Syllabus - Computer Science

Session 2024-25

Class 6th

❖ Introduction to Computers

- Introduction to Computers, Uses of Computers
- **Applications of Computer**: Education, Entertainment, Sports, Communication, Shops, Hospital, Banks, Government Offices, Travel
- **Characteristics of Computer**: Speed, Accuracy, Reliability, Diligence, Automation, Storage
- **Portable Computing Devices**: Mobile (Smart Phones), Tablet Computer, Palmtop Computer, Laptop Computer
- Limitations of Computer

❖ Computer Components

- **Introduction to Basic/Standard Components of A Computer System**: How computer works (Input, Processing, Output)
- **Block Diagram of Computer**: Parts of Central Processing Unit (Memory Unit, Control Unit, Arithmetic Logical Unit (ALU))
- **Types of Computer Memories**: Primary Memory, Secondary Memory
- **Categories of Computer**: Micro Computer (Personal Computer), Mini Computer, Main Frame Computer, Super Computer

❖ Basics of Working with Computers:

- **Operating System**: Windows, DOS, Android
- **Starting Computer System**: Powering On, Logging In
- **Desktop and Its Components**: Icons (My Computer, Network, Recycle Bin, User's Files), Shortcuts, Wallpaper, Changing Wallpaper, Taskbar (Start Button, Quick launch Bar, System Tray, Notification Area, Clock, Active Programs)
- **Working with Windows Applications**: Notepad, WordPad, Paint, Calculator, Using Run Box, Search Box of Start Menu
- **Shutting Down Computer System**: Sleep, Shut Down, Log Off, Restart

❖ MS Paint

- What is Paint?
- How to start the MS-Paint
- **Parts of a Paint Window**: Title Bar, Quick Access Toolbar, Menu Bar (Paint button, Home tab, View tab), Vertical and Horizontal Scroll Bar, Status bar, Work Area
- Saving the Drawing
- **Home Tab Ribbon**: Clipboard (cut, copy, paste), Image (Select Option, Copying a selection, Painting with a selection, Selection option (Crop, Resize and Rotate flip), Invert Color, Tools (Pencil, Fill with Color, Text Tool, Eraser, Color Picker, Magnifier), Brushes, Shapes, Size, Colours (Color Boxes, Color Palette, Edit Colors) Groups
- **View Tab Ribbon**: Zoom, Show or Hide, Display Groups

❖ Hardware and Software

- **Hardware:** Features of Hardware, System Unit (CPU), Motherboard (Hard Drive, Video Card, Processor, FAN, RAM slot, Power Supply, CD/DVD), Important points for taking care of Hardware
- What is Software? Definition
- **Types of Software** - System software, Application Software
- Difference between System Software and Application Software
- Relationship between Hardware & Software

❖ Input Devices

- Input devices, Uses of Input Devices
- Keyboard, Different types of keys on Keyboard, Mouse and its buttons, Mouse pad, Microphone, Scanner, Web Camera, Touch Pad, Bar Code Reader, Light Pen, Joy Stick, Touch Screen, Biometric, Electronic Signature Pad

❖ Output Devices

- Output Devices, Types of output devices
- Monitor (Cathode-Ray Tube (CRT), Flat- Panel Display), Printer (Dot matrix Printer, Inkjet Printer, Laser Printer), Speaker, Headphone, Plotter, Projector
- Difference between Input & Output Devices

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Class 7th

❖ Typing Tutor

- Introduction to Touch typing and Typing Tutor, Position of the fingers on key-board (Home Row, second row, third row, fourth row),
- Numeric key pad, Important Keys on Key-board (Spacebar, Enter key, Backspace key, Shift key, Caps Lock key, Num Lock Key)
- Tips to improve typing speed
- Proper Posture
- Suggestions for Repetitive Stress Injuries during continuous typing

❖ Windows Explorer

- **Windows Explorer**, Opening Windows Explorer, Parts of Windows Explorer (Left Pane, Right Pane), Hierarchy of locations (Favourites, Libraries, Personal Folder, Computer, Control Panel, Recycle Bin) Windows Explorer Views (Small, medium, large and extra-large icons views, Tiles Icons view, List Icons view, Details Icons view, Content Icons view)
- **Working with Files and Folders** (Selecting Items, creating a new Folder, Renaming an Item, Deleting an Item, Copying Item using copy and paste, Moving Item using cut and paste, Copy Item using send to)
- **Personalization/Customizing of Desktop** (Themes, Desktop Background, Screensaver

❖ Microsoft Word

- Introduction, What is Word Processing?, Features of Word Processing software
- Different Word processing software
- **MS Word**, Special Features of MS Word, How to Start MS Word, Parts of MS Word Window (File Menu, Quick Access Toolbar, Title Bar, Tabs, Ribbon,

Dialog Box Launcher, Ruler, Text Area, Vertical and Horizontal Scroll Bars, Status Bar, Document Views, Zoom Slider)

- Creating New Document using MS Word, Opening an existing document, Saving a New/Existing Document
- Selection of text (Using mouse, Using keyboard)
- **Home Tab:** Clipboard Group (Copy/Cut Text, Pasting Text, Format Painter), Font Group (Font face and Font size, Font styles, Font color, Text Highlight color, Text Effects, Change Text Case), Paragraph Group (Bullets and Numbering, Text Alignment, Adjusting Line Spacing, Shading), Editing Group (Find and Replace)
- Undo and Redo Commands
- **Insert Tab:** Pages Group (Page Breaks), Illustrations Group (Picture/Clip Art, Shapes, Smart Art Graphic), Header & Footer Group (Adding and removing Headers and Footers, Page Number), Text Group (Text Boxes, WordArt), Symbols Group (Using Symbols)
- **Picture Tools (Format Tab):** Adjust Group (Corrections, Color, Artistic Effect, Compress picture, Change picture, Reset Picture, Remove Background), Picture Style Group (Picture Style Gallery, Picture Border, Picture Effects), Arrange Group (Position, Wrap Text, Align, Group, Rotate), Size Group (Crop, Height and Width)
- **Page layout Tab:** Page Setup Group (Margins, Orientation, Size, Columns), Page Background Group (Water Mark, Page Color, Page Borders)
- **Review Tab:** Proofing Group (Spelling and Grammar, Word Count)
- Printing Documents
- What is Table?
- **Creating A Table:** Using Table Button, Using Insert Table Option, Using Draw Table Option,
- Entering Data in the Table
- **Modifying A Table:** Inserting Column In a Table, Inserting Rows In a Table, Insert a Cell in a Table, Deleting Columns in a Table, Deleting Rows in a Table, Deleting Cells in a Table, Deleting a Table)
- **Properties of a Table:** Alignment of a Table, Changing the size of Row, Column or Cell

- Splitting Cells, Merging Cells, Splitting Table

❖ Introduction to Multimedia

- Introduction, Component of Multimedia (Text, Sound (Audio), Images, Animation, Video)
- **Requirement for Multimedia:** Hardware requirements (Input Devices, Output Devices, Storage Devices) and software requirements
- **File Formats for Multimedia:** Text Formats, Image Formats, Digital Audio File Formats, Digital Video File Formats
- **Multimedia Presentation:** Types of Multimedia Presentation (Virtual, Slide Presentation, Web Pages)
- **Applications of Multimedia:** Education, Business Systems, Medical Services, Entertainment, Public Places, Multimedia Conferencing

❖ Storage Devices

- What is memory?, Usage of Memory
- **Type of Memory:** Primary Memory (RAM, ROM), Secondary Memory (Hard Disk Drive, External Hard Disk Drive, Floppy Disk, Magnetic Tape, CD, DVD, Pen Drive, Memory Cards)

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Class 8th

❖ Typing Tutor (Punjabi)

- Touch Typing
- **Different Techniques for Typing in Punjabi**: Phonetic fonts, Unicode font, Gurmukhi Keyboard Mapper:
- **Keymaps Of Commonly Used Punjabi Fonts**: Unicode Font – Raavi, Phonetic Fonts – AnmolLipi
- Numeric key pad, Important Keys on Key-board (Spacebar, Enter key, Backspace key, Shift key, Caps Lock key, Num Lock Key)
- Tips to improve typing speed, Proper Posture, Suggestions for Repetitive Stress Injuries during continuous typing

❖ Internet Fundamentals

- What is Internet?, History of Internet
- **Requirement for Internet:** Hardware Requirements, Software Requirements:
- **Facilities provided by internet:** News and Information, Art and Entertainment, On-Line Shopping, Mailing Letters, Health and Fitness, Tourism and Travel, Chatting, Banking Operations, Video Conferencing
- **Internet Connections:** Types of Internet Connections
- **Modem and Its Types:** External Modem and Internal Modem
- Internet Service Providers (ISP)
- **Services provided by Internet:** World Wide Web, Electronic Mail, E-Commerce, Social Networking Sites, Video Conferencing, Chatting, Web Searching
- Tools and Skills required for using Internet
- Web Browsing

❖ Introduction to Information Technology

- **Information Technology:** Need of Information Technology (For Business and Industry, At home, For Training)
- Web Sites, Searching, Web Surfing, Difference Between On-Line and Off-Line, Downloading, Net Banking, On-Line Shopping, How to View On-Line Result, Mobile Technology

❖ MS PowerPoint

- Introduction to PowerPoint, What is Presentation? What is Slide? How to Start/Open PowerPoint?
- **Components of PowerPoint Window:** Title Bar, Quick Access Toolbar, Ribbon and Tabs, Outline/Slides Tabs, Slide Pane, Notes Pane, Status Bar, View Options
- How to Create Photo-Album Presentation?
- **How to Play Presentation for audience:** How to Play Presentation from the Very First Slide, How to Play Presentation from the Current Slide
- Saving and Exiting Presentation
- **How to Create a New Blank Presentation:** Adding Text to Slides, Formatting Text of a Slide,
- Inserting New Slide, How to Change the Slide Layout?
- **How to Change the Appearance of Slides:** Working with Themes, Changing Background Styles, Format Background (Solid Fill, Gradient Fill, Picture or Texture Fill, Pattern Fill)
- Adding Contents to a Slide (WordArt, ClipArt, Tables, SmartArt, Pictures, Movie/Video etc.)
- **Slide View Options in PowerPoint:** Normal view, Slide Sorter view, Reading view, Slide Show view, Zoom Slider
- Working with Transition (Effect Options, Sounds, Duration)
- **Working with Animation**: Animation and its types (Entrance, Emphasis, Exit, Motion Paths), How to Apply Animation, Working with Animation Options (Effect Options, Add Animation, Animation Pane, Animation Painter, Timing Effects, Previewing Animations)
- **Record Slide Show/Narration and Timings**: How to Remove Narration or Timings from a Recorded Slide Show

- **Save Presentation**: as PDF format, as a Video, as a PowerPoint Show, in the form of Picture Files

❖ Generations of Computer

- Introduction to Generations
- **First Generation Computers:** Main features and characteristics of First Generation, Examples of First-Generation Computer Systems
- **Second Generation Computers:** Main features and characteristics of Second Generation with examples
- **Third Generation Computers:** Main features and characteristics of third Generation with examples
- **Fourth Generation Computers:** Main features and characteristics of fourth Generation with examples
- **Fifth Generation Computers:** Main features and characteristics of fifth Generation with examples

Unit-VI: Computer Memories

- What is Memory, Memory units, Types of Memory
- **Internal Memory -** CPU Registers, Cache Memory - Advantages and Disadvantages of cache memory, Primary/Main memory, RAM and its types– SRAM, DRAM, ROM and its types-ROM, PROM, EPROM, EEPROM) Characteristics of the Static and Dynamic RAM, Advantages of ROM
- **External Memory:** Characteristic of Secondary Memory, Sequential Access Devices, Direct Access Devices
- **Physical Structure of Magnetic disks:** Tracks and Sectors

Some Important Practical Topics
8th Class (Computer Science)

1. Practical for Searching any topic using Google Search Engine in any Web Browser (For Example: Open www.google.com in any web browser and then search information about different types of Computers)
2. Practical to view the result of Punjab School Education Board classes using internet.
3. Practical for downloading Images from internet, copying text content from web pages and get them in the word document.
4. Practical to open PowerPoint using different ways.
5. Practical for diplaying/showing information about the different components of PowerPoint Window.
6. Prepare a Photo Album Presentation (using at least 10 photographs)
7. Practical to Save and Close the Presentation in PowerPoint
8. Create a New Blank Presentation showing different Types of Computers using at least 5 slides (Use Text Formatting and Clip-Art/Images etc. in the Presentation)
9. Play Presentation from first slide and current slide using slide show option in PowerPoint.
10. Create Presentation by changing the appearance of slides with the help of Themes/Background Styles/Format Background options in the New/Existing Presentation.
11. Apply Transition Effects in your Presentation (Use Effect Options and Sound Duration in your Presentation)
12. Use Different Types of Animations on Text/Images etc. added in the New/Existing Presentation.
13. Practical for using various Animation options through Animation Pane.
14. Save Presentation in different formats (PDF, Video, Images, PowerPoint Show)
15. Prepare a Presentation in PowerPoint showing the Different Generations of Computers. Prepare a presentation with at least 10 slides and use Text Formatting, Images, Transition Effects, Animation Effects in it.

16. Prepare a Presentation in PowerPoint that shows Different Types Of Computer Memories.
17. Type any essay/topic in MS Word using any punjabi font.

Charts/Models

- Prepare a chart/model showing the various services provided by the Internet.
- Prepare a chart/model related to different Generations of Computers.
- Prepare a chart/model showing different Types of Computer Memories.
- Prepare a chart/model showing the Physical Structure of a Magnetic Disk.

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Class 9th

❖ Networking

- Networking, Need of Networking, Advantages and Disadvantages of Network
- **Components of Computer Networks**: Computer (clients, servers), Network Interface Card (Ethernet Card, Wireless Card), HUB / Switch, Router, Transmission Media
- **Types of Networks**: Personal Area Network (PAN), Local Area Network (LAN), Metropolitan Area Network (MAN), Wide Area Network (WAN)
- **Network Topologies:** Topologies and its types - Bus Topology, Advantages and Disadvantages of Bus Topology, Ring Topology (Single Ring and Dual Ring), Advantages and Disadvantages of Ring Topology, Star Topology, Advantages and Disadvantages of Star Topology, Mesh Topology, Advantages and Disadvantages of Mesh Topology, Tree Topology, Advantages and Disadvantages of Tree Topology, Hybrid Topology, Advantages and Disadvantages of Hybrid Topology
- **Data Communication:** Components of Data Communication (Sender, Medium, Receivers, Protocol), Modes of data transmission (Simplex, Half duplex, Full duplex**)**

❖ Internet Applications

- Introduction to Internet, E-mail, CAPTCHA Code
- Concept of Downloading and Uploading
- Cloud Networking and Cloud Printing
- **Google Apps:** Gmail - Creating new account, Log-in to Gmail account, How to send E-mail, How to Read E-mail, Google Calendar, Google Maps, Google Translate, Google Docs, Google Sheets, Google Slides, Google Form, Google Sites, Google Photos, Google Lens, Google Meet, Google Play Store, Google Drive - Benefits of Google Drive, How to share file(s) from google drive

- **Digital Locker:** Objectives of Digital Locker
- **Internet Threat**s: Virus, Spyware, Trojan horse, Phishing Scams
- **Internet Security:** Anti-virus, Anti-Spyware, Prevention from Trojan Horse, Prevention from Phishing Scam
- **Cyber Crime & Cyber Ethics:** Cyber Crime - Computer as a Target, Computer as a Weapon, Preventive measures against Cyber Crime, Cyber Ethics - Principles of Cyber Ethics, Don'ts and Do's

❖ Microsoft Excel

- Introduction of MS Excel, Feature of MS Excel, Common uses of MS Excel, How to Start MS Excel
- **Components of MS Excel Window:** Quick Access Toolbar, Title Bar, Control buttons, File Tab, Tabs, Ribbon/Toolbar, Dialog Box Launcher, Name box, Formula bar, Scrollbars, Spreadsheet Area, Leaf Bar, Status Bar, View Buttons, Zoom Control, Active Cell
- **MS Excel Terminology:** Workbook, Worksheet, Row, Column, Cell, Active Cell, Cell Address, Comparison between Worksheet and Workbook
- **Working with Data in Excel Worksheets:** Basic functioning in Worksheet - Entering Data (Entering Formula or Function, Entering Contents other than formula or function), Editing a Cell Data, Deleting Data, Selecting Cells, Entering Same Data in a Row or Column - Using Fill Command, Using Copy and Paste, Using Fill Handle
- **Working with Series in Excel Worksheets:** Series of Month/Day Names, Series of Numbers
- **Operations on Workbook and Worksheets:** Operations on Worksheets- Inserting new Worksheet, Renaming Worksheet, Removing Worksheet, Copying a Worksheet, Operations on Workbooks- Creating New Workbook, Saving Workbook, Opening an Existing Workbook
- **Formatting in MS Excel:** Changing the text styles (Font, Size, Font Color, Text Background color, Basic styles), Changing the Cell styles (Cell Borders, Changing cell width, Changing cell height, Merging Cells, Aligning Text, Changing Orientation of Text, Wrapping Text, Applying Number Formats), Conditional Formatting, Formatting as Tables
- **Inserting rows, columns & objects in MS Excel:** Inserting Cells, Inserting Rows, Inserting Columns, Using AutoSum, Inserting Charts

- Introduction of Formulas and Functions, Elements of formulas – Operators and Operands, Operators used in MS Excel Formulas (Arithmetic operators, Comparison operators, String concatenation operator), The Operator Precedence in Excel, Cell Referencing - Relative References, Absolute Reference, Mixed Reference
- Uses of Formula and functions, Using Formulas - Simple use of Arithmetic Operators, Advanced use of Arithmetic Operators with operator precedence, Using formula for calculating the percentage, Using caret (^) operator Using ampersand (&) operator, Using Functions- Mathematical Function (SUM, COUNT , COUNTA , COUNTBLANK, AVERAGE, MIN, MAX, RANK, LARGE, ROUND), Conditional Functions (IF, SUMIF, COUNTIF), String Functions (LEN, LEFT, RIGHT, MID, LOWER, UPPER, PROPER), Date Functions (TODAY, NOW, DAY, MONTH, YEAR)
- **Sorting and Filtering Data:** Sorting Data - Sorting using Home tab ribbon, Sorting Data using Data Tab Filtering Data- Filtering by Data Items, Filtering according to range of data, Filtering by color
- **Working with Data Tools:** Text to columns, Remove Duplicates, Data Validation
- **Setting Page Layout in MS Excel:** Margin- Setting Margins, Applying standard margin, Orientation-Landscape orientation**,** Portrait Orientation, Changing page orientation from Page Layout Tab Ribbon, Size- Changing Size from Page Layout Tab Ribbon, Print Area- Set Print Area Clearing Print Area, Page Break, Scaling- Setting Scaling using Print Preview option (Fit Sheet on One Page, Fit All Columns on One Page, Fit All Rows on One Page, No scaling), Setting Header and Footer, Setting Page Layout using Print Preview Window (Orientation, Size, Margin, Scaling**)**
- **Working with different views in MS Excel:** Normal View (Default View), Page Layout View, Page Break Preview, Custom Views, Full Screen View
- **Protecting Worksheet and Workbook:** Protecting Worksheet, Protecting MS Excel Workbook

❖ E-Governance

- Introduction, Characteristics of Good Governance. What is E – Governance, Four pillars of E-Governance-Connectivity, Knowledge, Data Content, Capital
- Governance vs. E-Governance, History and development of E – Governance, Objectives of E – governance
- **E–Governance Models**- Government to citizens (G2C), Government to businessman (G2B), Government to employees (G2E), Government to government (G2G)
- **Services of E – Governance:** E-Governance Services at National Level, E-Governance Services at State Level, E-Governance Services at Local Level (E-Governance Services in Urban Areas, E-Governance Services in Rural Areas)

❖ Database Management System

- Introduction, Data and Information (Data (or Raw Data), Information (or Processed Data)), Data vs. Information
- **Database Terminology:** Attribute, Record, Table, Database
- File Processing System
- **DBMS:** Definition, Advantages and disadvantages of DBMS
- File Processing System vs DBMS
- **Components of DBMS Environment:** Software, Hardware, Procedures, Data, Users (Application Programmers, Database Administrators (DBA), End-Users)
- **Database Operations:** Data Definition Operations, Data Manipulation Operations, Data Control Operations

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Class 10th

❖ Office Tools

- Introduction, Software and its Types – System and Application Software
- **Different Types of Office Tools:** Word processor Softwares, Spreadsheet Softwares, Presentation Software, Database Systems. Multimedia Tools
- **Online Office Tools:** Common Online Office Tools
- Google Docs -Opening Google Docs, creating a Blank Document using Google Docs, Opening a Microsoft Word Document using Google Docs, downloading document files from Google Docs Collaborating on Documents with Others- Share with people and groups, get link for Viewer, Commenter, Editor; Viewing All the Recent Changes to a Document;
- **Google Sheets-** Opening Google Sheets, creating a Blank spreadsheet using Google Sheets;
- **Google Slides-** Opening Google Slides, creating a Blank presentation using Google Slides;
- Advantages and Disadvantages of Online Office Tools
- Offline Vs Online Office Tools

❖ HTML

- Introduction, HTML, Software Requirements for HTML – Text Editors and Web Browsers
- **Tags and Attributes** - Paired Tags, Unpaired Tags
- Basic Structure of HTML document: HEAD Part, BODY Part; Creating a Web Page with Basic Structure of HTML document, Viewing the Web Page with Basic Structure of HTML document
- **Formatting in HTML:** Bold, Italic, Underline and Strikethrough, Adding Line Break and Horizontal Line, Heading Level (H1 to H6), Making Paragraphs, Superscript and Subscript Text, Working with Fonts (face, size and color attributes), Making Text Size Larger (<BIG>) or Smaller (<SMALL>), Monospaced Font (<TT>), Pre-formatted Text (<PRE>), Center

Alignment (<CENTER>), Marked Formatting (<MARK>), Scrolling Text (<MARQUEE> with Behaviour, Bgcolor, Direction, Height, Loop, Scrollamount, Width attributes, Formatting Body of HTML document (using Background, Bgcolor, Link, Text attributes)

- **Working with Lists:** Unordered List, type attribute of Unordered List; Ordered List, type and start attributes of Ordered List; Definition List; Nesting of Lists
- **Working with Tables:** Using <TABLE>, <TH>, <TD>, <TR>, <CAPTION> tags; Working with attributes of table: Setting Table Height and Width, Setting Table Border and Border Color, Setting Table Backgrounds (Bgcolor, Background attributes), Setting Cell Padding and Cell Spacing, Merging Cells using rowspan and colspan attributes; Changing the Alignment of a Table or Cell Value-Setting Horizontal Alignment (using align attribute), Setting Vertical Alignment (using valign attributes)
- **URLs and Their Types:** Absolute URL, Relative URL-Relative File Path Delimiters
- **Working with Images:** Working with Attributes of <IMG> tag-Setting Alternate Text for the Image, Setting Width and Height of the Image, Setting Image Alignment
- **Working with Hyperlinks:** Different states of links (unvisited, visited, active) Attributes of Anchor Tag: Setting Titles for Links, Setting Target Window; Linking with Images; Link to an Email Address; Named Anchors or Creating Bookmarks
- **Working with Forms:** <FORM> Tag; Action and Method attributes of form; Elements or Controls for the HTML Form-Textbox Control, Text Area Control, Password Field Control, Checkbox Control, Radio button Control, Selection List Control, File Selection Control, Button Control, Submit Button, Reset Button
- **Phases of Web Development:** Information Gathering, Planning, Design & Layout, Development, Testing & Launch, Maintenance

❖ Operating System

- Introduction, Operating System, Services provided by operating System-User Interface, Program execution, I/O operations, File System

manipulation, Communication, Error Detection, Resource Allocation, Protection;

- **Types of Operating Systems:** Batch Operating System, Multi-Programming Operating System, Time-Sharing Operating Systems, Multi-Processing Operating System, Network Operating System, Real Time Operating System, Single-User and Multi-User Operating Systems
- **Computer Security**: CIA Triads-Confidentiality, Integrity, Availability; Computer Security Threats: Malware, Phishing, Rootkit, Key logger; How Do We Secure Our Computer: Latest Anti-Malware software, Password protection, Apply Latest Updates & Patches, Firewall etc.

❖ Desktop Publishing

- **Desktop Publishing:** Definition, Features of Desktop Publishing
- **Desktop –Publishing Software:** Introduction of Microsoft Publisher, Adobe Photoshop, Corel Draw. QuarkXPress, Adobe Dreamweaver, GIMP
- **Word Processing vs. Desktop Publishing:** Similarities between Word Processing and Desktop Publishing, Differences between Word Processing and Desktop Publishing
- **WYSIWYG Feature;** Graphics: 2D Graphics (Raster or Bitmap Graphics, Vector Graphics) 3D Graphics
- Margins, Gutter Margin, Fonts, Frames and Layers
- **Printers:** Impact printers-Dot-Matrix Printers, Daisy-wheel Printers, Line Printers; Non-Impact Printers-Ink-jet printers, Laser printers; Difference between Impact Printer and Non-Impact Printer; Difference between Inkjet Printer and Laser Printer

❖ Microsoft Publisher

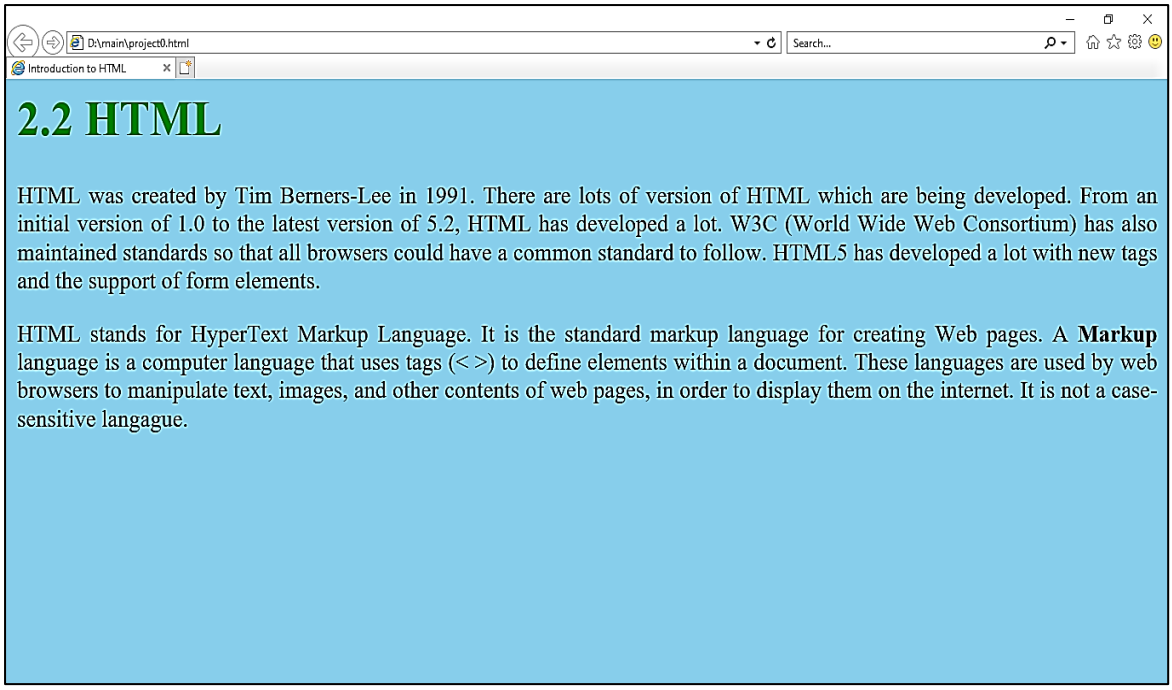
- What is Publisher?, How to start publisher
- **Components of the Publisher Window:** The Quick Access Toolbar, Ribbon and Tabs, File Window,
- **Creating a Publication:** Creating a publication using Blank Layout, Creating a Publication using Templates (Installed Templates, Online Templates, My Templates) Customizing Templates

- **Advertisements:** Brochures-Creating Brochures using MS-Publisher; Newsletters-Creating Newsletters using MS-Publisher, Banners-Creating Banners using MS-Publisher; Business Cards-Creating Business Card in Publisher;
- Award Certificates, Greeting Cards / Invitation Cards / Compliment Cards, Envelops, Letterhead-Creating Letterhead in Publisher, Resumes-Creating Resumes in MS Publisher, Curriculum Vitae (CV); Signs
- Saving Publication, Printing Publication

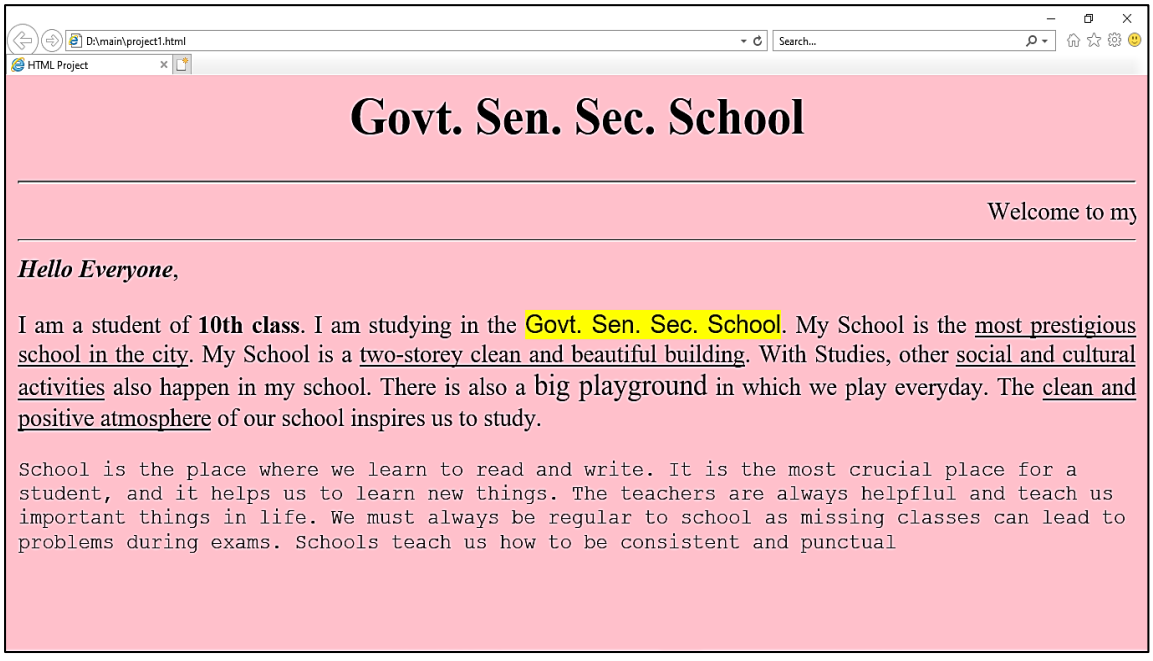
Some Important Practical Activities

10th Class (Computer Science)

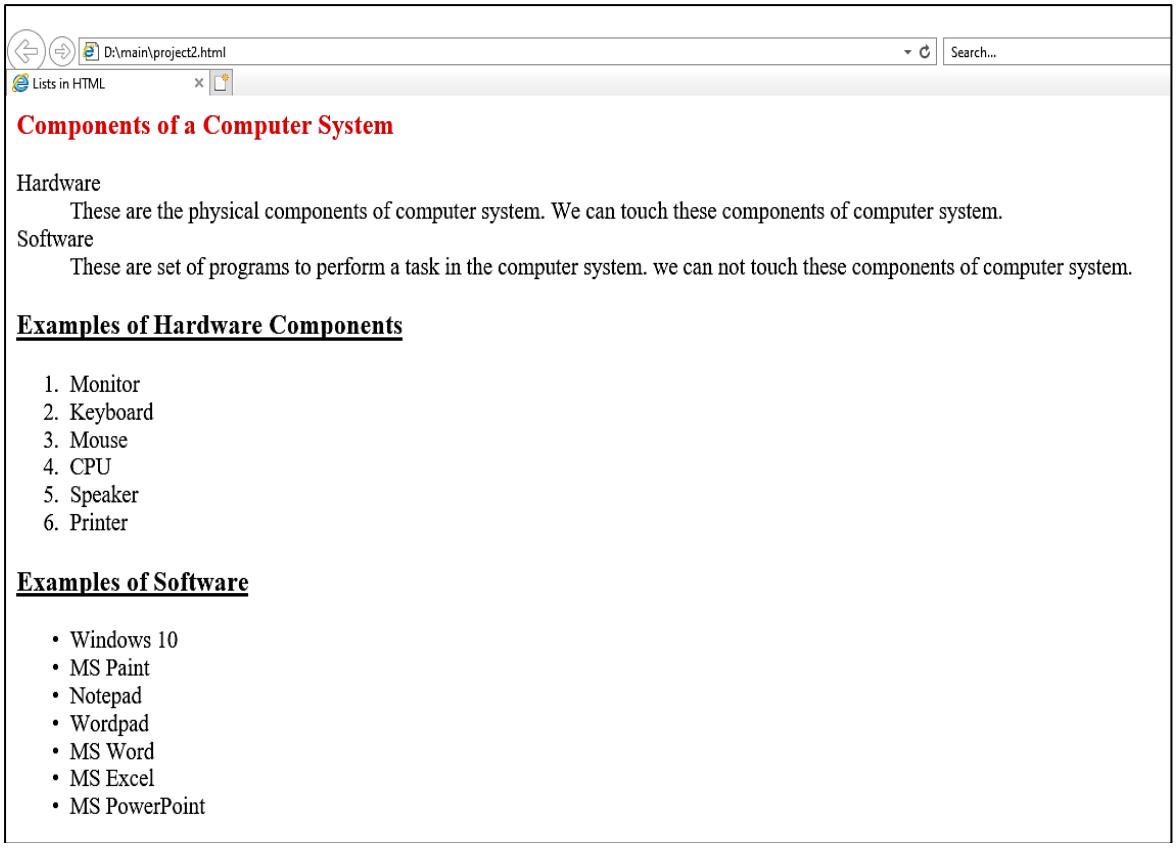
1. **Open Google Docs using Google Chrome web browser and prepare a leave application for urgent Work in it. After preparing the application download it in DOCS and PDF format.**
2. **Open Google Sheets using Google Chrome web browser and prepare the result of 5 students of your class in it. After preparing the result, share the sheet with other students of your class so that they can enter the results of 5 other students in that sheet. Now again open the same sheet on your computer and check the results of students entered by other students.**
3. **Open NOTEPAD++ and create a simple web page using simple HTML structure. Then save it as a webpage with the name MYWEBPAGE and open it in any web browser.**
4. **Create a web page showing an introduction to HTML, as shown in the example below. Set the background color of the body of this web page to skyblue. Save the file as "project0.html" and view the output in a web-browser.**



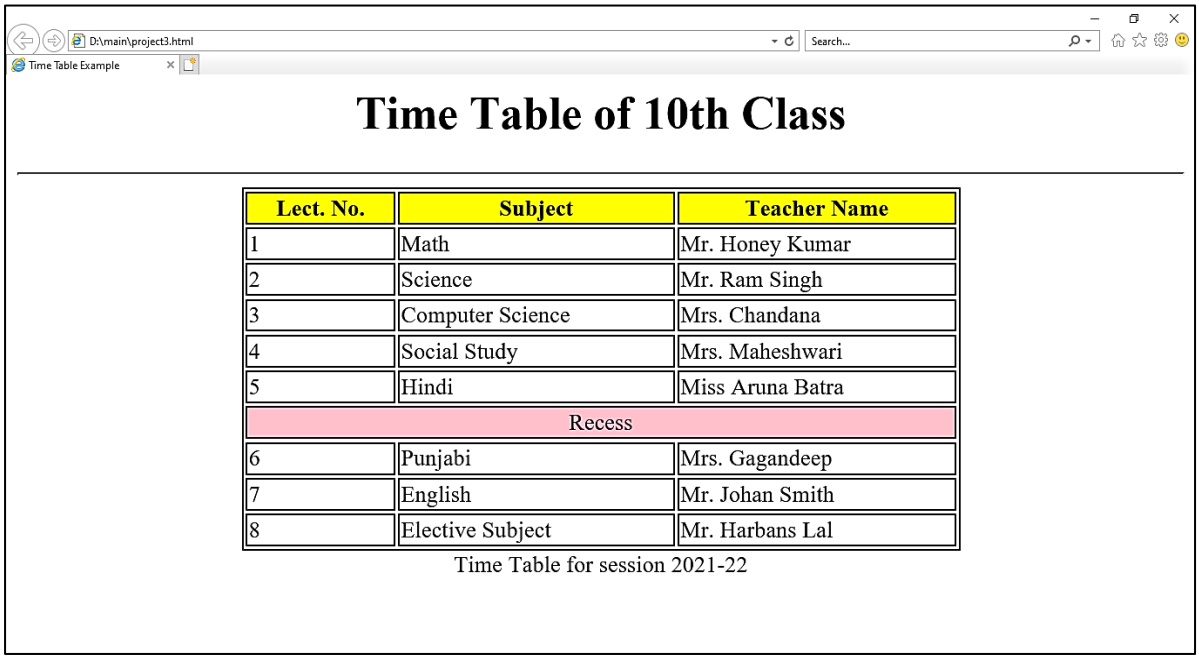
5. **Create the following webpage using the basic HTML tags that you learned in your syllabus:**



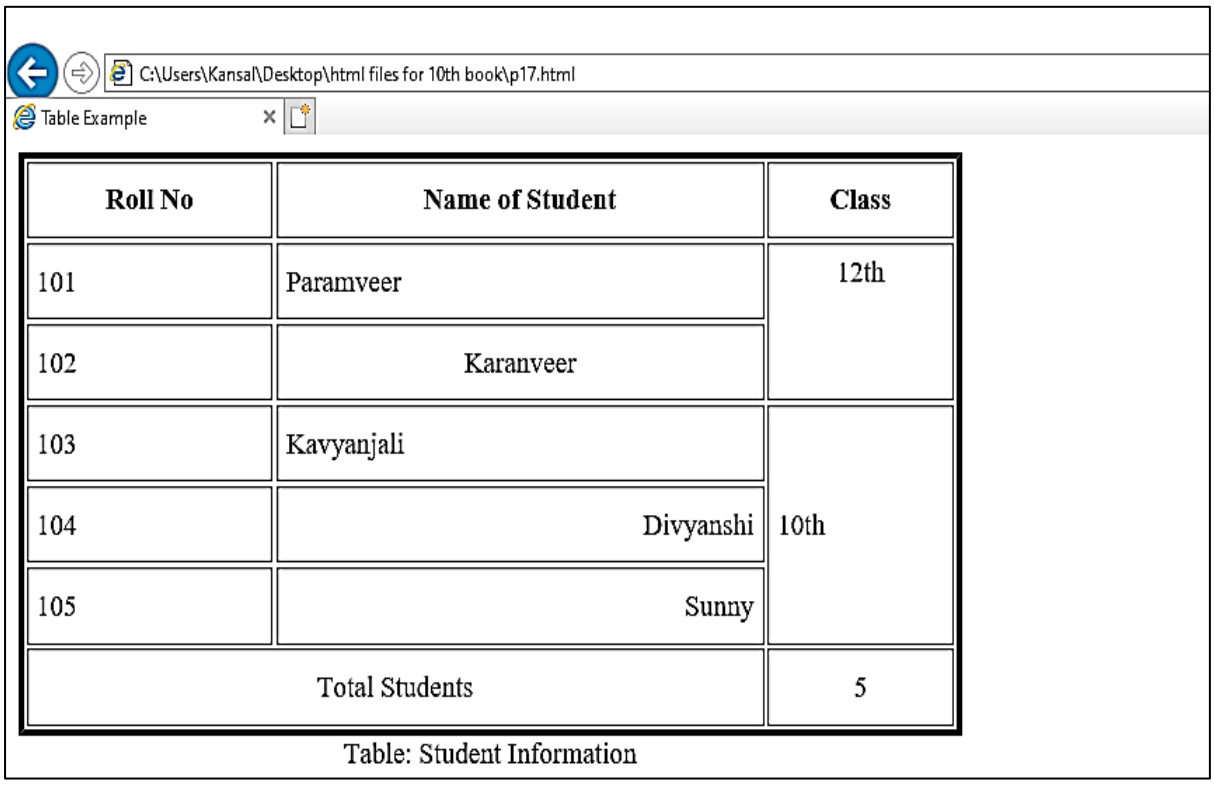
6. **Create a web-page using HTML that displays the output as shown in the web-browser below.**



7. Create time table of your class with the help of table in web page using HTML as shown below:



8. **Create a table in a web page using HTML as per the web page shown below. Use ROWSPAN and COLSPAN attributes to merge table cells and ALIGN and VALIGN attributes to align data in cells**.



Roll No	Name of Student	Class
101	Paramveer	12th
102	Karanveer	
103	Kavyanjali	10th
104	Divyanshi	
105	Sunny	
Total Students		5

Table: Student Information

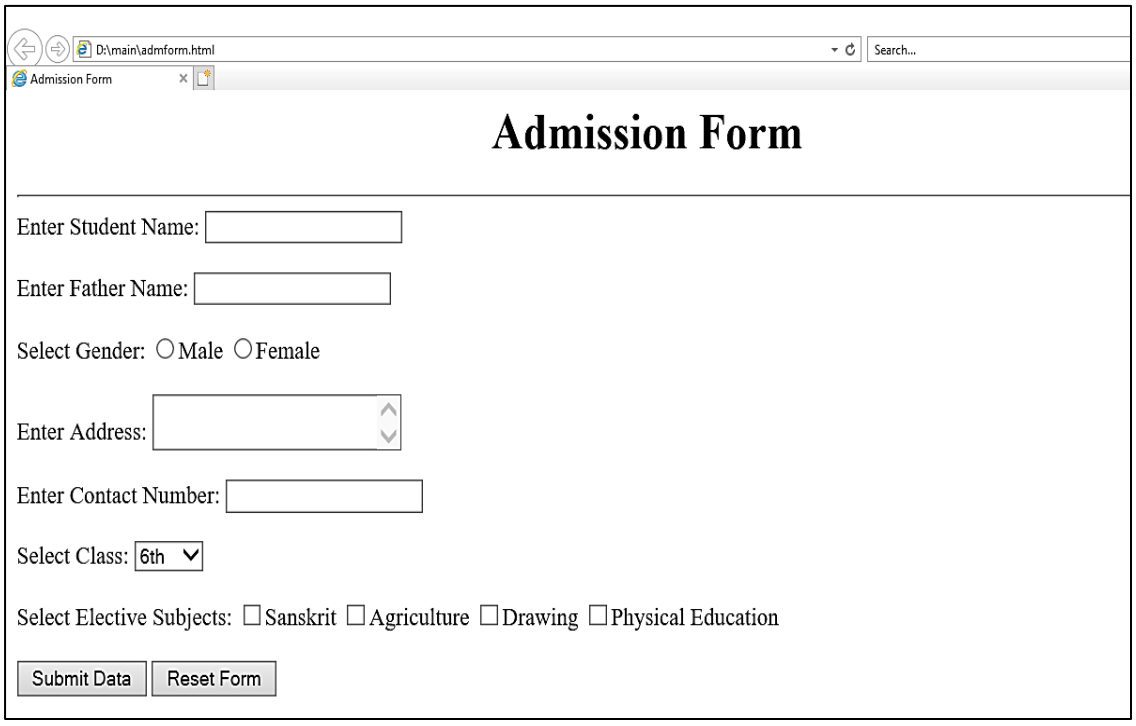
9. **Create your school web page as shown in the figure below and save it as "myschool.html". Show the scrolling text using the MARQUEE tag and download any image from the internet depicting the school building that you can use in your webpage.**

10. Create a web page that displays some useful links of local and global resources, as shown below:

Generate links as below:

- **Link "My School" to the local web page that we created in Activity 9 (“./myschool.html”).**
- **Link "Punjab School Education Board" to its official website “http://www.pseb.ac.in/”.**
- **Link "ePunjabSchool" to its official website “https://www.epunjabschool.gov.in/”.**
- **Link "Ashirwad Portal for Scholarships" to its official website “http://scholarships.punjab.gov.in/”.**

11. Create an "Entry Form" using HTML-Form as shown below. This form uses the controls used in HTML forms like Textboxes, Textareas, Selection Lists, Checkboxes and Buttons etc.

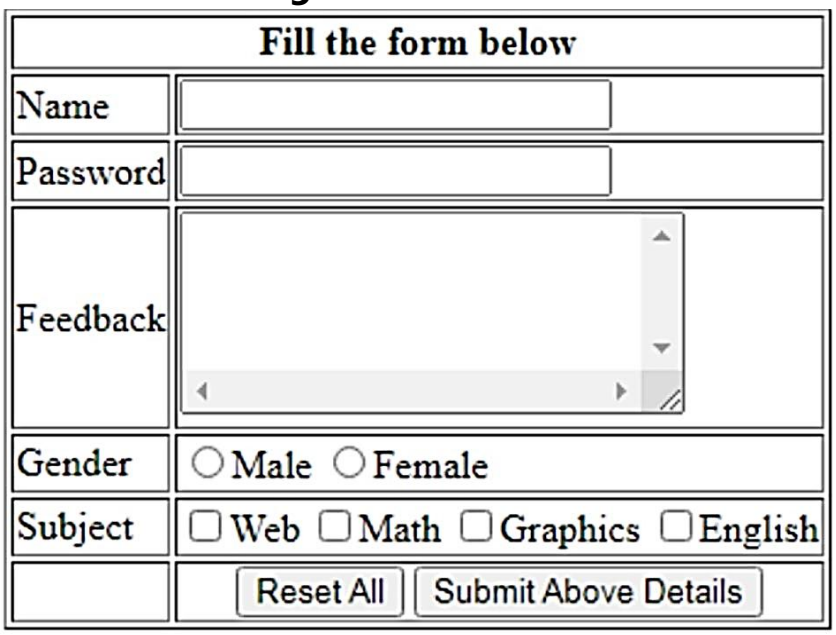


12. Generate the web page using HTML as shown below. You can download images from the internet and use them in the table accordingly and create hyperlinks to the respective websites in the "Favourite Websites" column.

Student Records

S. No.	Image	First Name	Last Name	Class	Favourite Website
1		Mohan Lal	Sharma	10th	Google
2		Kavya	Kumari	10th	YouTube
3		Karanveer	Singh	10th	PSEB

13. **Create a web-form using tables in HTML as shown below**



14. **Create an advertising publication for your school with the help of templates in MS Publisher.**
15. **Prepare Business Cards and Award Certificates for yourself in the MS Publisher.**

Charts/Models

- **Prepare charts/models illustrating different Types of Software.**
- **Create charts/models showing the functions of various Tags and Attributes related to Tables in HTML.**
- **Prepare charts/models related to different Types of Operating Systems.**
- **Create a chart/model showing the difference between Raster (Bitmap) Graphics and Vector Graphics.**
- **Create a chart/model showing the Different Components of the MS Publisher Window.**

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❖ Web Designing with HTML

- Introduction, What is Good Web Design – Simplicity, Consistency, Typography & Usage Text, Multidivisional Design, Pictures, Videos and Audio, Communication and Address, Social Sharing Feature, (F) Design
- Phases of Website Development
- HTML Concept, HTML's Role in the Web, Structure of HTML Documents-Head Part, Body Part; HTML Editor
- **Working with Links and Images:** Working with Links (using href, target, title attributes), Working with Images (using src, alt, width, height, title attribues)
- **Style Sheets**: Benefits of CSS; Types of Style Sheets-Inline style, Internal style sheet, External style sheet; CSS Syntax; CSS Selectors- The Element Selector, The ID Selector, The CLASS Selector, Grouping Selectors
- **Different Style Sheet Properties:** CSS Background, Text, Fonts, Links, Lists, Border, Margin, Padding Properties, CSS Box Model; Example Program for CSS Properties

❖ Usage of Internet

- Internet, Internet Service Provider (ISP), Web Browsers, Bookmarks and Favourites, Identify Secure Sites (HTTPS, Lock Symbol)
- **Internet & its Application:** Communication (What Are the Advantages of Internet Communication, What Are the Types of Internet Communication), Job Search (Ways to use the Internet for your job search: Job search engines, Social Media, Visit employer websites to look for jobs and work opportunities), Online Shopping (Some famous online stores, How to buy a product through online shopping, Advantages and Disadvantages of Shopping Online), Travel (How Internet helps in Travelling, Facility of Fastag in travelling, What are the benefits of using FASTag), Social Networking (Facebook, YouTube, WhatsApp, Instagram, Twitter)
- **Internet Search:** Search Engines (Google.com, Bing.com, Wikipedia.com, Encyclopedia.com), Search Techniques (By Using Specific Keywords, By Simplify Your Search Terms, By Using Quotation Marks, By Removing

Unhelpful Words, Search Using Operators, Combination Searches, Search a Specific Site, Finding Related Sites, Image Search News Search, Map Search)

- Internet and World Wide Web
- **Internet Security:** Internet Threats-Hackers, Viruses, Spyware, Worms, Phishing, Spamming; Ways to protect from the threats

❖ Cyber Threats and Security

- Introduction, What is Cyber?,
- **Cyber Threats/Attacks:** Cyber Threat/Attack Types-Stalking, Piracy, Phishing, Hacking, Spamming, Email Spoofing, Denial of Service Attack /DOS Attack, Web Jacking, Internet Time-Theft, Salami Attack, Data Diddling
- **Causes of Cyber Threats/Attacks**: Easy Access to the Internet, Lack of Technical Information, Non-Use of Security and Privacy, Criminal Wisdom or Feeling of Revenge, Ignorance of IT Crime and Law, Excessive Use of Mobile Technology and Social Media
- **Malware & Its Variants:** Adware, Spyware, Viruses, Ransom ware, Computer Worms, Trojan Horse, Browser Hacking / Hi-Jacking Software, Steelware
- **Cyber Security & Techniques:** What is Cyber-Security Technology and its Types- Authentication, Strong Password, Encryption, Antivirus, Firewall, Digital Signatures
- Cyber Space & WWW
- Introduction to IT Act 2000: Objectives of the IT Act, Features of the IT Act

❖ Computer System and Maintenance

- Introduction, Computer Maintenance and Security
- **Preventive Maintenance**: Basic Guidelines for Preventive Maintenance
- Booting and Safe mode Problems: How to Start Windows in Safe Mode, How to Fix Your PC in Safe Mode-Scan for Malware, Run System Restore, Uninstall Recently Installed Software, Update Hardware Drivers, To check system crashes
- **Installation of Device Drivers:** Download the drivers manually, How to install the driver; Plug and Play Hardware Installation

- Type of Ports: Serial Port, Parallel Port, PS/2 Port, Universal Serial Bus (or USB) Port, VGA Port, Power Connector, Modem Port. Ethernet Port. Digital Video Interface, DVI port
- PC Security Tools: Importance of PC Security tools
- Software Update and Upgrade
- **MS Office Installation:** Installing MS Office, Activation instructions
- Introduction to Windows Operating Systems: Windows 10, Windows 8.1, Windows 7
- Introduction to Thin Client Technology
- **Control Panel:** Display Properties, Mouse and Keyboard, Date and Time, Devices and Printers, Regional Settings, Fonts
- **Utility Programs:** File Compression tools, Disk Defragmentation, Disk Clean-up, Backup and Restore
- Shutting Down Options: Switch User, Log Off, Lock Screen, Restart, Sleep, Hibernate, Shut Down or Turn Off

❖ DBMS

- Introduction, Database, DBMS, Application Areas of DBMS, Data Base Life Cycle, DBMS Working-Designers, Administrators, End Users
- **Architecture of DBMS:** 1-tier DBMS architecture, 2-tier DBMS architecture, 3-tier DBMS architecture
- **Features/ Characteristics of DBMS:** Reducing Data Redundancy, Sharing of Data, Data Integrity, Data Security, Privacy, Backup and Recovery, Data Consistency
- **Limitations of DBMS:** Setup Cost, Database Complexity, Technical staff requirement, Database Failure, Performance
- Cloud Database

❖ Concept of Programming and Programming Languages

- Introduction, Concept of Program and Programming, Programming Languages
- **Types of Programming Languages**- Low Level Languages: Machine Language (Advantages and Disadvantages of Machine Language) Assembly Language (Advantages and Disadvantages of Assembly Language); High Level

Languages: Procedural or Procedure Oriented Languages, Problem-Oriented or Non-Procedural Languages, Object-Oriented Programming Languages, Logic-Oriented languages (Advantages and Disadvantages of High-Level Languages)

- **Language Translator:** Assembler, Interpreter and Compiler
- **Programming Process:** Defining the problem, Planning the Solution (Algorithms, Basic Examples of Algorithms, Flow Charts: Symbols used for flow-charts, Basic Examples of flow charts), Coding the Solution, Compile the program, Testing and Debugging the Program (Syntax Errors, Logical Errors), Documenting the Program

❖ Introduction to C and Basic Structure of C Program

- Introduction and History of C, Why C is called Middle Level Language
- Introduction to C Editors & IDEs: Turbo C, Code::Blocks
- Creating and Executing C Programs, Getting Started with C
- Character set
- **Tokens:** keywords, Identifiers-Naming Rules, Literals (Numeric Literals, Character Literals), Operators, Special Symbols
- Concept of variables & constants and their declarations, Data types – Primitive Data types only
- Header files (stdio.h, conio.h, math.h, string.h) in C, Input and Output Statements in C-scanf() and printf() functions, Structure of a C program

❖ Operators and Expressions in C

- Introduction and Concept of Operator and Operand
- **Expressions:** Numerical Expressions, Logical or Conditional Expressions
- Types of Operators according to number of Operands: Unary operators, Binary operators, Ternary Operator
- **General Classification of Operators**: Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Bitwise Operators, Increment & Decrement Operators (prefix and postfix), Conditional Operators, Additional Operators (sizeof operator)
- **Type Conversion:** Implicit Conversion, Explicit Conversion
- Precedence of Operators

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❖ Office Automation and Typing

- Word Processor: Introduction to MS Word
- Document Writing and Editing in MS Word: Adding new text, Deleting a part of the text, Copying a text, Moving text, Formatting text, Alignment, Line Spacing, Bullets and Numbering
- **Working with Fonts:** Change the Font, Change the Default Font Settings
- **Proofing:** Auto Correct, Spelling & Grammar; Find and Replace
- **Page Setup:** Margins, Orientation, Paper Size; Page Borders; Print Preview & Print
- **MS Excel** – Spread sheet Software; Formula Bar; Working with Formulas-Mathematical Operators for Formulas, Basic steps for creating a formula, Manual Formula
- **Working with Functions:** Steps for using a function, AutoSum, Commonly Used Functions – SUM, COUNT, MAX, MIN, AVERAGE, NOW, TODAY, CONCATENATE, UPPER, PROPER; Relational Operators for Conditional/Logical Functions, Conditional Functions-IF, SUMIF, COUNTIF
- Border and Shading, Custom Filter, Custom Sort, Freeze Panes
- Page Setup and Printing Options: Margins, Orientation, Size, Print Area, Breaks, Background, Print Titles
- **File Conversion**: How to convert an Excel file to a PDF
- **Typing Technique:** Touch Typing, Voice Typing
- Font Conversion Tool

❖ Control Statements in C

- Introduction, Control Statements and their types-Branching, Looping and Jumping
- **Branching Control Statements**: Conditional Control Structures or Decision-Making Statement (Simple if statement, if else statement, else if statement, Nested-if statement), Multi Way Conditional (Case) Control Structures (switch-case statement)

- **Looping Control Statements:** Pre-test Loops (for loop, while loop); Post-Test Loop (do while loop)
- **Jumping Control Statements:** goto statement, break statement, continue statement

❖ Computer Network

- Introduction to Network, Need of Networking
- **The OSI Layers:** Physical Layer, Data-Link Layer, Network Layer, Transport Layer, Session Layer, Presentation Layer, Application Layer
- **Network Devices:** Hub (Active Hub, Passive Hub, Intelligence hub), Switch, Routers- Functions of a Router, Repeater, Bridge- Types of Bridges, Gateway, Brouter
- **Communication Media:** Guided Media- Twisted Pair Cable (Unshielded Twisted Pair (UTP), Shielded Twisted Pair (STP), Advantages and Disadvantages of twisted pair cable), Coaxial Cable (Advantages and Disadvantages of Coaxial cable), Optical Fibre (Advantages and Disadvantages of optical fibre); Unguided Media- Infrared (Applications of Infrared Waves in Communications), NFC, Bluetooth, Wi-Fi, Radio Waves (Applications, Advantages and Disadvantages of Radiowaves), Micro waves (Applications, Advantages and Disadvantages of Microwave), Satellites (Advantages and Disadvantages of Satellite Microwave)
- **Communication Modes:** Categories of transmission Modes- Simplex Mode (Advantage and Disadvantages of Simplex mode), Half-Duplex Mode (Advantage and Disadvantages of Half-Duplex mode), Full Duplex Mode (Advantage and Disadvantages of Full-Duplex mode)
- **Network Sharing**: Printer Sharing
- **Protocol:** TCP/IP, FTP, PPP, SMTP, POP/IMAP, HTTP
- Network Component Addresses: MAC Address, IP Address

❖ Current Trends in Information Technology

- Introduction to Information Technology, Definition of Information Technology

- **Applications of Information Technology**: Business, Classroom Education, Online Education, Finance, Health, Media, Transport, Telecommunication, Entertainment, Defence
- **Current Trends in Information Technology:** Mobile Internet, Wi-Fi Technology, Bluetooth technology, E-Commerce, M-Commerce Technology, GPS Technology, Android Technology, Virtual Reality, Nanotechnology, 5G Technologies, Internet of Things (IoT) Technology, Multimedia Technology, Cloud Computing: Cloud Printing, Cloud Storage (Advantages and Disadvantages)

❖ Artificial Intelligence and Expert System

- Introduction to AI, What is Artificial Intelligence?
- **Types of AI:** Type-1 (Narrow Artificial Intelligence (NAI), General Artificial Intelligence (GAI), Strong Artificial Intelligence (SAI)), Type-1I (Reactive Machines, Limited Memory Machine, Theory of Mind, Self-Awareness)
- **Importance of AI:** Game Playing, Voice Recognition, Understanding the Natural Language, Computer Vision& analysis
- **Applications of AI:** Intrusion Detection System, Gaming, Natural Language Processing, Machine Learning, Expert Systems, Vision Systems, Speech Recognition, Handwriting Recognition, Intelligent Robots
- Purpose or Goal of AI, Pros and Cons of Artificial Intelligence
- **Expert Systems**: Components of Expert System (User Interface, Inference Engine, Knowledge Base), Characteristics of Expert Systems, Limitations of Expert systems, Comparison between Human and Expert Systems
- **Robotics**: Generations of Robots, Applications of Robotics, Introduction of Languages used to develop AI (Python, R, Lisp, Prolog, Java)

❖ Digitalization

- Introduction to Digitalization
- **E-Commerce**: Types of E-Commerce-Business to Business (B2B), Business to Customer (B2C), Customer to Customer (C2C), Customer to Business (C2B); Advantages of E-Commerce, Disadvantages of E-Commerce

- **Digital or Online Payment**: Online Payment Methods-Credit Card, Debit Card, E-Wallets, NetBanking / Banking Apps, Mobile Banking, BHIM App (Bharat Interface for Money); Benefits of Online Payment
- **E-Learning**: MOOCs (Massive Open Online Courses), SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds), SWAYAM PRABHA
- National Academy Depository (NAD)
- **Digital Locker**: How to use DigiLocker

❖ E-Governance (Part-2)

- Introduction, Concept of E-Governance
- **Working System of E-Governance:** G2G (Government to Government), G2C (Government to Citizen), G2B (Government to Business), G2E (Government to Employee), G2N (Government to NGOs)
- **Levels of E-Governance:** National Level, Domestic Level/State Level, International Level; Benefits & Drawbacks of E-Governance;
- What is Smart Governance?; Sarba Sewa/Sewa Kendra/Sanjh Kendra
- **Awareness of Aadhar**: What is an Aadhar, Features of Aadhar, Uses of Aadhar
- **Information System**: Components of Information System, Types of Information System-Transaction Processing System (TPS), Decision Support System (DSS), Executive Information System (EIS), Management Information System (MIS), Expert System

❖ Image Editing and File Conversion Tools

- Introduction
- **Popular Image Editing Tools/Software:** GIMP (GNU Image Manipulation Program), GIMP Features, GIMP supported image formats, GIMP Preferences
- **Working with Image Editor-GIMP:** Creating a new image, Opening an image for editing, Saving an image, Export As, Image Properties, Auto Correct, Brightness and Contrast, Crop Settings, Rotate and Flip Settings, Flip, Resize, Aspect Ratio, Compression Settings

- Working with Image Layers: Layer Properties, Adding Layer, Deleting Layer, Merge Layers, Scaling a Layer
- **Image Editing Tools**: Selection Tools, Eraser Tool, Text Tool, Move Tool, Align Tool, Scale Tool, Blur / Sharpen Tool, Bucket Fill Tool
- **Masking:** Adding Layer Mask
- Image File Conversions

❖ Audio and Video Editing

- Introduction, Audio Converter-Codec, CD ripping, Encoder Settings (Lossy Audio, Lossless Audio, Uncompressed Audio)
- Free Audio Converter – Fre:ac: Features of Fre:ac, Add Files to Software, Removing Files
- **Video Editing:** Popular Video Editing Software
- **Working with Video Editors:** Project, Import Files (Audio/Video/Images), Video Transitions, Video Effects, Titles, Storyboard and Timeline, Video Preview (Monitor), Tracks, Export Video, Saving & Opening Projects, Video File Formats, Video Cutting, Video Joining (Merge)
- Free Video Cutter Joiner: Cutting / Splitting Video Files Using Free Video Cutter Joiner, Join/Merge Video Files Using Free Video Cutter Joiner

Some Important Practical Activities

12th Class (Computer Science)

1. **After preparing the resume in MS Word as shown below, save the Word document with your name, print it and save your resume in PDF format:**

Your Name
Mobile-: 91- Your Contact Number

youremailid@gmail.com

Objective:

To work with a group of people where I can utilize my acquired knowledge & skills for the betterment of organization and subsequently gain expertise in my area of work.

Education qualification

- 12th from PSEB Punjab in 2020 with **90.33%.**
- **10th** from PSEB Punjab in 2018 with **86.50%.**

Personal Qualities

- Always willing to learn new things
- Flexible to work with any team environment
- Never give up
- Team work ability
- Punctual and Disciplined
- Do things with Patience and perseverance

Personal Information

Father's Name	Your Father Name
Date of Birth:	DD-MM-YYYY
Gender:	Male/Female
Nationality:	Indian
Address	House No, Street No, Address Line1 Address Line 2 Pin Code: XXXXXX, District: AAAAAAA, Punjab

Hobbies

- Social restructuring through awareness and education
- Imparting knowledge to others
- Meditating.

Declaration

I hereby declare that all the above stated information is correct and true to the best of my knowledge and belief.

Date: DD-MM-YYYY

Place: Your City Name **Signature**

2. Prepare the Word document as shown below:

Sales Invoice

Invoice Number: INV0076 Submitted Date: 2020-05-04

To

Account Name:
E-mail: murli@abc.com
Phone Number: 7865389176
Point of Contact: David

Invoice Details

Invoice Date: 2020-05-04
PO Date: 2020-05-04
PO Number: 123
PO Amount: $450.00
Payment Terms: Net30

Invoice Items:

Product	Price	Quantity	Total Price
Camera	$200.00	1	$200.00
TV	$150.00	1	$150.00
Video Game	$100.00	1	$100.00

Invoice Summary

Subtotal: $450.00	Tax: $10.00	Freight Charges: 4.00	
		Total Invoice Amount:	$464.00

3. Prepare the result sheet in Excel as shown below. It generates the result using formulas and functions and displays the result data by formatting it with the help of Conditional Formatting:

S.No.	Name of the Student	Class	Pol Science	History	Comp Sci	Total	Percentage	Result
1	Mohinder Singh	12th	56	86	98	240	80.00	Pass
2	Rajpal Kaur	12th	23	56	95	151	50.33	Pass
3	Monika Devi	12th	63	56	63	182	60.67	Pass
4	Palwinder Kaur	12th	Absent	Absent	Absent	Absent	Absent	Absent
5	Ramesh Lal	12th	63	65	56	184	61.33	Pass
6	Yunus Khan	12th	98	85	90	273	91.00	Pass
7	Meera Devi	12th	13	33	30	0	0.00	Fail
8	Ram Kumar	12th	69	56	80	205	68.33	Pass
9	John	12th	Absent	Absent	Absent	Absent	Absent	Absent
10	Rakesh Kumar	12th	62	75	75	212	70.67	Pass

Total Number of Students	10
Total Absent Students	2
No of Students Passed	7
No of Students Failed	1
Max Marks	273
Min Marks	0

4. **Prepare Time Table of your class in Excel.**
5. **Find and correct the errors in the following program Code and then Prepare the updated program on Computer System. Note down its Output.**

```
#include<stdio.h>
int main()
{
if(5>10);
printf("Hello")
else;
printf("Welcome")
return (0);
}
```

6. **Write a program in C Language to find the larger of two numbers.**
7. **Write a program in C language to check if the input character is a Vowel character or not.**
8. **Find and correct the errors in the following program code of loop in C Language and Prepare the updated program on Computer System. Note down its Output.**

```
#include<stdio.h>
int main()
{
int i;
for(i=1,i<=10,i++);
printf("\n%d"i);
return (0);
}
```

9. **Prepare a program to find the Factorial of a Number in C Language.**
10. **Download the syllabus and ebooks of your subjects from the official website of Punjab School Education Board (https://www.pseb.ac.in/).**
11. **Create your account on Digi locker and download your Aadhaar Card or 10th Class DMC.**
12. **Edit an image using any Image Editing Software and make necessary changes in it as per your requirement.**
13. **Compress the size of any image and save it in PDF format.**

14. **Create a movie by joining different photos with the help of any Video Editing Software. Also insert Titles, Transition Effects etc. in the movie.**
15. **Merge and Splits some audio/video files with the help of any Audio/Video Cutter/Joiner.**

Charts/Models

- **Prepare a chart/model showing the various types of Control Statements used in C Language**
- **Prepare charts/models illustrating different Types of Communication Media**
- **Prepare charts/models showing Types of Communication Modes with suitable Examples**
- **Prepare charts/models showing Current Trends in Information Technology (IT)**
- **Prepare a chart/model showing the various Components of the Expert System**
- **Prepare a chart/model illustrating the Types of E-Governance**