Sushant University
soaring high

IT WORKSHOPFILE

EXPERIMENTS AND PPT

Program: BCA Sem-1

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S. No.	List of experiments
1	Identify different components of a computer system (CPU, motherboard, RAM, storage, input/output devices).
2	Assembling and disassembling of computer system.
3	Create a Powerpoint presentation on the topic "Generations of computer" using at least 7 slides. Design a title slide as first slide and List of contents as second slide. Use suitable background, font style, and alignment. Make presentation attractive by using proper design, images, and animations. Apply transitions and at least one SmartArt graphic.
4	Understand and use online collaboration tools such as Google Drive, Google Docs, and Google Sheets for creating, sharing, and editing documents, spreadsheets, and files collaboratively in real time.
5	To understand and demonstrate safe internet practices and basic cybersecurity measures such as various common cyber threats awareness, creating strong passwords, using antivirus software, and ensuring safe downloads.
6	To study and understand the major components of an Operating System and the services it provides to users, programs, and hardware.

EXPERIMENT-1

IDENTIFY THE COMPONENTS OF COMPUTER SYSTEM

A computer system is composed of several key components: the CPU, which performs calculations; the motherboard, the central hub connecting all parts; RAM, for temporary data storage; storage devices, for long-term data storage; and input/output (I/O) devices, which allow users to interact with the computer. These components work together to take in data, process it, and produce results.

1. Central Processing Unit (CPU)

• Function: The "brain" of the computer. It executes instructions and performs calculations and logical operations for all other components.

• Sub-components: It includes the control unit (CU), which manages operations, and the arithmetic logic unit (ALU), which performs the actual calculations.

• Role: It is the core of the processing unit, responsible for interpreting and executing most of the commands from the other hardware and software.

2. Motherboard

• Function: The main printed circuit board that connects and allows all other components to communicate with each other.

• Components: It houses the CPU, RAM, and expansion slots, and provides ports for connecting external devices.

• Role: It acts as the central hub or "nervous system" of the computer, providing the electrical connections for all parts to function together.

3. Random Access Memory (RAM)

• Function: A type of volatile memory that provides fast, temporary storage for data and programs that the CPU is actively using.

• Role: It allows the CPU to access and manipulate data quickly, significantly speeding up performance. When the computer is turned off, the contents of RAM are erased.

4. Storage

• Function: Non-volatile memory used for long-term storage of data and programs. This data remains even when the computer is powered off.

• Types: Common examples include Hard Disk Drives (HDDs) and Solid-State Drives (SSDs), each with different advantages for speed and cost.

• Role: It is where the operating system, applications, and your files are permanently saved for later use.

5. Input/Output (I/O) Devices

• Function: The devices that allow a user to interact with the computer and the computer to present information back to the user.

• Input Devices:

    • Examples: Keyboard, mouse, microphone, and scanner.
    • Role: Used to input data and commands into the system.

• Output Devices:

    • Examples: Monitor, printer, and speakers.
    • Role: Used to display or present the results of the computer's processing.

EXPERIMENT 2

PC HARDWARE & DISASSEMBLY

Assembling a computer involves installing components like the CPU, RAM, and power supply onto the motherboard and inside the case, while disassembling is the reverse process: unplugging and removing parts in the correct order, from the most external to the most internal. Safety is paramount in both, requiring anti-static precautions like using a wrist strap to prevent component damage. The general order for assembly is to prepare the motherboard outside the case, then install it, connect drives, and finally connect all power and data cables. Disassembly follows the reverse of this order, from external connections inward.

Assembling a computer

1. Prepare your workspace and case: Open the computer case, which may involve removing screws from the side panel. Make sure you have all necessary tools and components, and take anti-static precautions.

2. Prepare the motherboard:

• Install the CPU into its socket, using the lever mechanism. Be careful not to touch the pins.

• Apply thermal compound to the CPU and install the heat sink and fan assembly on top of the CPU.

• Install the RAM modules into their slots, pushing them in firmly until the clips on both ends snap into place.

3. Install components into the case:

• Mount the motherboard into the case, securing it with standoffs and screws.

• Install the power supply unit (PSU).

• Mount internal drives (like hard drives or SSDs) in their bays and secure them with screws.
• Install any expansion cards, such as a graphics card, into their respective slots.

4. Connect all internal cables:

• Connect all the necessary power cables from the PSU to the motherboard and other components.

• Connect the data cables from the drives to the motherboard.

• Connect the front panel connectors for the power button, USB ports, and audio jacks.

5. Final connections and power on:

• Connect external cables like the monitor, keyboard, and mouse to the appropriate ports on the back of the computer.

• Plug in the power cable and turn on the system.

Disassembling a computer

1. Power down and unplug: Completely shut down the computer and unplug all external cables, including the power cord, monitor, keyboard, and mouse.

2. Open the case: Remove the screws on the back and slide off the side panel to gain access to the interior.

3. Disconnect all cables:

• Carefully disconnect all internal cables from the motherboard and drives. It's helpful to take a photo of the layout before disconnecting.

• Disconnect power cables from the drives and the motherboard.

4. Remove components:

• Drives: Unscrew and slide out any hard drives or optical drives.

• Expansion cards: Press the release clips and remove any expansion cards, such as graphics cards.

• RAM: Push down on the clips at both ends of each RAM module to release them, then pull them straight out.

• CPU cooler: Unscrew the CPU cooler and fan assembly. Be gentle and avoid touching the CPU's surface.

• Power supply: Unscrew the power supply and remove it from the case.

• Motherboard: Unscrew and remove the motherboard last, as it holds many other components.

5. Clean up: You can use a small paintbrush to clean any dust from the system unit during disassembly.

EXPERIMENT 3

GENERATIONS OF COMPUTERS

ALL THE STEPS TO OPEN POWER POINT AND MAKE A PPT ON GENERATIONS OF COMPUTERS ARE MENTIONED BELOW:

STEPS TO OPEN POWERPOINT

Turn on your computer.
Click on the Start button (bottom-left corner of the screen).
Type "PowerPoint" in the search box.
Click on Microsoft PowerPoint from the results.
PowerPoint will open with a blank presentation.

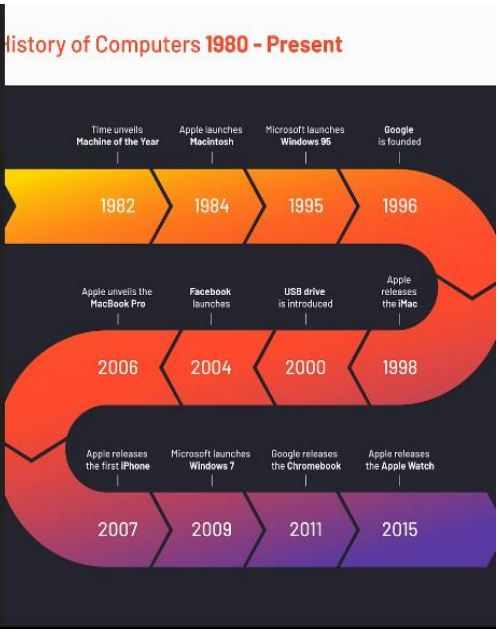
STEPS TO MAKE A PPT ON "GENERATIONS OF COMPUTERS"

Choose a design
Go to the Design tab and select a theme for your slides.

- Create Title Slide
  - Click on the first slide.
  - Write the title: "Generations of Computers".
  - Subtitle: Prepared by [Your Name].
- Add New Slides
  - Click Home > New Slide.
  - Add one slide for each generation.
- Add Pictures
  - Go to Insert > Pictures > Online Pictures.
- Add Transitions/Animations (Optional)
  - Click Transitions tab → choose effects like Fade.
  - For bullet points, click Animations tab → choose effects.
- Final Slide (Conclusion)
  - Title: "Conclusion".
- Save the Presentation
  - Click File > Save As.
  - Choose location (Desktop/Documents).
  - Give a name like Generations_of_Computers.pptx.

Generations of Computers

From vacuum tubes to quantum computing: the revolutionary journey of technology



First Generation (1940-1956)

Vacuum Tubes

Primary technology

Room-sized machines

Massive power consumption

Examples

ENIAC, UNIVAC I

IBM 701

Manchester Mark 1

Limitations

Frequent breakdowns

Extreme heat generation

Machine language only

Second Generation (1956-1963)

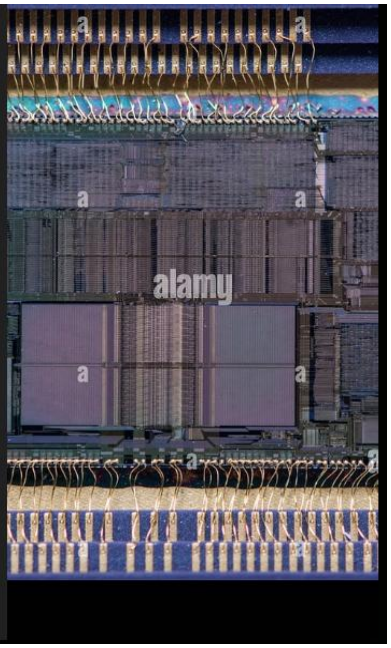
Transistor Revolution

- Smaller, faster, more reliable
- Assembly languages introduced
- Magnetic core memory
- Batch processing systems

Key advantage: 90% size reduction

Notable computers: IBM 1401, CDC 1604, DEC PDP-1

Third & Fourth Generations



1 **Third Generation (1964–1971)**

Integrated Circuits (ICs)

Minicomputers emerge

High-level languages: COBOL, FORTRAN

Examples: IBM System/360, PDP-8

2 **Fourth Generation (1971–Present)**

Microprocessors

Personal computers born

GUI interfaces, networking

Examples: Apple II, IBM PC, Intel 4004

Fifth Generation of Computer (1980-Present)

Artificial Intelligence

Fifth Generation Computer - Desktop

The Journey Continues: From Vacuum Tubes to AI

Each generation of computers has delivered transformative leaps in speed, significant size reduction, and immense power.

AI & Beyond
Intelligent, intuitive, and human-like interactions.

Microprocessors
Personal computing, miniaturization, global access.

Integrated Circuits
Increased speed, reliability, multitasking.

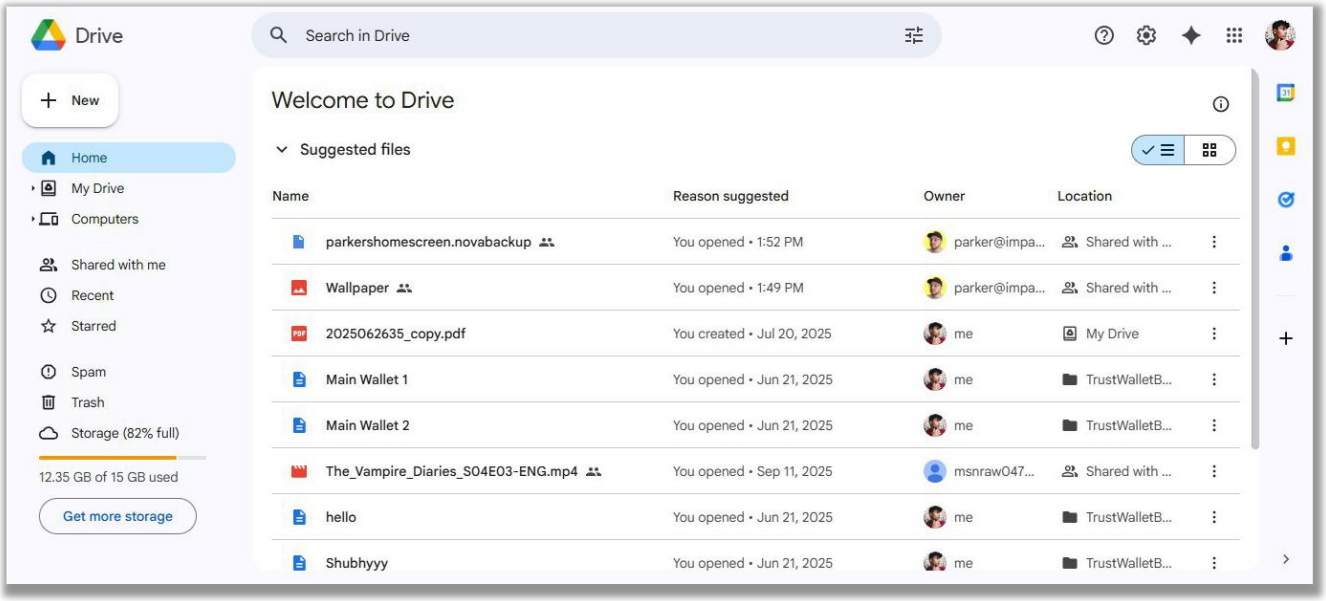
Transistors
Smaller, faster, more reliable, commercial use.

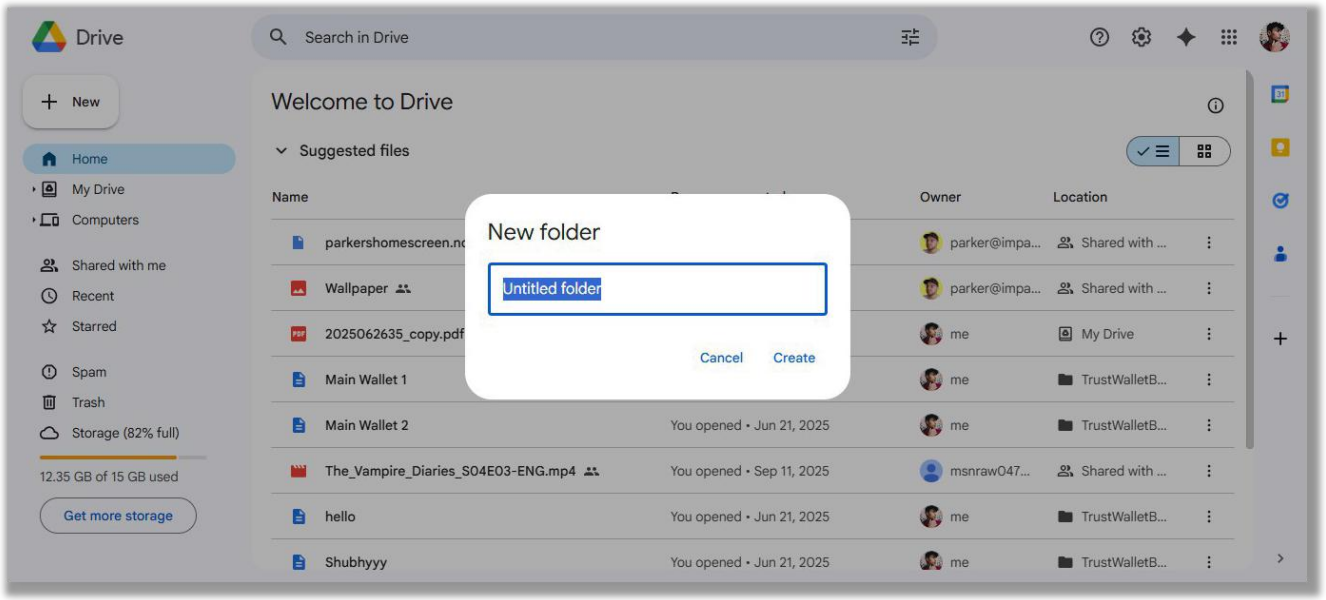
Vacuum Tubes
Foundational, room-sized, digital age begins.

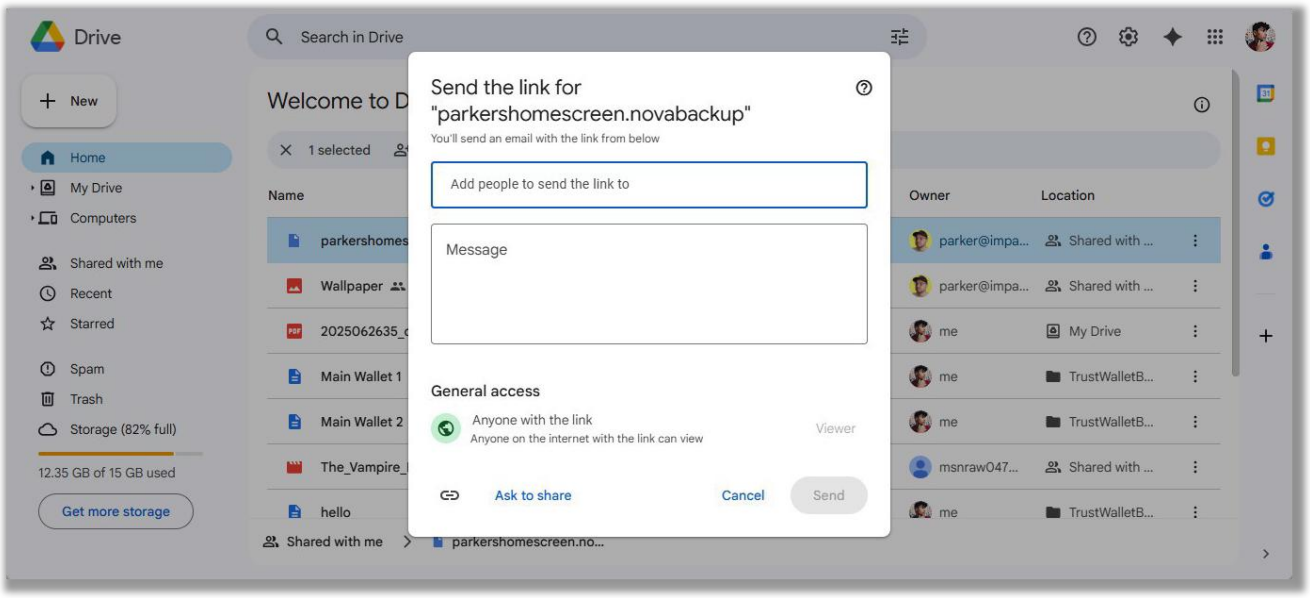
Today's computers are incredibly smarter, faster, and more accessible than anything conceived decades ago. The future promises even more intelligent, efficient, and human-like machines. Let's embrace the remarkable technology that continues to shape our tomorrow!

EXPERIMENT 4

GOOGLE DRIVE



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My Drive
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Recent
Starred
Spam
Trash
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Owner
Location
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You'll send an email with the link from below
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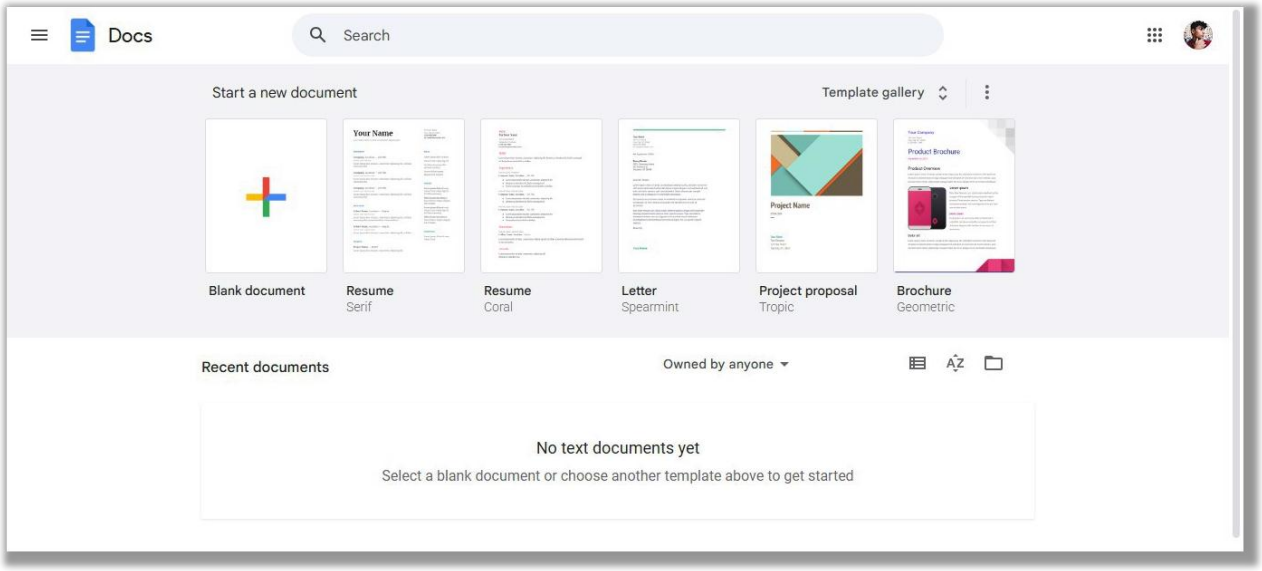
Anyone on the internet with the link can view
Viewer
Ask to share
Cancel
Send
Shared with me

GOOGLEDOCS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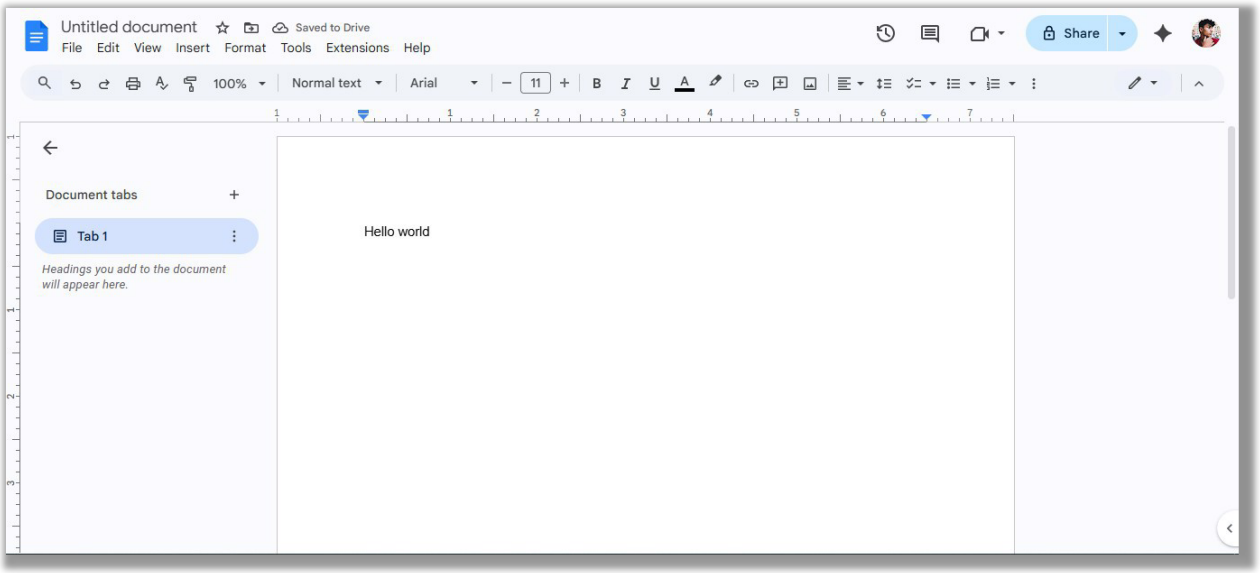
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Arial
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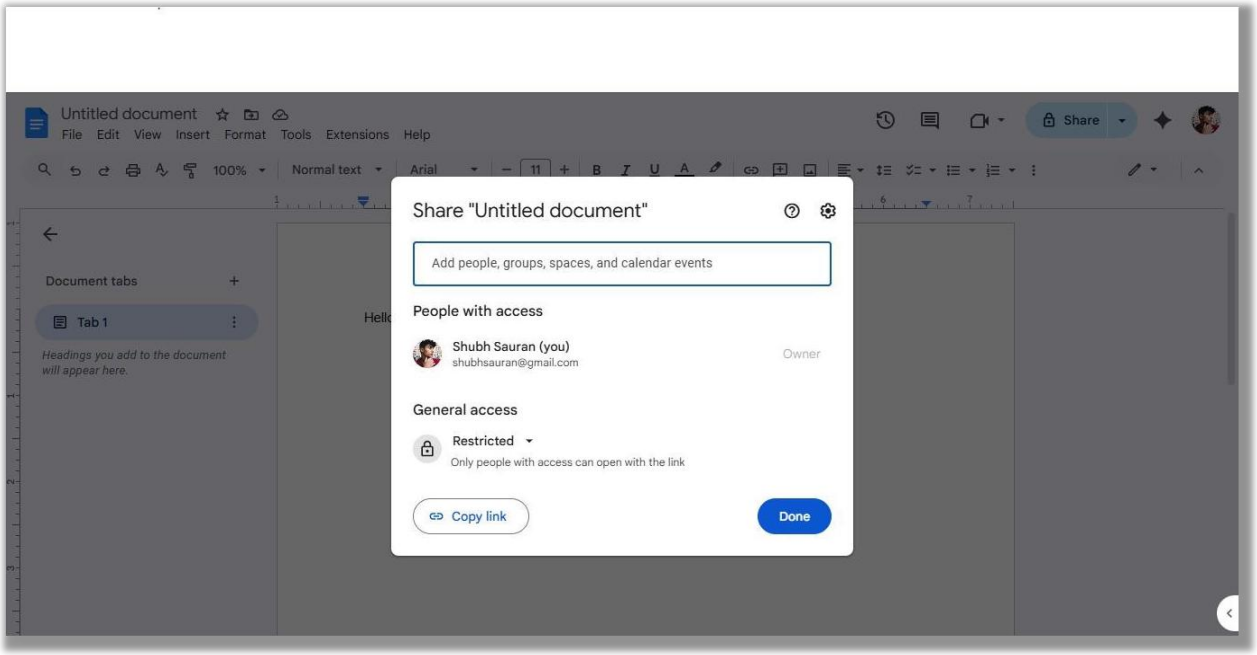
Headings you add to the document will appear here.
Hello world



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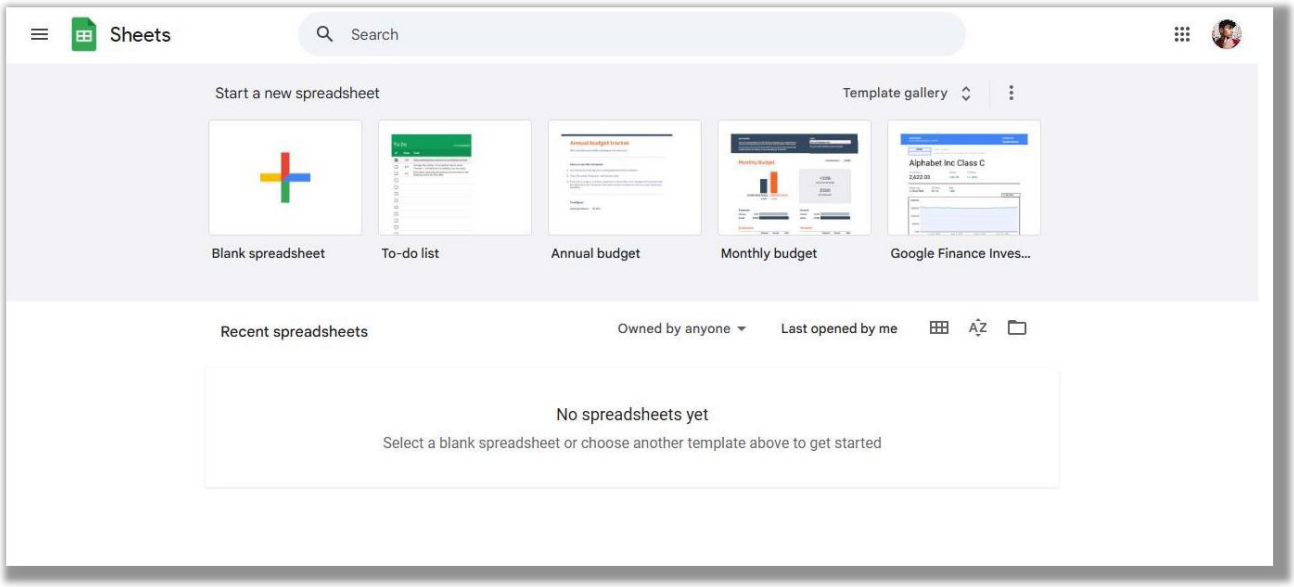

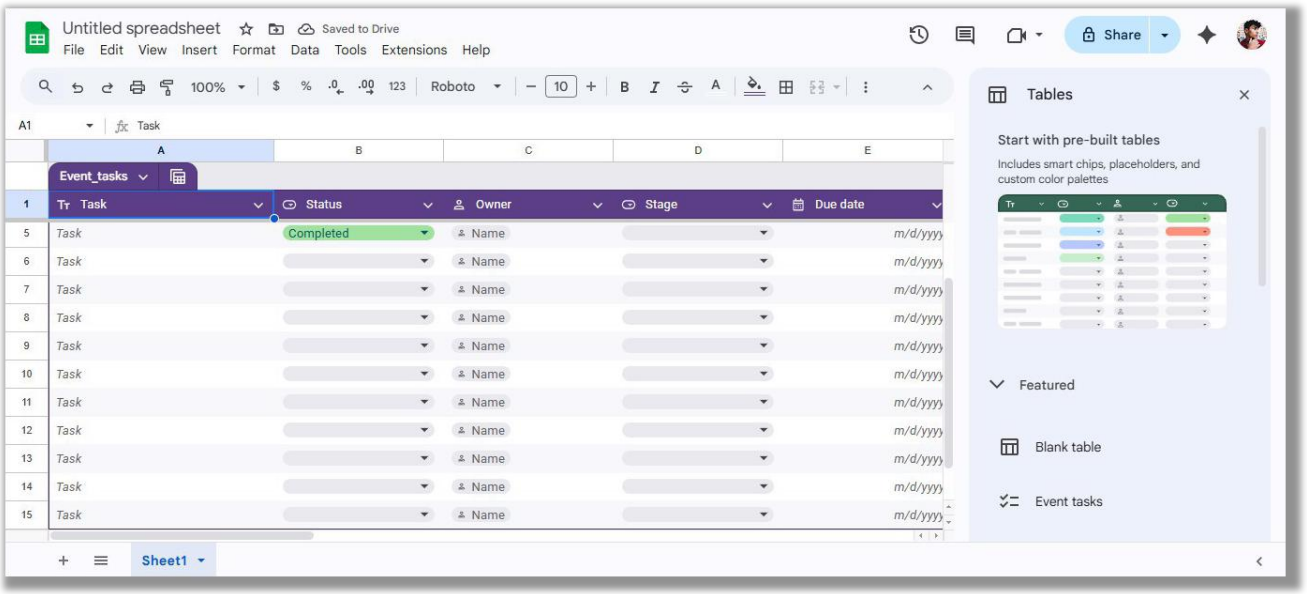
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Start with pre-built tables
Includes smart chips, placeholders, and custom color palettes
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Status
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Stage
Due date
Completed
Name
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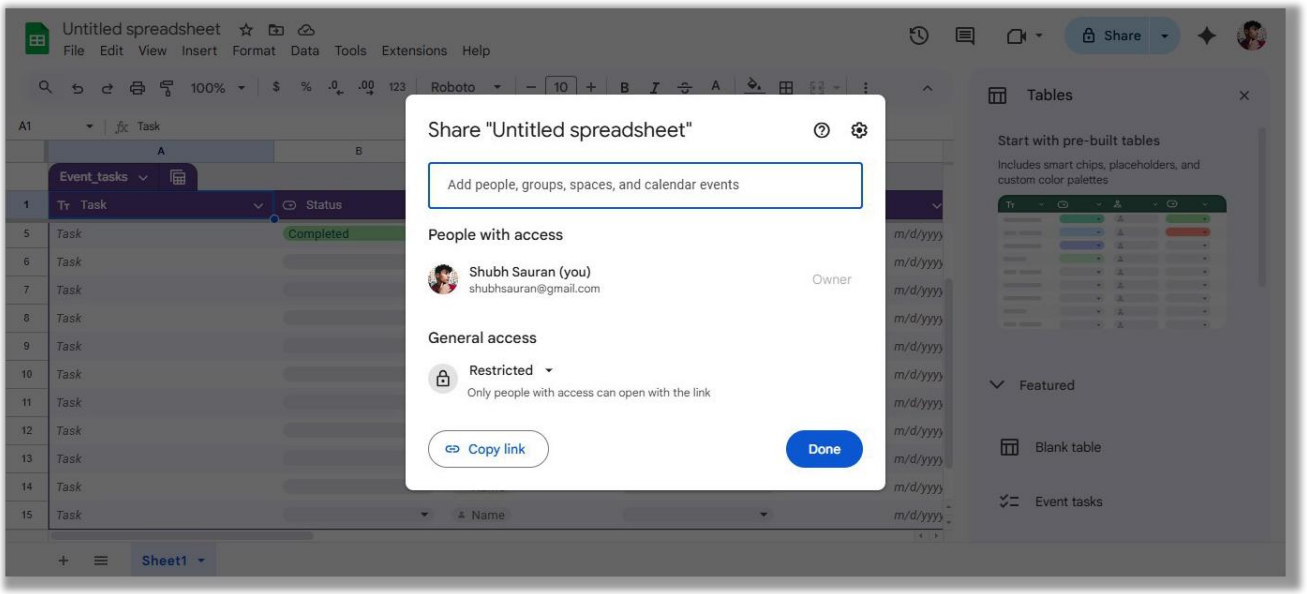
Sheet1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Tables
Start with pre-built tables
Includes smart chips, placeholders, and custom color palettes
Featured
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Event tasks
Share "Untitled spreadsheet"
Add people, groups, spaces, and calendar events
People with access
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shubhsauran@gmail.com
Owner
General access
Restricted
Only people with access can open with the link
Copy link
Done
Sheet1

EXPERIMENT 5

Understanding & Demonstrating Safe Internet Practices and Basic Cybersecurity Measures

In today's digital world, we rely on the internet for communication, education, banking, entertainment, and more. While the internet provides countless advantages, it also exposes users to several security risks. Practicing safe internet habits is essential to protect personal information, financial details, and digital devices from hackers or malicious activities. The goal of cybersecurity is to keep data secure, ensure privacy, and prevent unauthorized access.

1. Awareness of Common Cyber Threats

Knowing the kinds of threats that exist online helps users stay alert and safe. Some common cyber threats include:

Cyber Threat	Description	Example
Malware	Software designed to damage or access systems without permission	Viruses, worms, ransomware
Phishing	Fake messages or emails designed to trick users into revealing information	"Your bank account needs verification – click the link"
Identity Theft	Stealing personal information to pretend to be someone else	Using someone's Aadhaar/bank details
Social Engineering	Manipulating people to reveal confidential information	Impersonating customer care
Spyware	Software that secretly monitors user activity	Hidden trackers collecting browsing data

2. Creating Strong & Secure Passwords

Passwords are the first line of defence against unauthorized access.
Tips for a strong password:

- Minimum 12 characters
- Contains uppercase, lowercase, numbers, and special symbols
- Avoid common words like name, birthday, pet name, 12345
- Use unique passwords for every account
- Enable Two-Factor Authentication (2FA) where possible

To remember passwords safely, users can store them using a trusted password manager instead of writing them on paper or sharing them with others.

3. Using Antivirus Software

Antivirus software protects your device from malicious programs by detecting, blocking, and removing malware.
Why use an antivirus?

- Real-time protection against malware
- Scans downloaded files and external devices (pen drives, hard drives)
- Warns about harmful websites
- Improves device security and performance

Recommended safety practices:

- Keep the antivirus updated
- Enable automatic scanning
- Avoid pirated antivirus copies (they may contain malware!)

4. Ensuring Safe Downloads & Browsing

Unsafe downloads are one of the most common ways malware spreads.
Safe downloading habits:

- Download only from official websites or trusted app stores
- Avoid clicking on pop-ups offering free software, movies, or games
- Check file extension (.exe, .scr, .apk may contain malware if unexpected)
- Scan files using antivirus before opening

Never download:

- Cracked or pirated software
- Apps from unknown third-party sources
- Attachments from unknown emails

Safe browsing practices:

- Look for HTTPS in the website URL
- Avoid entering personal information on public Wi-Fi
- Log out from accounts after use (especially on shared devices)

Safe Practice	Purpose
Awareness of cyber threats	Helps avoid traps and scams
Strong passwords + 2FA	Protects accounts from hacking
Antivirus software	Secures the device from malware
Safe downloads & browsing	Prevents malware infection and data theft
Regular software updates	Fixes vulnerabilities
Backup of important data	Prevents permanent loss

Conclusion

Cybersecurity is not only the responsibility of experts every internet user must practice safe online behaviour. By staying alert, using strong passwords, keeping devices protected with antivirus software, avoiding unsafe downloads, and being aware of cyber risks, we can ensure a safer and more secure digital environment. Safe internet practices protect our identity, money, data, and privacy making the internet a powerful and safer place for learning, work, and entertainment.

EXPERIMENT6

Understanding the Major Components of an Operating System and the Services It Provides

An Operating System (OS) is the fundamental software that manages a computer's hardware and provides an environment where applications and users can perform tasks smoothly. Without an OS, a computer is only a set of electronic components with no coordination or usability.

What is an Operating System?

An Operating System is system software that acts as an intermediary between the user, application programs, and hardware. It allocates system resources, controls operations, and ensures the entire computer system works efficiently and securely.

Major Components of an Operating System

An OS is made up of multiple essential components that work together to manage the computer system. The key components include:

1 Kernel

- The core part of the OS
- Directly interacts with the hardware
- Manages CPU time, memory, and system resources
- Controls low-level operations such as process switching and interrupt handling

2 Process Management

- Manages creation, execution, and termination of processes
- Provides multitasking by allocating CPU to multiple programs
- Handles scheduling, deadlock prevention, and synchronization

3 Memory Management

- Allocates and deallocates memory to programs
- Tracks every memory location in the system
- Enables virtual memory for efficient multitasking

4 File System Management

- Organizes and stores information in files
- Provides operations like creation, deletion, reading, and writing
- Maintains security, access permissions, and directory structure

5 Device Management

- Controls input/output devices such as keyboard, mouse, printer, and storage
- Uses device drivers to enable communication between hardware and software
- Performs buffering, caching, and device scheduling

6 Security and Protection

- Protects data from unauthorized access
- Maintains user authentication (passwords, biometrics)
- Provides access control, encryption, and auditing

7 User Interface

- Allows interaction between user and system
- Types:
    - GUI (Graphical User Interface) – Windows, Icons, Mouse menus
    - CLI (Command Line Interface) – Terminal, Command prompt

Services Provided by the Operating System

The OS provides a wide range of services to users, programs, and hardware to ensure smooth operation.

OS Service	Description

OS Service	Description
Program Execution	Loads and runs programs and applications
File System Access	Allows users/programs to create, read, and manage files
Input/Output Operations	Handles communication between software and hardware
Error Detection & Handling	Detects and fixes hardware/software errors
Resource Allocation	Shares CPU, memory, and devices among processes
Security & Protection	Prevents unauthorized access and ensures safe operation
Communication Services	Supports data exchange between programs or computers
Networking Services	Provides internet and network connectivity

Importance of an Operating System

Importance	Explanation
Convenience	Makes computers easy and usable for everyone
Efficiency	Utilizes hardware resources optimally
Multi-tasking	Enables execution of many tasks simultaneously
Security	Protects data and system integrity
Portability	Supports software to run on different hardware
Reliability	Ensures stable and error-free operation

Conclusion

An Operating System is the backbone of every computer system, acting as a bridge between hardware and users. Its major components — such as the kernel, process manager, memory manager, file system, device manager, and security modules — work together to ensure efficient and secure operation. The OS provides essential services like program execution, resource allocation, and input/output operations, making modern computing possible.