

# Lab report



**ICT (Information and Communication Technology Fundemental)**

**For the degree of bachelor of science in computer science**

**Session 2k24**

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# Lab 1

## 1. Typing practices (Typing tutor)

### 1. Touch Typing:

What it is: Touch typing is the technique of typing without looking at the keyboard, relying on muscle memory for key placement.

Benefits: Increases typing speed and accuracy, reduces strain on eyes, and allows for faster text input.

Practice Tip: Start with the home row (ASDF JKL;) and gradually expand to the rest of the keyboard.

### 2. Online Typing Tutors:

Keybr.com: This website provides randomized words and gradually introduces all the letters of the alphabet, offering a way to practice typing without looking at the keyboard.

TypingClub: Offers lessons starting with basic typing to advanced techniques. Provides feedback and tracks progress.

10FastFingers: A site that helps you measure your typing speed and offers competitive typing tests.

Ratatype: Offers lessons, typing tests, and certification for improved typing skills.

### 3. Typing Games:

TypeRacer: A fun game where you race against others by typing a passage as quickly and accurately as possible.

Nitrotype: A racing game where your car speeds up based on your typing speed. It's great for competitive typing practice.

TypingAttack: A game that helps improve typing speed and accuracy by typing words to destroy incoming alien ships.



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#### **4. Typing Practice Apps:**

Typing Master (Windows): A typing tutor software that provides various lessons and tests, with feedback on areas that need improvement.

KeyBlaze (Windows, Mac): A software with built-in lessons and customizable exercises for learners at all levels.

#### **5. Daily Typing Routine:**

Start Slow: Focus on accuracy before speed. Make sure you're typing correctly.

Consistency: Practice regularly, even if it's just for 10–15 minutes a day.

Posture and Ergonomics: Ensure you're typing in a comfortable position with a proper keyboard setup to avoid strain and injury.

By combining these tools and methods, you can steadily improve your typing skills.

## **2.Internal Components of computer ( Recognition+understanding )**

### **1. Central Processing Unit (CPU)**

Role: The brain of the computer; executes instructions from software by performing calculations and logical operations.

Main Parts:

Control Unit (CU): Directs the flow of data and instructions.

Arithmetic Logic Unit (ALU): Handles mathematical and logical operations.

Cache: Small, fast memory for storing frequently used data.

### **2. Motherboard**

Role: The main circuit board; connects all components, enabling communication.

Key Features:

Slots for CPU, RAM, storage, and expansion cards.



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Houses the chipset, which manages data flow between components.

### **3. Random Access Memory (RAM)**

Role: Temporary storage for data and programs currently in use; allows quick access by the CPU.

Characteristics:

Volatile (data is lost when power is off).

Typically measured in GB (e.g., 8GB, 16GB).

### **4. Storage Devices**

Role: Long-term data storage.

Types:

Hard Disk Drive (HDD): Uses spinning disks and magnetic storage.

Solid State Drive (SSD): Faster, uses flash memory with no moving parts.

NVMe SSDs: High-speed SSDs connected via PCIe slots.

### **5. Power Supply Unit (PSU)**

Role: Converts electrical power from an outlet to usable power for the computer's components. It

Features:

Provides different voltage levels.

Often includes cooling mechanisms.

### **6. Graphics Processing Unit (GPU)**

Role: Specialized for rendering images, video, and animations; crucial for gaming and professional graphics work.

Types:

Integrated GPU (within the CPU).

Dedicated GPU (separate card).



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## **7. Cooling Systems**

Role: Prevents overheating of components like CPU and GPU.

Types:

Air Cooling: Uses fans and heatsinks.

Liquid Cooling: Uses liquid and radiators.

## **8. BIOS/UEFI**

Role: Basic Input/Output System or Unified Extensible Firmware Interface; initiates hardware during boot-up and provides a platform for the OS.

Stored in: Non-volatile memory (e.g., EEPROM).

## **9. Expansion Cards**

Role: Add extra functionality (e.g., sound cards, network cards).

Connected via: PCI or PCIe slots.

## **10. Input/Output (I/O) Ports**

Role: Allows connection of external devices.

Examples:

USB, HDMI, Ethernet, Audio jacks.

Understanding these components and their interactions helps you grasp how computers operate and how to troubleshoot or upgrade them.



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## Lab 2

### 1. Window Installation

**Steps:**

#### 1. Measure the Window Opening

Measure the width and height of the window opening.

Ensure the new window fits within the rough opening with about a 1/4-inch gap on each side for adjustments.

#### 2. Remove the Old Window

Use a pry bar to remove any interior or exterior trim.



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Carefully take out the old window sash and frame.

Clean the opening, removing old caulk, nails, or debris.

### **3. Check and Prepare the Opening**

Ensure the opening is level, plumb, and square. Use shims to adjust if necessary.

Apply flashing tape around the opening to protect against water infiltration.

### **4. Dry Fit the New Window**

Place the new window into the opening to check the fit.

Adjust shims as needed to center and level the window.

### **5. Install the Window**

Apply a continuous bead of caulk to the backside of the nailing flange or window frame.

Place the window into the opening, pressing firmly.

Secure the window with screws or nails through the nailing flange or pre-drilled holes in the frame.



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Ensure the window is level and plumb, adjusting shims as needed.

## 6. Seal the Window

Apply flashing tape over the nailing flange or screw heads.

Use caulk around the exterior perimeter of the window to seal against water penetration.

## 7. Insulate Around the Window

Fill any gaps between the window frame and the rough opening with spray foam or fiberglass insulation.

Avoid overfilling, as this can warp the window frame.

## 8. Install Interior/Exterior Trim

Reinstall or replace interior and exterior trim.

Caulk around the trim for a finished, weatherproof look.

## 9. Final Checks

Test the window to ensure it opens, closes, and locks properly.



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Clean up and inspect for any missed gaps or defects.

## 2.CPU assembling

Here's a step-by-step guide on how to assemble a CPU (Central Processing Unit) onto a motherboard:

### Tools and Materials Needed:

CPU

Compatible motherboard

Thermal paste (if not pre-applied on the CPU cooler)

CPU cooler (fan or liquid cooler)

Small screwdriver (typically Phillips)

Anti-static wrist strap (optional, but recommended)

### Steps:

#### 1. Prepare Your Workspace

Work in a clean, static-free environment.



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Use an anti-static wrist strap or periodically touch a metal object to discharge any static electricity.

## **2. Unbox the CPU and Motherboard Carefully**

Handle the CPU only by its edges; avoid touching the pins on the bottom to prevent damage.

## **3. Locate the CPU Socket on the Motherboard**

Find the CPU socket on your motherboard (typically in the center).

Check for a small triangle or marking on the corner of the socket, as this will help you align the CPU correctly.

## **4. Open the CPU Socket Lever**

Lift the CPU socket lever (usually a metal arm) to open the CPU retention bracket.

Gently pull the lever out and up to unlock the socket.

## **5. Align and Place the CPU**

Locate the triangle or alignment marker on the corner of the CPU and match it with the one on the socket.



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Gently place the CPU into the socket without using any force. It should fit snugly and naturally.

## 6. Secure the CPU in Place

Once the CPU is seated, lower the retention bracket over it.

Press the lever down and lock it back in place to secure the CPU.

## 7. Apply Thermal Paste (if necessary)

If your CPU cooler doesn't have pre-applied thermal paste, apply a small pea-sized amount in the center of the CPU.

Spread it slightly to ensure even coverage when the cooler is installed.

## 8. Attach the CPU Cooler

Align the CPU cooler's mounting bracket with the mounting holes around the CPU socket.

Attach the cooler according to its instructions (it may clip on, screw in, or use another mounting mechanism).



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Connect the cooler's fan cable to the CPU\_FAN header on the motherboard.

## 9. Check the Installation

Ensure the cooler is securely mounted and the CPU fan cable is connected.

Inspect the area to make sure there are no loose components or cables around the CPU.

**Additional Steps (for Post-Assembly)**

**Insert the Motherboard into the Case:** Once the CPU and cooler are installed, you can mount the motherboard in the computer case.

**Install RAM and Other Components:** Proceed with installing RAM, GPU, and other components.

**Power Up and Test:** After assembling the entire system, power it up and verify the CPU is functioning by checking the BIOS or system diagnostics.

This should cover the essentials for assembling a CPU onto a motherboard.



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## **Lab 3**

### **1. Motherboard and its internal structure**

A motherboard, also known as the mainboard or system board, is the primary circuit board in a computer that connects and allows communication between all the hardware components. It provides the essential framework for the processor, memory, storage devices, and peripheral components to work together. Here's an overview of its key internal structure and components:



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## **1. CPU Socket**

The central processing unit (CPU) is placed in this socket, which is one of the most important components of the motherboard. The socket type depends on the CPU model (e.g., Intel or AMD). It allows communication between the CPU and other components on the motherboard.

## **2. Memory Slots (RAM Slots)**

These are where the system's memory (RAM) modules are installed. The number of slots can vary (typically 2, 4, or more), and the memory type (DDR4, DDR5, etc.) depends on the motherboard's design.

## **3. Chipset**

The chipset manages data flow between the CPU, memory, and peripherals. It's often divided into two parts:

Northbridge (Memory Controller Hub): Handles communication between the CPU, RAM, and high-speed devices like the GPU.

Southbridge (I/O Controller Hub): Manages lower-speed connections, such as USB, SATA, audio, and Ethernet.

## **4. Power Connectors**

The motherboard requires power from the power supply unit (PSU). There are typically two main power connectors:

24-pin ATX power connector: Powers the motherboard and most of the connected components.

4 or 8-pin CPU power connector: Supplies power to the CPU.

## **5. Expansion Slots (PCI/PCIe Slots)**

These slots are used to add expansion cards, such as graphics cards (GPU), sound cards, network interface cards (NICs), and storage controllers. PCIe (Peripheral Component Interconnect Express) slots are the most common in modern motherboards, supporting faster data transfer rates.

## **6. Storage Connectors**

SATA Ports: These are used to connect traditional hard drives (HDDs), solid-state drives



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(SSDs), and optical drives.

M.2 Slots: A more modern interface for connecting high-speed SSDs and other devices, offering faster speeds than SATA.

## 7. Integrated Graphics

Some motherboards come with integrated graphics (IGP), allowing you to use the computer without a dedicated GPU. The GPU is built into the CPU or the chipset.

## 8. Audio and Network Ports

These ports include the onboard sound card, Ethernet ports, and audio jacks for input and output (such as microphones, speakers, or headphones).

## 9. USB Ports

These connectors allow the motherboard to interact with peripheral devices such as keyboards, mice, printers, and storage devices. There are different versions of USB ports, such as USB 2.0, USB 3.0, and USB-C, providing varying data transfer speeds.

## 10. BIOS/UEFI Chip

The Basic Input/Output System (BIOS) or Unified Extensible Firmware Interface (UEFI) is firmware stored in a chip on the motherboard. It is essential for the computer's startup process and configuration of hardware settings before the operating system takes control.

## 11. Heat Sinks and Cooling Solutions

Many motherboards have built-in heat sinks for cooling the chipset and voltage regulators. More advanced motherboards may also have integrated or optional water-cooling solutions.

## 12. Form Factor

The physical size and layout of the motherboard are determined by its form factor, with the most common being ATX, microATX, and mini-ITX. These factors dictate the number of components the motherboard can hold and its compatibility with various computer cases.

## 13. Internal Connectors

These are used for connecting various internal components, such as:



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Front panel connectors for power, reset buttons, and LEDs.

Case fan headers for controlling case cooling fans.

Internal USB headers for adding USB ports to the front of the case.

## 14. CMOS Battery

This small battery (often a CR2032 coin cell) powers the CMOS chip, which stores system settings like date, time, and hardware configuration when the computer is powered off.

Each of these components and connections plays a critical role in ensuring that the computer functions correctly, and their layout and integration will vary depending on the motherboard's design and intended use.

## Lab4

### 1. Introduction to MS Office

A motherboard, also known as the mainboard or system board, is the primary circuit board in a computer that connects and allows communication between all the hardware components. It provides the essential framework for the processor, memory, storage devices, and peripheral components to work together. Here's an overview of its key internal structure and components:



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## User Interface

### 1.Ribbon:

The toolbar at the top of the MS Word window, which provides easy access to various commands grouped under tabs like Home, Insert, Layout, and Review.

### Quick Access Toolbar:

Located above the Ribbon, this toolbar provides quick access to commonly used commands, such as Save, Undo, and Redo.

### Document Area:

The main area where you type and format your text.

### 2.Font and Paragraph Formatting:

MS Word offers extensive formatting options, including font style, size, color, and paragraph alignment, line spacing, and indentation.

### 3.Styles:

Predefined formatting options that allow you to apply consistent styles to headings, subheadings, and other text elements.

### 4.Clipboard:

Allows users to cut, copy, and paste text and other objects within the document or between other documents.

### 5.Page Layout:

MS Word provides tools for adjusting page orientation, size, and margins. Users can also insert page breaks and section breaks to organize content.

### 6.Insert Tools:

Images, Tables, and Shapes: You can add images, tables, and various shapes to make documents visually engaging.

### 7.Headers and Footers:



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Add consistent information, such as page numbers, document titles, or author names, across pages.

Charts and SmartArt: Useful for inserting graphical elements, like flowcharts or organizational charts.

## **8.Text editing and formatting:**

Font and Paragraph Formatting: MS Word offers extensive formatting options, including font style, size, color, and paragraph alignment, line spacing, and indentation.

### **Styles:**

Predefined formatting options that allow you to apply consistent styles to headings, subheadings, and other text elements.

### **Clipboard:**

Allows users to cut, copy, and paste text and other objects within the document or between other documents.

## **Review and proofreading tools**

### **Spell Check and Grammar Check:**

Word automatically highlights spelling and grammar errors and offers suggestions for corrections.

### **Thesaurus:**

Helps users find synonyms and improve word choice.

### **Track Changes and Comments:**

Useful in collaborative environments, enabling others to review, comment, and suggest changes to the document.

### **Document Protection and Security:**

MS Word allows users to protect documents with passwords, control editing rights, and restrict formatting, helping maintain document integrity.

### **Saving and Sharing Options:**

Word documents can be saved in various formats, including .docx, .pdf, and .rtf, and users can



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directly share documents via email or cloud services like OneDrive.

## Templates

MS Word provides pre-made templates for various document types, including letters, resumes, reports, and newsletters, allowing users to start with a pre-designed layout.

## Macros

Allows users to record repetitive tasks as a sequence, known as a macro, to save time by automating complex formatting or editing processes.

## Common uses of MS Word

Writing and editing professional documents such as letters, resumes, and reports.

Creating complex documents that include images, charts, and tables.

Collaborating on documents with multiple users by using review features.

Preparing academic papers, project proposals, or research reports with proper formatting.

## Advantages of using MS Word

**User-Friendly Interface:** Easy for beginners yet powerful for advanced users.

**Compatibility:**

Compatible with many file formats and integrates well with other Microsoft Office apps.

**Wide Range of Tools:**

Provides a variety of editing, formatting, and design tools.

**Collaborative Features:**

Supports real-time collaboration, especially in cloud-based versions.



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MS Word is an essential tool for anyone who works with documents and is known for its versatility and ease of use, which have made it a standard in workplaces, schools, and personal use worldwide.

## 2. MS Word basic Features

Microsoft Word offers a variety of basic features that make it an essential tool for creating, editing, and formatting text documents. Here are some of the fundamental features of MS Word:

### 1. Text Editing

**Typing:** The primary function of MS Word is text input. You can type and edit text in the document area.

**Cut, Copy, Paste:** You can cut, copy, and paste text to move or duplicate content.

**Undo/Redo:** Allows you to quickly undo or redo changes (Ctrl + Z for undo, Ctrl + Y for redo).

### 2. Font Formatting

**Font Style and Size:** Change the font to a variety of styles (e.g., Arial, Times New Roman) and adjust the size to suit the document's purpose.

**Bold, Italic, and Underline:** Basic text styling to emphasize certain parts of your document.

**Font Color:** Change the color of your text for highlighting or decorative purposes.

### 3. Paragraph Formatting

**Alignment:** You can align text to the left, center, right, or justify it across the page.

**Line Spacing:** Adjust the amount of space between lines of text (single, 1.5, double, etc.).

**Bullets and Numbering:** Easily create lists using bullet points or numbered lists.

**Indentation:** Adjust the indentation of paragraphs for a cleaner, structured layout.

### 4. Page Layout



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**Margins:** Adjust the top, bottom, left, and right margins of the document.

**Orientation:** Switch between portrait and landscape page orientation.

**Page Size:** Choose from various page sizes like A4, letter, etc., depending on the document's requirements.

## 5. Insert Features

**Images:** Add images or pictures from your computer or online to your document.

**Tables:** Create tables to organize data neatly within the document.

**Shapes:** Insert shapes (e.g., circles, squares, lines) to enhance your document design.

**Links:** Insert hyperlinks to external websites or internal bookmarks within the document.

## 6. Spell Check and Grammar

**Spell Checking:** MS Word automatically checks your spelling as you type, underlining mistakes in red.

**Grammar Checking:** Similar to spelling, grammar errors are underlined in blue or green.

**Thesaurus:** You can right-click a word to access synonyms for better word choices.

## 7. Document Formatting

**Styles:** Apply predefined styles to headings, body text, and other document elements for consistent formatting.

**Themes:** Apply a set of coordinated colors, fonts, and effects to give your document a professional look.

**Headers and Footers:** Add content that repeats on every page, such as page numbers, document title, or your name.

## 8. Saving and File Management

**Save/Save As:** You can save your document in different formats, such as .docx, .pdf, or .rtf.

**AutoSave:** MS Word can automatically save your document as you work, reducing the risk of data loss.

**Version History:** In cloud-based versions like Word for Office 365, you can access previous versions of your document.

## 9. Print Options



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Print Preview: View how your document will look once printed.

Page Setup: Adjust the settings such as the number of pages per sheet or print quality.

Print: Send your document to a printer directly from MS Word.

## 10. Find and Replace

Find: Search for specific words or phrases within your document.

Replace: Replace a word or phrase with another throughout the entire document or in specific sections.

## 11. Comments and Review

Comments: Insert comments to leave notes or reminders in the document, which are useful for collaborative work.

Track Changes: Track edits made by multiple authors, allowing users to accept or reject changes.

## 12. Templates

Pre-designed Templates: MS Word offers a wide selection of templates for different document types, such as resumes, letters, reports, and newsletters.

## 13. Basic Document Navigation

Scroll: Move through the document by scrolling vertically or horizontally.

Go To: Jump to a specific section, page, or object (e.g., table, graphic) in the document.

Navigation Pane: Organize and search through large documents by headings or sections.

## 14. Undo/Redo Actions

Undo: Revert any recent changes (keyboard shortcut: Ctrl + Z).

Redo: Reapply changes that were undone (keyboard shortcut: Ctrl + Y).

These basic features of MS Word help users create well-formatted, professional documents easily. The intuitive interface and powerful tools allow for both simple and advanced document creation tasks.



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## Lab 5

# 1. MS word Advanced features including mail merge, table of contents, section breaks and references, headers/footers efficiently

Here's an overview of the advanced features in Microsoft Word that you mentioned:

### 1. Mail Merge

Mail Merge is a powerful tool for generating personalized documents like letters, labels, or emails by combining a main document with a data source.

#### Steps to use Mail Merge:

- 1) Go to Mailings tab and select Start Mail Merge.
- 2) Choose the type of document (Letters, Email Messages, Labels, etc.).
- 3) Click Select Recipients to use an existing data source (Excel, Outlook contacts) or create a new one.
- 4) Insert fields using Insert Merge Field (e.g., Name, Address).
- 5) Preview results and finish by clicking Finish & Merge.

### 2. Table of Contents (TOC)

A Table of Contents provides an automatic summary of document headings.



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## **How to create a TOC:**

- 1) Ensure your document uses Heading Styles (Heading 1, Heading 2, etc.).
- 2) Go to the References tab and click Table of Contents.
- 3) Choose a built-in style or create a custom one.
- 4) Update the TOC easily when changes are made using Update Table.

## **3. Section Breaks**

Section Breaks allow different formatting (e.g., page layout, headers/footers) within the same document.

### **Types of Section Breaks:**

- 1) Next Page: Starts a new section on the next page.
- 2) Continuous: Starts a new section on the same page.
- 3) Even/Odd Page: Starts a new section on the next even or odd page.

### **How to insert Section Breaks:**

Place the cursor where the break is needed.

Go to Layout tab > Breaks > choose a type.

## **4. References (Citations & Bibliography)**

Word offers tools for managing sources and inserting citations.

### **Steps:**

- 1) Go to References tab.
- 2) Click Insert Citation to add new sources or reference existing ones.
- 3) Use Bibliography to insert a formatted bibliography.
- 4) Word supports different citation styles like APA, MLA, or Chicago.



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## 5. Headers and Footers

Headers and Footers provide consistent information like page numbers, document title, or chapter names at the top/bottom of pages.

### Steps to insert and manage:

- 1) Go to the Insert tab and choose Header or Footer.
- 2) Select a predefined style or create a custom one.
- 3) Use Page Number to insert automatic numbering.
- 4) To create different headers/footers for sections, use Link to Previous to toggle connections between sections.

### Efficient Tips:

- 1) **Shortcut Keys:** Use Ctrl+F2 to quickly preview print settings.
- 2) **Navigation Pane:** Easily view and navigate sections using Ctrl+F to open the pane.
- 3) **Quick Updates:** Right-click TOC or citation entries and select Update Field.



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# Lab 6

## 1. Using Mendeley

Mendeley is a reference management software and academic social network that helps researchers manage, share, and cite research papers. It is particularly popular for organizing references and creating bibliographies. Here's how you can use Mendeley effectively:

### 1. Getting Started

Download and Install: Download Mendeley Desktop or Mendeley Reference Manager from the official website.

Create an Account: Sign up for a free account to sync your library across devices.

### 2. Adding References

Drag and Drop: Drag PDFs directly into the Mendeley interface, and it will extract metadata automatically.

Manual Entry: Add references manually using the "Add New" button if you don't have a PDF.

Web Importer: Install the Mendeley Web Importer browser extension to add references directly from web pages or databases.

### 3. Organizing References

Folders: Create folders to organize your references by project or topic.

Tags: Use tags for quick searches and categorization.

Notes and Highlights: Add notes or highlight text in PDFs for easy reference.

### 4. Collaborating with Others

Groups: Create public or private groups to share references with collaborators.

Sharing: Share papers and notes within groups for joint projects.

### 5. Citing and Bibliographies



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Word Plugin: Install the Mendeley Cite add-on for Microsoft Word or LibreOffice to insert citations and generate bibliographies in various styles (APA, MLA, Chicago, etc.).

Drag-and-Drop Bibliography: Drag references directly from Mendeley into documents for quick bibliographies.

## 6. Searching and Discovering

Search Your Library: Use keywords to find specific references in your library.

Discover New Research: Browse recommendations and related papers based on your library and profile.

## 7. Syncing and Backup

Sync your library regularly to access your references across devices or on the Mendeley web .

## 2. Grammarly & PDF Element

Here's how Grammarly and PDF elements (like editing and management tools) can enhance your productivity:

### Grammarly: Writing Assistant

Grammarly helps improve the quality and correctness of your writing by identifying grammar, spelling, punctuation, style, and tone issues.

### How to Use Grammarly

#### Install Grammarly:



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Download and install the Grammarly desktop app or browser extension (Chrome, Edge, etc.).

You can also use the Grammarly keyboard for mobile or integrate it with MS Word.

#### **Features:**

Grammar and Spell Check: Automatically corrects errors.

Clarity Suggestions: Offers rewrites to improve sentence structure.

Tone Detector: Suggests changes based on your desired tone (formal, casual, etc.).

Plagiarism Checker (Premium): Checks your text against online sources.

Citation Suggestions: Provides suggestions for citing sources properly.

#### **Use Cases:**

Writing academic papers, emails, blog posts, or professional reports.

Ensuring formal tone and error-free content for submissions.

#### **Platforms Supported:**

Works in browsers, MS Word, Google Docs, and dedicated apps.

#### **Benefits of Grammarly:**

Saves time on proofreading.

Enhances clarity and engagement in writing.

Improves consistency in tone and style.

PDF Tools (e.g., Adobe Acrobat, Wondershare PDFelement): PDF Editing and Management

#### **Common Features of PDF Tools:**



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## **Edit PDFs:**

Add, delete, or modify text and images in PDF documents.

Adjust fonts, sizes, and formatting.

## **Convert Files:**

Convert PDFs to Word, Excel, PPT, or image files and vice versa.

Maintain formatting during conversion.

## **Annotate and Comment:**

Highlight, underline, or strike through text.

Add comments, sticky notes, and shapes for reviews.

## **Merge and Split PDFs:**

Combine multiple PDFs into a single document.

Split large PDFs into smaller, manageable files.

## **Forms and Signatures:**

Fill in and save PDF forms.

Add electronic or digital signatures to documents.

## **OCR (Optical Character Recognition):**

Recognizes text in scanned or image-based PDFs for editing and searching.

## **Protect and Secure:**



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**Add passwords, restrict editing, or redact sensitive information.**

How to Use PDFelement (Example: Wondershare PDFelement):

Download and Install: Install PDFelement from the official website.

Open PDFs: Drag and drop your PDF into the interface.

Edit or Convert: Use the toolbar to edit, convert, or annotate.

Save and Share: Save changes and share directly via email or cloud services.

### **Combining Grammarly and PDF Tools**

Polishing Documents: Copy text from PDFs, use Grammarly to refine, and reinsert the improved text into the PDF using a PDF editor.

Collaborating: Use PDF annotation features to comment, then Grammarly to finalize text.

Academic Use: Grammarly ensures correct citations and grammar, while PDF tools manage research papers or digital submissions.

## **3. Automation with Macros Create and run macros for repetitive tasks**

Creating and running macros to automate repetitive tasks can significantly save time and improve efficiency. Here's a guide to using macros for automation:



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## What Are Macros?

Macros are a sequence of recorded actions or instructions that can be replayed to perform repetitive tasks automatically. They are commonly used in tools like Microsoft Office (Excel, Word), Google Sheets, and other software.

## How to Create and Run Macros

### 1. Microsoft Office (Excel, Word, PowerPoint)

Macros in Microsoft Office are typically created using VBA (Visual Basic for Applications).

Steps to Create a Macro in Excel (or Word):

Enable Macros:

Go to File > Options > Trust Center > Trust Center Settings > Macro Settings.

Enable "Enable all macros" (if safe).

Record a Macro:

Go to the Developer tab (enable it in Options if not visible).

Click Record Macro:

Give it a name and, optionally, assign a shortcut key.

Choose where to save the macro (This Workbook, New Workbook, etc.).

Perform the actions you want to automate (e.g., formatting, calculations).

Click Stop Recording when done.

Run the Macro:



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Go to Developer > Macros.

Select the macro from the list and click Run.

Edit a Macro (Advanced Users):

Click Developer > Macros > Edit.

Modify the VBA code as needed.

Example VBA Code (Excel):

vba

Copy code

```
Sub FormatData()
```

```
    Range("A1:D100").Font.Bold = True
```

```
    Range("A1:D100").Interior.Color = RGB(220, 230, 241)
```

```
End Sub
```

## 2. Google Sheets

Macros in Google Sheets are built using Google Apps Script.

Steps to Create a Macro:

Record a Macro:

Go to Extensions > Macros > Record Macro.

Perform the actions you want to automate (e.g., sorting data, formatting).

Stop recording and save the macro with a name.

\*\*Run a Ma



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## 4. PDF to word conversion

Converting a PDF to Word format is a common task for editing or reusing the content. There are several methods to achieve this, using both online tools and software. Here's how:

### 1. Using Online Tools

Online converters are quick and convenient but may have limitations like file size or privacy concerns.

#### Steps:

Visit a trusted tool:

Adobe PDF to Word Converter

Smallpdf

ILovePDF

#### Upload the PDF:

Drag and drop the file or select it from your device.

#### Convert and Download:

Wait for the conversion to complete, then download the Word file.

### 2. Using Adobe Acrobat

Adobe Acrobat provides high-quality conversions and preserves formatting better than most tools.

#### Steps:

Open the PDF in Adobe Acrobat:



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Use Adobe Acrobat Pro (not the free Reader version).

Export to Word:

Go to File > Export To > Microsoft Word > Word Document.

Save the File:

Choose a location and save the Word document.

### **3. Using Microsoft Word**

Microsoft Word itself can open and convert PDFs into editable Word documents.

Steps:

Open Microsoft Word.

Go to File > Open, and select the PDF file.

Word will convert the PDF into an editable document.

Save the file as a Word document (.docx).

### **4. Using PDF Editors (e.g., Wondershare PDFelement)**

Many PDF editors include PDF-to-Word conversion as a built-in feature.

Steps:

Open the PDF in the software (e.g., PDFelement, Foxit PhantomPDF).

Select the Convert to Word option from the toolbar.

Save the converted file.

### **5. Using Google Docs (Free Option)**

Google Docs allows you to convert PDFs into editable documents, although formatting may vary.



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Steps:

Upload the PDF to Google Drive.

Open the PDF in Google Docs by right-clicking and selecting Open with > Google Docs.

Go to File > Download > Microsoft Word (.docx).

## 6. Using Dedicated Software

You can also use specialized software for PDF conversions, like:

Nitro PDF

PDF Converter Pro

Soda PDF

Tips for Best Results

Simple PDFs: Basic text documents convert well using most tools.

Complex PDFs: For PDFs with images, tables, or advanced formatting, tools like Adobe Acrobat or Nitro PDF yield better results.

Privacy: For sensitive documents, use offline software to avoid privacy risks.

## 5. Referencing Tools & Citations

Using referencing tools and citation managers can save time and ensure accuracy in academic and professional writing. Here's a guide to some of the most popular referencing tools and their features:



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## **Popular Referencing Tools**

### **Mendeley**

Features:

Manage and organize references.

Generate citations and bibliographies in various styles.

Collaborate with groups for shared projects.

Integration: Microsoft Word, LibreOffice, and BibTeX for LaTeX users.

Best for: Researchers needing a collaborative environment.

### **Zotero**

Features:

Automatically collect references from websites.

Organize references into collections and add tags.

Generate citations in multiple styles.

Integration: Works with Word, Google Docs, and other platforms.

Best for: Users needing seamless browser integration for reference gathering.

### **EndNote**

Features:

Advanced reference management and formatting.

Attach and annotate PDFs.

Share references with collaborators.



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Integration: Works with Word, Google Docs, and more.

Best for: Large research projects with detailed reference management.

### **BibTeX (for LaTeX Users)**

Features:

A tool for managing bibliographies in LaTeX documents.

Requires a .bib file to store references.

Best for: Researchers writing scientific papers in LaTeX.

### **RefWorks**

Features:

Cloud-based reference management.

Share references with team members.

Annotate and organize PDFs.

Best for: Institutional use with strong collaborative features.

### **Grammarly Citation Suggestions**

Features:

Helps flag missing citations.

Provides basic citation style recommendations (Premium version).

Best for: Quick checks for citation accuracy.

### **Citation Machine / EasyBib**

Features:



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Generate citations one at a time for free.

Choose from APA, MLA, Chicago, and other styles.

Best for: Quick, one-time citation needs.

## How to Use Referencing Tools

Install the Tool:

Download desktop applications or browser extensions as needed.

### Import References:

Add references manually, import from databases, or use web importers.

### Organize References:

Use folders, tags, and groups to keep your references organized by project or topic.

### Cite While You Write:

Use plugins or add-ons for Word, Google Docs, or LaTeX to insert in-text citations and generate bibliographies automatically.

### Export Bibliography:

Export your references in the required citation style (APA, MLA, Chicago, etc.).

## Common Citation Styles

**APA (American Psychological Association):** Social sciences, psychology.

**MLA (Modern Language Association):** Humanities, literature.

**Chicago/Turabian:** History, business.

**Harvard:** Common in the UK and Australia.

**IEEE:** Engineering, computer science.

**Vancouver:** Medicine, health sciences.

## Tips for Effective Referencing

**Check the Style Guide:** Always follow the specific style guide required for your project.



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Keep References Organized: Use tools like Mendeley or Zotero to manage references throughout your research.

Verify Accuracy: Double-check citations and bibliographies before submitting.

## 6. endnotes

Endnotes are references or citations placed at the end of a document, chapter, or section, typically used to credit sources, provide additional information, or explain certain terms. They are similar to footnotes, but unlike footnotes, which appear at the bottom of the page, endnotes are collected in one place at the end of the text. Here's how they generally work:

Placement: Endnotes are numbered sequentially and placed at the end of the document or chapter.

Reference Numbers: Each endnote is marked by a superscript number that corresponds to the reference in the main text.

Content: Endnotes provide further explanation, citation of sources, or commentary relevant to the main text.

Formatting: In academic writing or publishing, endnotes often follow a specific citation style (e.g., APA, MLA, Chicago).



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# Lab 7

## 1. Mail managements

Mail management refers to the processes and systems used to handle, organize, and track incoming and outgoing mail. It can involve both physical (paper-based) and electronic (email) communications. Effective mail management is crucial for ensuring timely responses, organizing information, and maintaining productivity. Here are some key components of mail management:

### 1. Physical Mail Management

Sorting: Incoming mail is sorted by type (personal, business, urgent, etc.) and priority (immediate, routine).

Categorization: Documents can be categorized by subject, sender, or purpose (e.g., bills, correspondence, legal documents).

Filing: Documents are filed physically in cabinets or stored in digital formats for easy retrieval.

Distribution: Mail is distributed to the relevant department or individual within an organization.

Archiving: Older, non-active documents are archived for long-term storage and compliance.

### 2. Email Management

Filtering: Emails are filtered into folders based on predefined rules (e.g., spam filtering, priority emails).



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Organization: Email inboxes are organized by topic, project, or sender to avoid clutter.

Tracking and Response: Keeping track of incoming messages and ensuring timely responses.

Archiving: Archiving important or old emails to prevent overload in the inbox and keep relevant emails accessible.

### **3. Digital Mail Systems**

Automated Sorting: Use of software tools to categorize, prioritize, and forward mail based on its content or sender.

Cloud-Based Solutions: Storing mail in cloud platforms for easy access, sharing, and collaboration.

Mail Scanning and Digitization: Converting physical mail into digital format for easier processing and storage.

### **4. Best Practices for Efficient Mail Management**

Set Clear Policies: Establish guidelines for handling and responding to different types of mail (e.g., urgent, personal, business-related).

Automate Where Possible: Use software tools for filtering and sorting emails, tracking correspondence, and scanning physical mail.

Stay Organized: Create a system for categorizing and archiving important mail/documents to avoid clutter.

Prioritize: Ensure that time-sensitive or high-priority mail is handled promptly.

Good mail management helps ensure smooth communication, effective time management, and proper record-keeping.

## **2. Collaborative Tools & Document**

**Protection,( Track changes and comments for collaborative work, Master reviewing and comparing documents, Protect documents with**



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## **(passwords and control editing permissions)**

**Collaborative Tools & Document Protection** are essential for teams working together efficiently while maintaining the security and integrity of their documents. Here's how these elements function in document management:

### **1. Track Changes and Comments for Collaborative Work**

Collaborative tools allow multiple people to work on the same document, track edits, and leave feedback without losing sight of previous versions.

**Track Changes:** This feature, commonly found in word processing software like Microsoft Word or Google Docs, allows collaborators to make edits that are automatically highlighted, making it easy to see who made each change. It tracks additions, deletions, and formatting changes.

**Comments:** Users can insert comments on specific parts of the document, enabling feedback, clarification, or suggestions without altering the main text. This is especially useful in the review process.

**Versions:** Many collaborative tools offer version control, allowing you to revert to earlier drafts or compare different versions of the document. Google Docs, for instance, provides a version history where you can see edits made over time and by whom.

### **Best Practices:**

Regularly save versions for review and comparison.

Be clear when adding comments or suggestions, ensuring the intended purpose is easy



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to understand.

Encourage the use of tracked changes for clarity when edits are substantial.

## 2. Master Reviewing and Comparing Documents

Reviewing and comparing documents are important in scenarios such as contract reviews, academic papers, or any other form of collaborative writing or editing.

**Document Comparison Tools:** Many platforms like Microsoft Word offer a "Compare" feature that allows you to compare two versions of a document side by side. This helps identify all changes made from one version to the next.

**Merge Documents:** Tools like Word's "Combine" feature allow you to merge multiple reviewed documents into one master document. This ensures no feedback is missed and that all edits are incorporated.

**Track Comments and Edits Across Versions:** Some advanced collaborative tools allow you to track both comments and edits from different collaborators, making it easier to synthesize feedback and create a final draft.

**Best Practices:**

Clearly identify who made which changes in the document (tracked changes and color-coding can help with this).

Resolve comments and mark changes as "accepted" or "rejected" to finalize the document.

Regularly review the document after each major change to ensure accuracy.

## 3. Protect Documents with Passwords and Control Editing Permissions

Protecting your document is crucial to ensure that only authorized people can view or edit sensitive information. This is especially important in legal, financial, or business-related contexts.

**Password Protection:** You can set a password for the document or file, ensuring that only those with the password can access it. Microsoft Word, Google Docs, and PDF



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editors offer built-in options for password protection.

#### Permissions and Restrictions:

**View vs. Edit:** Platforms like Google Docs, Microsoft OneDrive, or Dropbox allow you to set permissions such that certain users can only view the document, while others have the ability to edit.

**Restricting Downloading and Copying:** In Google Docs, you can disable the ability for viewers to download, print, or copy content, adding an extra layer of protection for sensitive material.

**Limit Editing by Section:** Some platforms allow you to control who can edit specific parts of the document, useful for collaborative work where different sections are handled by different people.

#### Best Practices:

Use strong, unique passwords to protect sensitive documents.

Regularly update permissions to reflect changes in who needs access (e.g., adding team members or removing former ones).

Regularly back up documents in case of errors or unwanted changes.

#### Tools for Collaboration and Document Protection:

**Google Docs/Sheets/Slides:** Real-time collaboration, comment functionality, version control, and permission settings.

**Microsoft Office 365 (Word, Excel, etc.):** Track changes, comments, version history, and password protection.

**Dropbox/OneDrive:** Shared folders, document permissions, and real-time collaboration.

**PDF Editors (Adobe Acrobat):** Adding password protection and controlling permissions for PDFs.

**Trello/Asana (for collaborative work):** Task management tools that integrate with document-sharing platforms for seamless collaboration.

**Final Thoughts:** By using collaborative tools effectively and implementing strong document protection strategies, teams can work together seamlessly while



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safeguarding the integrity and confidentiality of their documents.

## Lab 8

### 1. Data Visualization and Advanced Features (Creating Charts and Graphs (Bar, Line, Pie),

Data visualization is a crucial aspect of data analysis and presentation. Here's an overview of creating charts and graphs using various tools:

\*Types of Charts and Graphs\*



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1. **\*Bar Charts\***: Compare categorical data across different groups.
2. **\*Line Charts\***: Show trends over time or across categories.
3. **\*Pie Charts\***: Display proportional data, often used for categorical data.

#### **\*Data Visualization Tools\***

1. **\*Microsoft Excel\***: Built-in charting tools for various chart types.
2. **\*Google Data Studio\***: Free tool for

#### **2. Conditional Formatting,**

Conditional formatting is a powerful tool used in data analysis to highlight and visualize data based on specific conditions. Here's an overview:

#### **\*Types of Conditional Formatting\***

Conditional formatting is a powerful tool used in data analysis to highlight and visualize data based on specific conditions. Here's an overview:

### **\*Types of Conditional Formatting\***

1. **\*Value-based formatting\***: Highlight cells based on specific values, such as greater than,



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less than, or equal to.

2. **\*Formula-based formatting\***: Use formulas to determine which cells to format, such as formatting cells based on the value of another cell.
3. **\*Data validation\***: Restrict input data to specific formats or ranges.

## **\*Conditional Formatting Rules\***

1. **\*Highlight Cells Rules\***: Highlight cells based on specific conditions, such as "Greater Than" or "Top 10 Items".
2. **\*Top/Bottom Rules\***: Highlight top or bottom values, such as "Top 10%" or "Bottom 5".
3. **\*Data Bars\***: Display data bars to visualize data distribution.
4. **\*Color Scales\***: Apply color scales to display data distribution.



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## \*Tools Supporting Conditional Formatting\*

### 1. \*Microsoft Excel\*:

### 3. Create Bar code, QR code

Here's a guide on how to create barcodes and QR codes:

#### \*Creating Barcodes\*

1. \*Choose a barcode type\*: Common types include Code 128, Code 39, and EAN-13.
2. \*Select a barcode generator tool\*: Online tools like Barcode Generator or Barcode Maker can be used.



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3. \*Enter the data\*: Input the data you want to encode in the barcode, such as a product number or text.
4. \*Customize the barcode\*: Adjust settings like barcode size, orientation, and color.
5. \*Download the barcode\*: Save the generated barcode as an image file (e.g., PNG or JPEG).

## \*Creating QR Codes\*

1. \*Choose a QR code generator tool\*: Online tools like QRCode Monkey or GoQR.me can be used.
2. \*Select the QR code type\*: Choose from options like URL, text, email, or vCard.
3. \*Enter the data\*: Input the data you want to encode in the QR code.
4. \*Customize the QR code\*: Adjust settings like QR code size, color, and error correction



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level.

5. **\*Download the QR code\***: Save the generated QR code as an image file (e.g., PNG or JPEG).

Some popular online tools for creating barcodes and QR codes include:

- **Barcode Generator**
- **Barcode Maker**
- **QRCode Monkey**
- **GoQR.me**
- **Visme**

These tools offer a range of features and customization options to help you create the perfect barcode or QR code for your needs.



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## **4. Working with Tables and Data Validation)**

### **Also add frequency function and Statistical analysis functions**

Here's an overview of working with tables and data validation:

#### **\*Working with Tables\***

#### **\*Creating Tables\***

1. \*Select data range\*: Choose the data range you want to convert into a table.
2. \*Go to Insert tab\*: Click on the "Insert" tab in the ribbon.
3. \*Click on Table\*: Select "Table" from the dropdown menu.
4. \*Confirm data range\*: Confirm the data range and check the box for "My table has headers" if applicable.

#### **\*Table Features\***

1. \*Sorting and filtering\*: Use the dropdown menus in the header row to sort and filter data.
2. \*Data formatting\*: Apply formatting to the entire table or individual columns.
3. \*Data validation\*: Apply data validation rules to individual columns or cells.



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4. \*PivotTables\*: Create PivotTables to summarize and analyze data.

### \*Data Validation\*

#### \*Types of Data Validation\*

1. \*Whole number\*: Restrict input to whole numbers.
2. \*Decimal\*: Restrict input to decimal numbers.
3. \*Date\*: Restrict input to dates.
4. \*Time\*: Restrict input to times.
5. \*Text length\*: Restrict input to a specific text length.
6. \*List\*: Restrict input to a specific list of values.

#### \*Applying Data Validation\*

1. \*Select cell or range\*: Choose the cell or range you want to apply data validation to.
2. \*Go to Data tab\*: Click on the "Data" tab in the ribbon.
3. \*Click on Data Validation\*: Select "Data Validation" from the dropdown menu.
4. \*Choose validation type\*: Select the type of data validation you want to apply.

Here's an overview of working with tables and data validation:

### \*Working with Tables\*



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## **\*Creating Tables\***

1. \*Select data range\*: Choose the data range you want to convert into a table.
2. \*Go to Insert tab\*: Click on the "Insert" tab in the ribbon.
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6. \*List\*: Restrict input to a specific list of values.

### \*Applying Data Validation\*

1. \*Select cell or range\*: Choose the cell or range you want to apply data validation to.
2. \*Go to Data tab\*: Click on the "Data" tab in the ribbon.
3. \*Click on Data Validation\*: Select "Data Validation" from the dropdown menu.
4. \*Choose validation type\*: Select the type of data validation you want to apply.
5. \*Set validation rules\*: Set the specific rules for the chosen validation type.
6. \*Click OK\*: Confirm the data validation rules.

### \*Data Validation Examples\*

1. \*Restricting input to whole numbers\*: Use the "Whole number" validation type to restrict input to whole numbers.
2. \*Restricting input to dates\*: Use the "Date" validation type to restrict input to dates.
3. \*Restricting input to a specific list\*: Use the "List" validation type to restrict input to a specific list of values.

By applying data validation rules, you can ensure that data entered into your table is accurate and consistent.



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## **Lab 10**

**Advanced Tools and Final Project(Introduction  
to Pivot Tables, Using VLOOKUP and HLOOKUP,  
Introduction to Macros, Final Project: Analyze  
and Visualize Data Set Using Skills Learned  
Throughout the Course)**

Here's an overview of the advanced tools and



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final project:

## Advanced Tools

### \*Introduction to Pivot Tables\*

1. **\*What are Pivot Tables?\***: Pivot Tables are a powerful tool in Excel that allows you to summarize, analyze, and visualize large datasets.
2. **\*Creating a Pivot Table\***: Select a cell range, go to the "Insert" tab, and click on "PivotTable".
3. **\*Configuring a Pivot Table\***: Drag fields to the "Rows", "Columns", and "Values" areas to create a customized Pivot Table.
4. **\*Pivot Table Features\***: Use filters, sorting, and grouping to analyze data.

### \*Using VLOOKUP and HLOOKUP\*

1. **\*What are VLOOKUP and HLOOKUP?\***: VLOOKUP and HLOOKUP are functions that



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allow you to search for a value in a table and return a corresponding value.

2. **\*VLOOKUP Syntax\***: `VLOOKUP(lookup\_value, table\_array, col\_index\_num, [range\_lookup])`
3. **\*HLOOKUP Syntax\***: `HLOOKUP(lookup\_value, table\_array, row\_index\_num, [range\_lookup])`
4. **\*Using VLOOKUP and HLOOKUP\***: Use these functions to retrieve data from a table based on a specific value.

## **\*Introduction to Macros\***

1. **\*What are Macros?\***: Macros are a set of automated instructions that can be recorded or written in VBA (Visual Basic for Applications).
2. **\*Recording a Macro\***: Go to the "Developer" tab, click on "Record Macro", and perform the actions you want to automate.
3. **\*Writing a Macro\***: Use VBA to write a macro from scratch.
4. **\*Running a Macro\***: Run a macro by clicking



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on the "Macros" button or by assigning a shortcut key.

## Final Project

\*Analyze and Visualize Data Set Using Skills Learned Throughout the Course\*

1. **\*Objective\***: Analyze and visualize a dataset using the skills learned throughout the course.

2. **\*Dataset\***: Choose a dataset that interests you, such as a dataset on climate change, economic trends, or social media usage.

3. **\*Tasks\***:

- Clean and prepare the data for analysis.
- Use Pivot Tables to summarize and analyze the data.
- Use VLOOKUP and HLOOKUP to retrieve specific data points.
- Create visualizations, such as charts and graphs, to communicate insights.



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- Record a macro to automate repetitive tasks.

#### 4. \*Deliverables\*:

- A cleaned and prepared dataset.
- A Pivot Table summarizing the data.
- Visualizations, such as charts and graphs.
- A recorded macro.
- A written report summarizing the insights gained from the analysis.



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## **Lab 11**

### **1.Pencil tool**

## **Lab 12**



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## **1. Bob illustrator**

Here are short details about Adobe Illustrator:

### **Key Features**

1. Vector graphics editor
2. Drawing and shape-building tools
3. Advanced type tools
4. Color management and layers
5. Effects and plugins

### **Tools and Panels**

1. Toolbar
2. Control Panel
3. Layers Panel
4. Color Panel



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## 5. Swatches Panel

### File Formats

1. AI (native)
2. EPS
3. PDF
4. SVG

### System Requirements

1. Windows or macOS
2. Multi-core processor
3. 8 GB RAM
4. Dedicated graphics card

### Uses

1. Logo design
2. Icon design

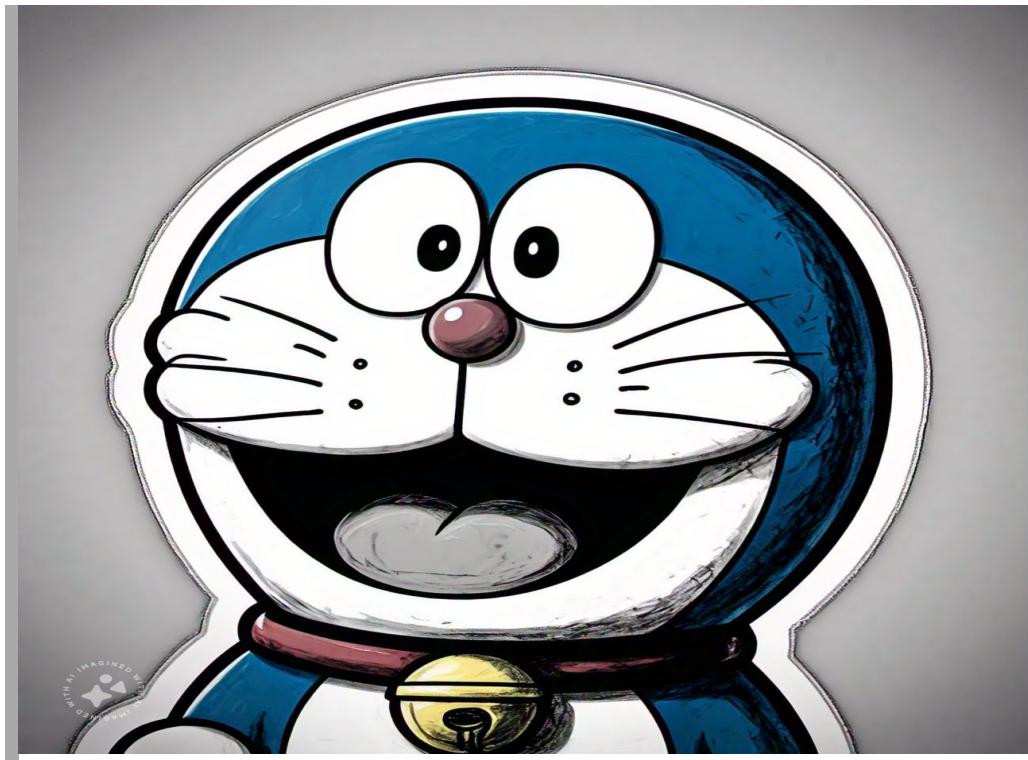


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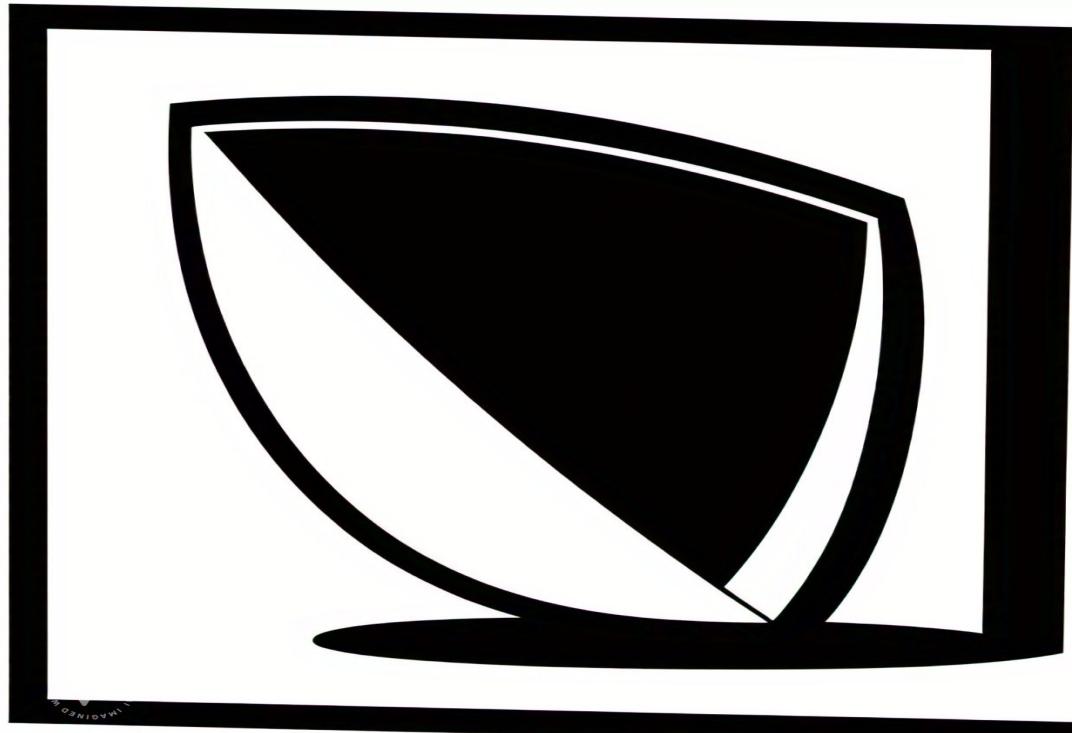
### 3. Illustrations

### 4. Graphic design

#### Examples



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Here are

short details about Canva:

## \*Key Features\*

1. Graphic design platform
2. Drag-and-drop editor
3. Huge template library
4. Customizable fonts, colors, and images
5. Collaboration tools



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## **\*Design Types\***

- 1. Social media graphics**
- 2. Presentations**
- 3. Infographics**
- 4. Logos**
- 5. Brochures**

## **\*Benefits\***

- 1. Easy to use**
- 2. Affordable**
- 3. Huge design community**
- 4. Constantly updated templates and features**

## **\*Pricing\***

- 1. Free plan available**
- 2. Pro plan (\$12.95/month)**
- 3. Team plan (\$30/month)**



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## **\*Ideal For\***

- 1. Small businesses**
- 2. Entrepreneurs**

## **2. Canva**

Here are short details about Canva:

### **\*Key Features\***

- 1. Graphic design platform**
- 2. Drag-and-drop editor**
- 3. Huge template library**
- 4. Customizable fonts, colors, and images**
- 5. Collaboration tools**



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## **\*Design Types\***

1. Social media graphics
2. Presentations
3. Infographics
4. Logos
5. Brochures

## **\*Benefits\***

1. Easy to use
2. Affordable
3. Huge design community
4. Constantly updated templates and features

## **\*Pricing\***

1. Free plan available
2. Pro plan (\$12.95/month)
3. Team plan (\$30/month)



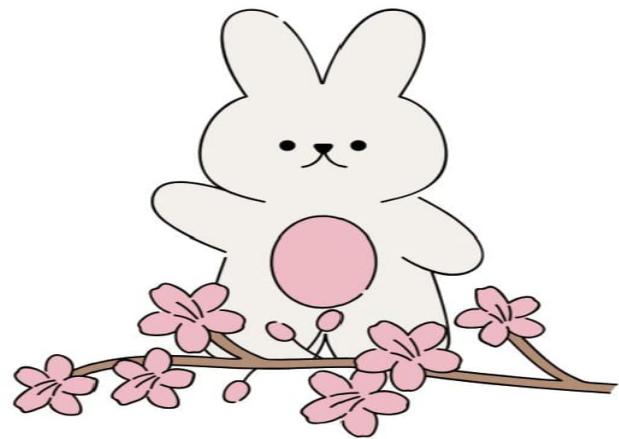
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## \*Ideal For\*

1. Small businesses
2. Entrepreneurs!



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# WELCOME *Party*

Join us . We shall be waiting for  
you

## BATCH 2K24

On December 13th at 5pm

At NFC IET MULTAN  
(GIRLS HOSTEL)



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## **Lab 13**

### **1.Git hub**



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