.

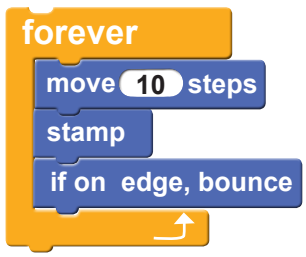
C. 1.

2.



3.

4.



10. Python

Unsolved Exercise

Part A

A. 1. Interactive Mode, Script Mode 2. F5 3. int
4. 35 5. Valid : orange
Invalid : is

B. 1. ii 2. i 3. i

C. 1. IDLE (GUI) 2. Python Shell 4. >>>
4. underscore (_) 5. Lexical elements/Lexical Units 6. String
7. print 8. lower 9. Reserve words

Part B

A. 1. i. General Public License ii. Centrum Wiskunde & Informatica
iii. Integrated Development Environment iv Microsoft Installer

2. i. Keyword: Keywords are the reserved words that have a specific function in a program. These words are used while writing program to get the desired output. The keywords are executed as per their purpose/action defined in the language (interpreter).

ii. Tokens: The smallest individual unit in a program is referred to as a 'Token'. Tokens are also known as Lexical Elements or Lexical Units. They can be categorised as: identifiers, keywords, literals, punctuators and operators.

iii. Punctuators: Punctuators are used as marks or as separators in a program. The characters used as punctuators are ' " # \ ( ) [ ] { } @ , : . ` = ;

iv. Variable: Variables are the data or values which can change during the execution of a program. It is a name given to a location in memory in which the value is stored during the execution of a program.

v. Expression: An expression represents a combination of variables, values and operators, which when evaluated produces result in the form of value.

Example : sum= a+10

vi. Operator: Operators are tokens that does computation (calculation) with designated or given values in an expression. Operators when applied on operands form an expression.

vii. Python Shell: IDLE (GUI) is the standard 'Python Development Environment', to write the codes. IDLE is an acronym of Integrated Development Environment. The interactive interpreter of Python is called 'Python Shell'. It creates, debugs, runs and edits Python Programs from a single interface.

B. 1. Features of Python Programming Language:

- The keywords of Python are in simple English, hence it is easy to learn.
- Python library is portable and compatible with all types of Operating System hence, it is known as platform independent programming language.
- Python is an interpreted language i.e. Python interprets and executes the code, line by line. This also makes program of Python, easy to debug.
- It can be easily integrated with C, C++, Java, etc.
- It is case sensitive, which means PRINT and print are two different words for Python.
- It is free to use.

2. Data types are the kind of data that is to be stored in the variables which is being used while writing a program.

Python imagines the data type of a variable during the execution of program by their syntax.

In Python, there are five standard data types:

- numbers
- string
- list
- tuple
- dictionary

3. For Single Line Comment: Comment line always starts with the symbol #.

   Example : #My First Program

   For Multiple Lines Comment: Comment should be enclosed between pair of triple apostrophe ''' '''.

   Example : '''My
   First
   Program'''

4. Character set in Python consists of valid characters such as alphabets, digits or special characters that are recognized by the library of Python Language.

Alphabets	A–Z or a–z
Digits	0,1,2,3,4,5,6,7,8,9
Special Characters	~ ! @ # % ^ & * ( ) _ - + = | \{}[ ]: ; " ' <> , . ? / , <<, >>
White Spaces	Blank space, Horizontal tab, New line, etc.

5. Guidelines for Creating Identifiers in Python:
   - An identifier is an arbitrary sequence of letters in lower case (a to z) & upper case (A to Z), digits (0 to 9) and underscore (_).
   - The first character of the identifier must be a letter (a to z or A to Z) or an underscore (_). It must not begin with digits (0–9).
   - An identifier must not be a 'Keyword'.
   - An identifier must not contain any special character except underscore (_).
6. Interactive Mode: 'Interactive Mode' allows us to type a set of commands only in a line at the command prompt '>>>'. Python interprets the given command and gives the output when the 'Enter' key is pressed for that line.

   Script Mode: In script mode, we type the set of codes in more than one line in a file and then use the interpreter to execute the complete program from the file.

   Working in interactive mode is convenient for beginners and for testing small modules of code, as we can test them immediately for each line while in script mode, we can code a program with more number of lines and can also save, edit and reuse the code in future.
7. Python, in interactive mode, is good enough to learn, experiment or explore, but the only drawback is that we cannot save the statements for further use and we have to retype all the statements to re-run them.
8. It is that portion of the program in which instructions are written to create a program and execute it.

In Python, there are various keyword or statements that helps to execute some task, for example; print statement is used to display the output.

Syntax : print 'message'; [Or] print variable_name

Example : print ('Welcome to ORANGE EDUCATION')

Output : Welcome to ORANGE EDUCATION

9. Python is being used in many diverse fields such as in Robotics, Scientific Purposes (Used by NASA), Search Engines (Google), YouTube, Hardware Testing (Being used by Intel, Cisco, HP, etc.), Peer to Peer file sharing (Bit Torrent), GUI Interface (Popularly used in GIMP), 3D Animation (Maya, etc.)

C. 1. i. Errors is: The variable 'sum' should not be in single quotes

Correct statement is: print (sum)

(ii) Errors is: First statement should be inside print(' ')

In second statement Print should be in lowercase

Correct: print('Your School Name')

print ('ABC Model School')

2. i. Output:

Grow Gratitude

4

729

0

ii. Output:

6 3

Keep

Smiling

rose rose rose

4 16