

National University of Computer and Emerging Sciences



Lab Manual ICT

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DECLARATION

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Date: _____

LIST OF EXPERIMENTS

Contents

1. Lab Task 1	3
2. Lab Task 2	8
3. Lab Task 3	12
4. Lab Task 4	17
5. Lab Task 5	22
6. Lab Task 6	26
7. Lab Task 7	31
8. Lab Task 8	34
9. Lab Task 9	37
10. Lab Task 10	40
11. Lab Task 11	44

LAB ASSESSMENT 1: Windows 11 Setup

Lab title : Installing Windows 11

Course name : Introduction to Information and Communication Technology

Author name : Mushaf Ali Mir

Submission date : 2 Sept 2024

INTRODUCTION

Windows 11, the latest operating system from Microsoft, introduces a sleek user interface, enhanced productivity tools, and improved performance features. This experiment is designed to explore the key functionalities, settings, and practical applications of Windows 11, providing insights into its usability and system improvements.

1.1. Objective

The objective of this experiment is to understand the features and capabilities of Windows 11, explore its user interface, and perform various tasks to evaluate its functionality and performance in comparison to previous versions.

1.2. Apparatus/Materials

1. A computer or laptop compatible with Windows 11
2. Windows 11 operating system installed
3. Stable internet connection
4. External storage device (e.g., USB or external hard drive).
5. Basic computer accessories (keyboard, mouse, monitor)

1.3. Theory

Windows 11 is built on the foundation of Windows 10, offering a modernized Start menu, enhanced multitasking features such as Snap Layouts, and improved gaming performance via DirectStorage. Understanding its design and features requires knowledge of operating system concepts, such as user interfaces, file management, system settings, and task management.

1.4. Procedure

1. Windows 11 Installation Setup:

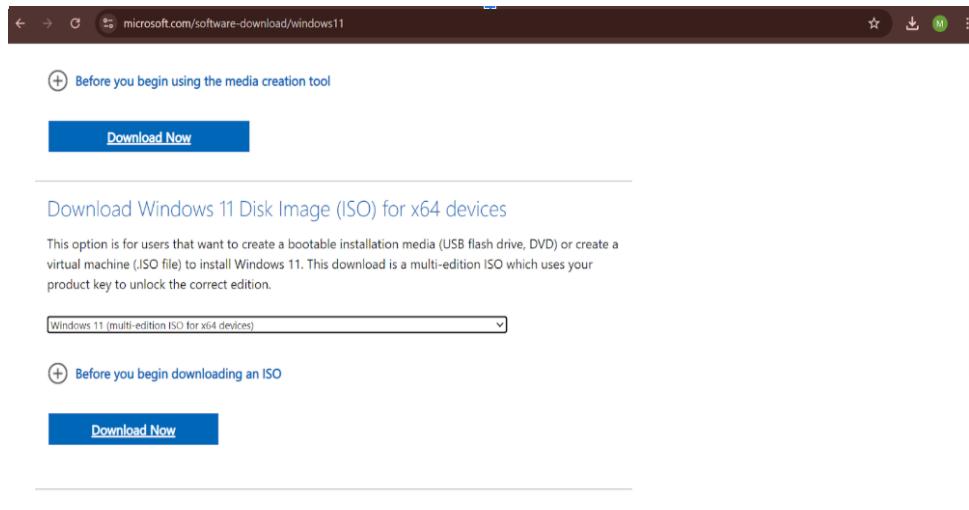


Figure 1.1: Download Setup

STEP 1:-Download Windows 11 ISO file from microsoft official website <https://www.microsoft.com/software-download/windows11> and Rufus from <https://rufus.ie/en/>,The purpose of rufus is to make our usb bootable so we can boot the iso file of windows 11 and install the windows

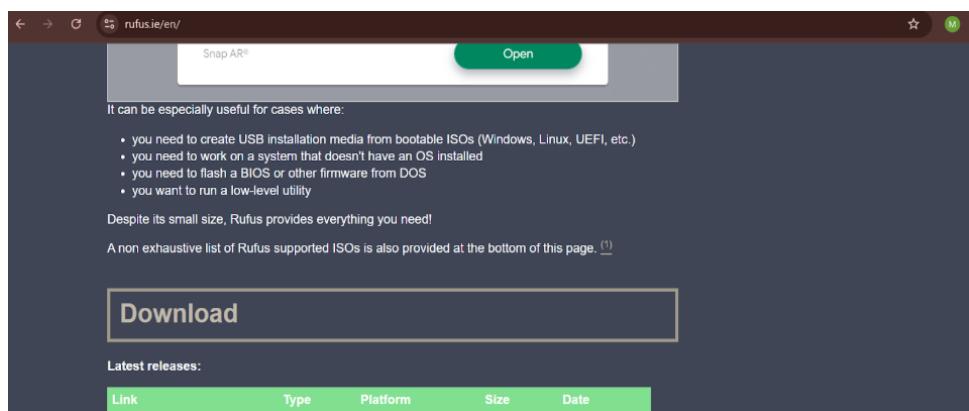


Figure 1.2: Downloading Rufus

STEP 2:-Now we need to Plug our usb in our device and open the rufus software in the software we will select our usb in the device option and on the boot selection option we will select our iso file in the download directory and on the partition scheme we select GPT and target system UEFI and then click START and wait for the status to reach 100

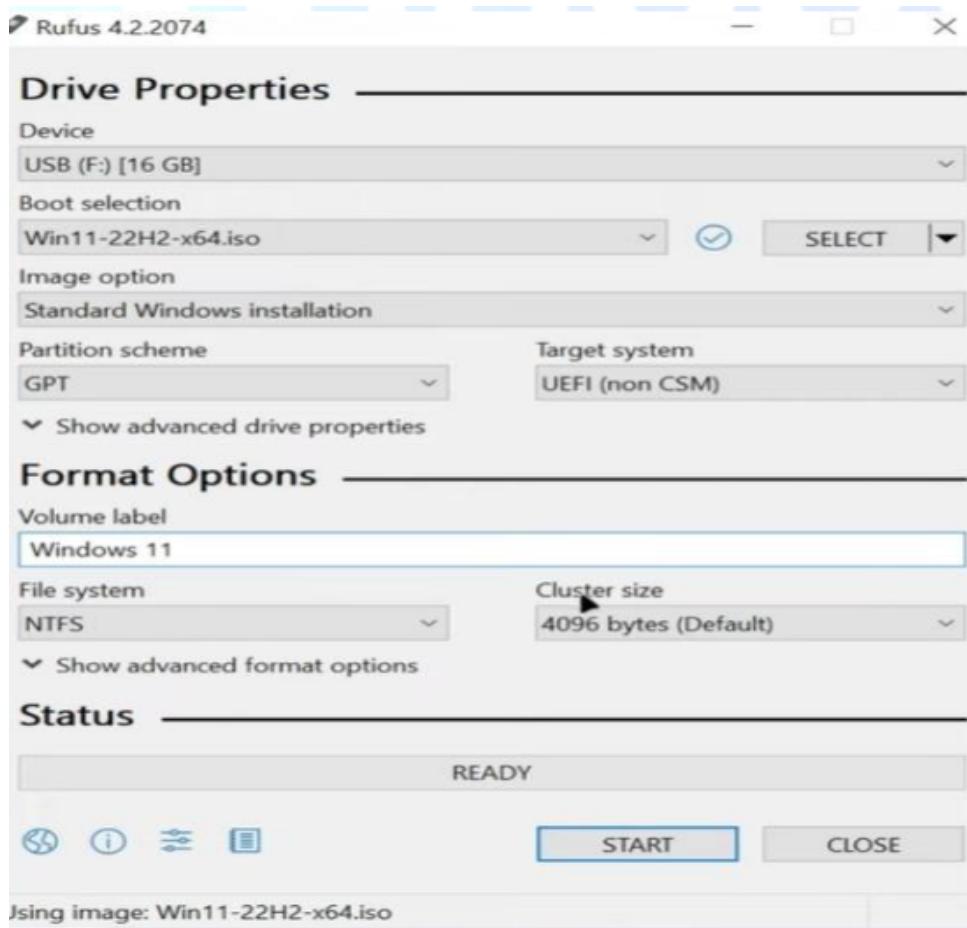


Figure 1.3: Setup Rufus

STEP 3:-Now we will restart the system and upon reaching the system company logo we will open the boot menu by (Esc) and select our USB as 1st Priority and exit from the bios,after restart our system will reach the windows installation setup,select English

2. Windows 11 Installation:



Figure 1.4: Windows Installation

STEP 4:-Now we will select our preferred version of Windows 11, Personally i would select Windows 11 Home x64.

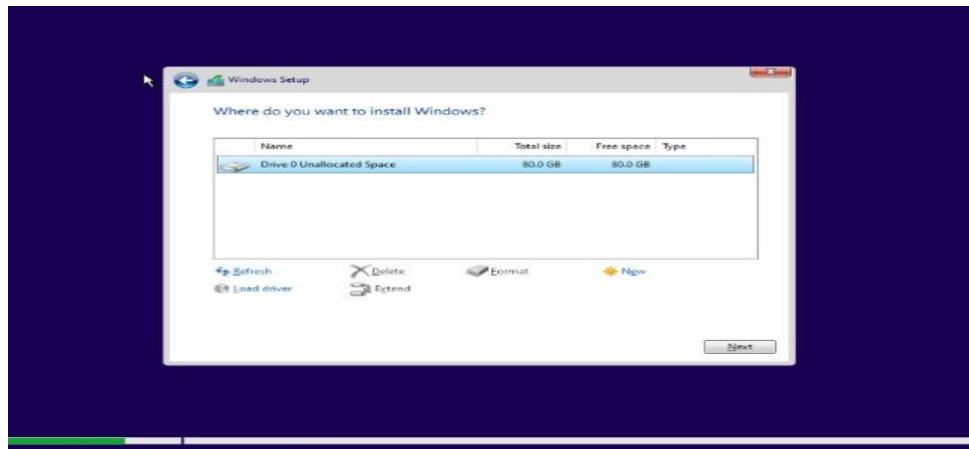


Figure 1.5: Disk Partition

STEP 5:-Now we will select our preferred Windows Installation Type we can either select upgrade or custom we will select custom to install on our desired partition.

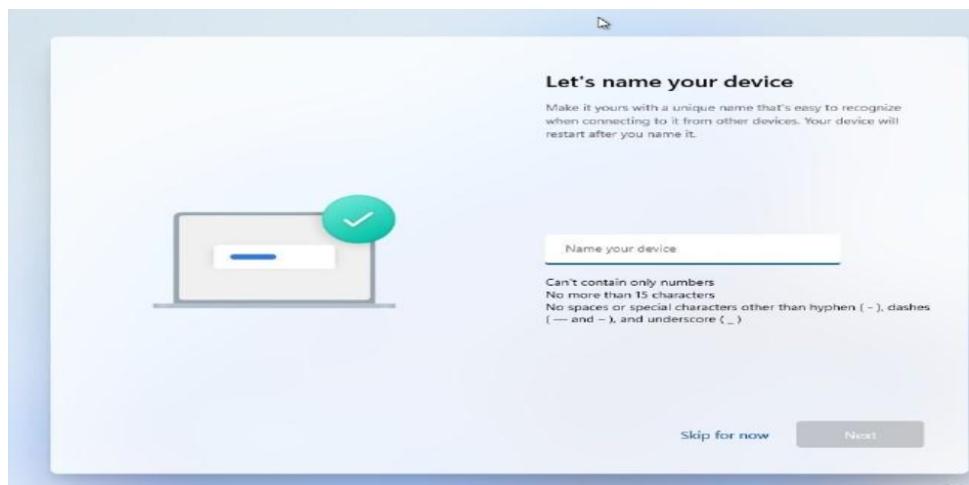


Figure 1.6: Setting Name For Device

STEP 6:-Now we will name our device any preferred name can be used.

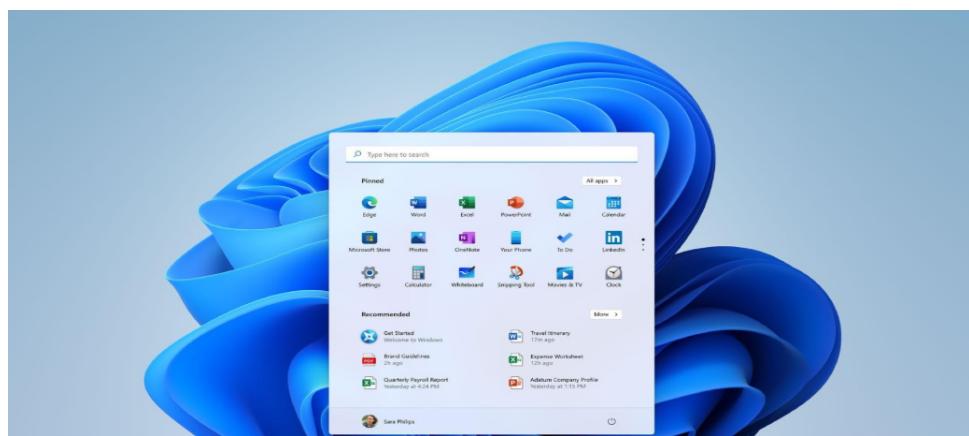


Figure 1.7: Windows Setup Complete

STEP 7:- Now after some minutes we will be able to login in our Windows 11.

1.5. Lab Task

- Test and configure virtual desktops for productivity.
- Install and uninstall an application
- Test and configure virtual desktops for productivity.

1.6. Observation

- The Start menu is centered, offering a more streamlined appearance compared to Windows 10
- Snap Layouts allow easy window arrangement, significantly enhancing multitasking.
- System settings are reorganized for easier navigation, with options for customization clearly labeled.
- Virtual desktops offer an intuitive way to manage multiple workspaces, useful for productivity.

1.7. Conclusion

Windows 11 provides a user-friendly interface with practical features like Snap Layouts, improved task management, and customizable settings. The operating system demonstrates a notable improvement in usability and performance, especially for multitasking and productivity tasks

1.8. Question

1. How does the Start menu in Windows 11 differ from that in Windows 10?
2. Describe how system settings are accessed and modified in Windows 11
3. How does Windows 11 enhance gaming performance compared to its predecessors?
4. What are the advantages of Snap Layouts compared to traditional window management?.

LAB ASSESSMENT 2: Scientific Report

Lab title : Creating Scientific Report

Course name : Introduction to Information and Communication Technology

Author name : Mushaf Ali Mir

Submission date : 6 Sept 2024

INTRODUCTION

Creating a double-column scientific report involves adhering to a formal structure widely used in academic and professional settings. This format improves readability by organizing content into two parallel columns, which is ideal for presenting detailed information efficiently. This experiment explores the process of designing such a report, focusing on the materials, theoretical framework, and key findings.

2.1. Objective

The purpose of this experiment is to demonstrate the methodology for creating a double-column scientific report, ensuring proper formatting and content alignment in accordance with academic standards.

2.2. Apparatus/Materials

1. Word processing software (e.g., Microsoft Word, LaTeX, Overleaf)
2. Templates for double-column reports
3. Sample data or text for testing the format.
4. Image editing software (e.g., Adobe Illustrator) for figures
5. Reference management tool (e.g., Zotero, Mendeley)

2.3. Theory

Double-column formatting is a standard layout in scientific and technical reports, designed to maximize space utilization and improve readability. It allows parallel presentation of text and visuals, enabling readers to quickly scan and compare information. The process involves structuring sections like abstract, introduction, methodology, and results, often using predefined styles or templates in word processing tools.

2.4. Procedure

1. Creating Double Column Report

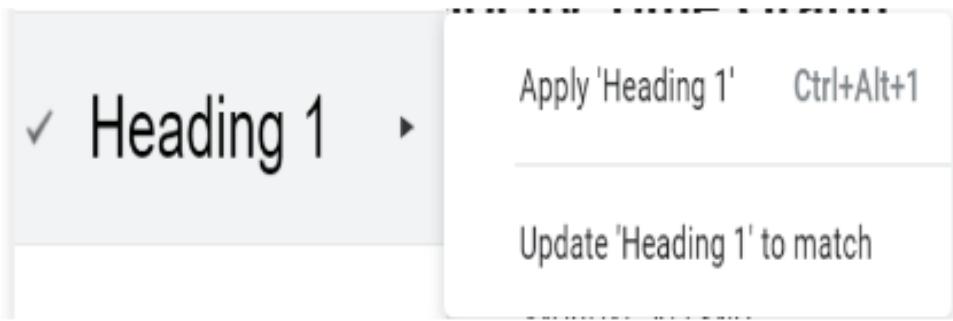


Figure 2.1: Applying Heading

STEP 1:-As per figure we first write our heading related to our topic as mine was The Graphical Analysis of Velocity and displacement time graph and through styles we select our heading and apply Heading.

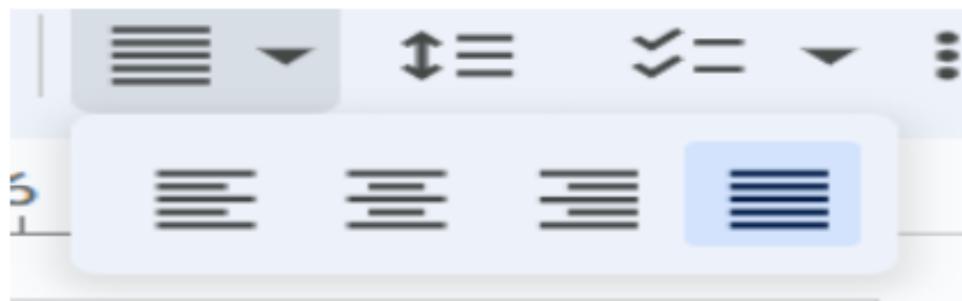


Figure 2.2: Justified Alignment

STEP 2:-As per figure now we select our written text and align all of the text through this desired alignment and make our text looks uniform and professional.

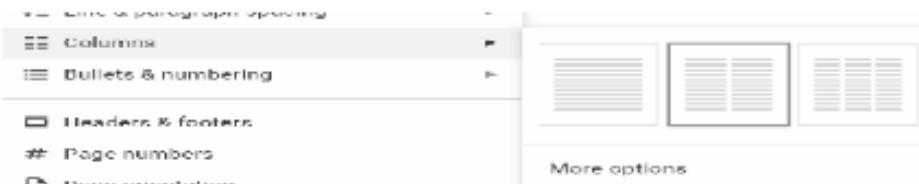


Figure 2.3: Setting Up Double Column

STEP 3:-As per figure we select our text and apply two columns to our text.



Figure 2.4: Bold And Italicized

STEP 4:-As per figure we select our text and make it bold and italic this depends on preference but it makes our text look professional and more easily readable for the reader.



Figure 2.5: Aligning With Scale

STEP 5:-As per Figure we play the game of the ruler and make the desired distance between the columns which helps us organize the columns and make it more appealing for the reader as a good text is one with good scaling and margins.

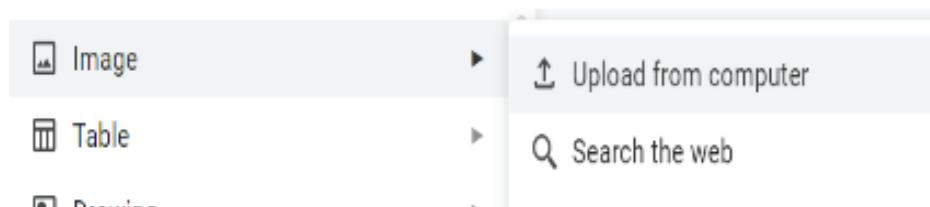


Figure 2.6: Uploading Images

STEP 6:-As per figure we upload pictures from our computer into the text on our desired location.



Figure 2.7: Image Alignment

STEP 7:-As per Figure we make our image in front of the text to make it align well with the text so we can also name it properly along with the text.

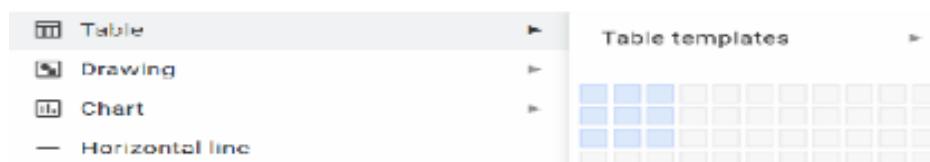


Figure 2.8: Table Creation

STEP 8:-As per Figure 1.8 we also will be inserting 3 columns and rows into our text through the insert option and then by selecting column, to make a table for our values.

2.5. Lab Task

- Analyze existing double-column report templates for structure.
- Create a double-column layout using software tools like LaTeX or Word.
- Add sections such as Abstract, Introduction, and Results with proper headings.
- Insert visuals (e.g., tables or graphs) to test alignment and formatting.

2.6. *Observation*

- Double-column layouts provide a compact, visually appealing structure for presenting information.
- Software tools like LaTeX offer precise control over formatting, while Word templates provide easier customization.
- Figures and tables require careful placement to ensure readability within the columns.
- Proper use of headings and subheadings improves the document's organization and navigation.

2.7. *Conclusion*

This experiment highlights the efficiency and professionalism of double-column layouts for scientific reporting. Tools like LaTeX and Word simplify the process, enabling users to produce high-quality, well-organized reports suitable for academic and technical dissemination.

2.8. *Question*

1. What are the advantages of a double-column layout over a single-column layout?
2. How does LaTeX differ from Microsoft Word in creating double-column reports?
3. What challenges might arise when placing tables or images in a double-column format?
4. Why are double-column layouts preferred for scientific and technical documents?

LAB ASSESSMENT 3: Linux Basics

Lab title : Learning Linux Basics

Course name : Introduction to Information and Communication Technology

Author name : Mushaf Ali Mir

Submission date : 12 Sept 2024

INTRODUCTION

Linux is a powerful and open-source operating system known for its versatility and reliability in managing software and hardware resources. Its command-line interface (CLI) is particularly valued for enabling users to execute complex tasks efficiently. This experiment focuses on learning basic Linux commands, understanding their applications, and exploring the benefits of Linux in various fields..

3.1. Objective

The purpose of this experiment is to familiarize users with basic Linux commands, understand their functionality, and analyze the benefits of using Linux in real-world scenarios.

3.2. Apparatus/Materials

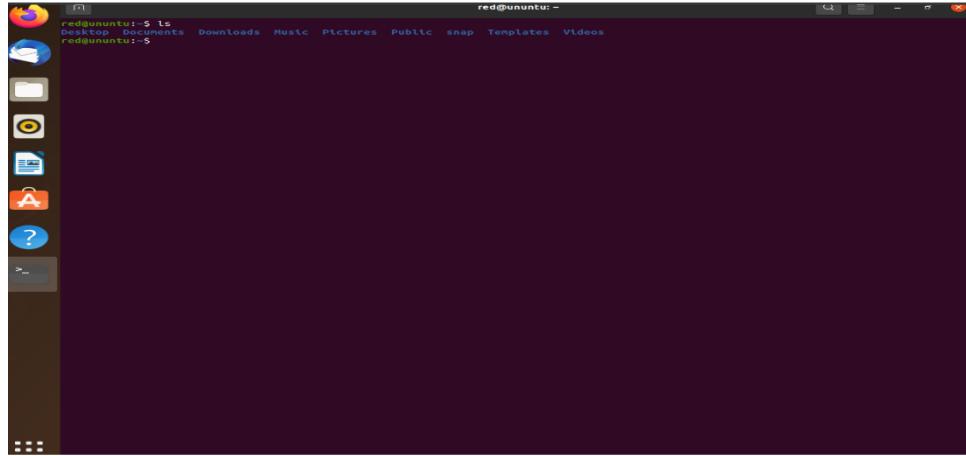
1. A computer or virtual machine with Linux installed (e.g., Ubuntu, Fedora)
2. Terminal application (pre-installed in most Linux distributions).
3. Internet connection (optional, for additional resources or command testing)
4. Basic understanding of file systems and directory structures

3.3. Theory

Linux, as an open-source operating system, allows users to interact with the system primarily through its CLI. Commands such as ls, cd, pwd, mkdir, rm, and chmod are fundamental for navigating and managing files and directories. Understanding these commands helps users efficiently manage resources, automate tasks, and customize system behavior. Linux's open-source nature and robust architecture make it a preferred choice for developers, system administrators, and enthusiasts.

3.4. Procedure

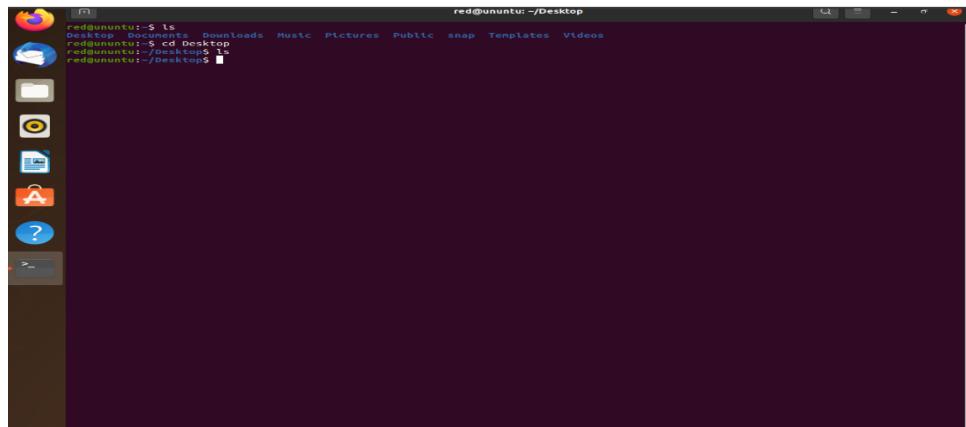
1. Navigating Linux Files With Terminal



```
red@ununtu:~$ ls
Desktop Documents Downloads Music Pictures Public snap Templates Videos
```

Figure 3.1: -ls – List files

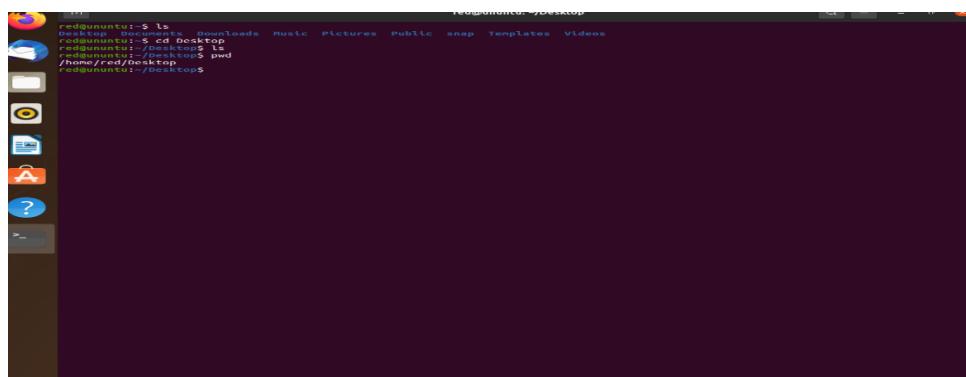
STEP 1:-We use ls to list the files and folders of the current directory,so we can find our desired folder or file to work with.



```
red@ununtu:~$ ls
Desktop Documents Downloads Music Pictures Public snap Templates Videos
red@ununtu:~$ cd Desktop
red@ununtu:~/Desktop$
```

Figure 3.2: -cd – Change directory:

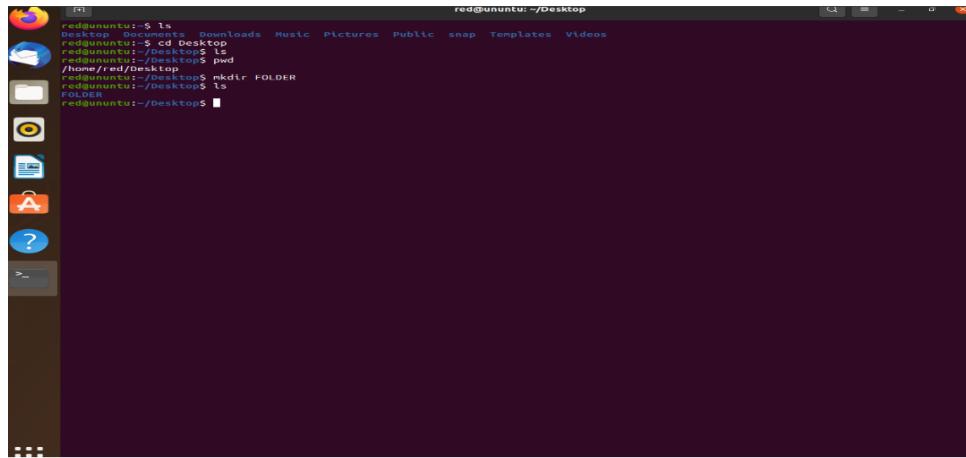
STEP 2:-We use cd to change the directory from our current directory to another directory which is used to navigate between different folders.



```
red@ununtu:~$ ls
Desktop Documents Downloads Music Pictures Public snap Templates Videos
red@ununtu:~$ cd Desktop
red@ununtu:~/Desktop$ ls
red@ununtu:~/Desktop$ pwd
/home/red/ununtu/Desktop
red@ununtu:~/Desktop$
```

Figure 3.3: -pwd – Print current working directory:

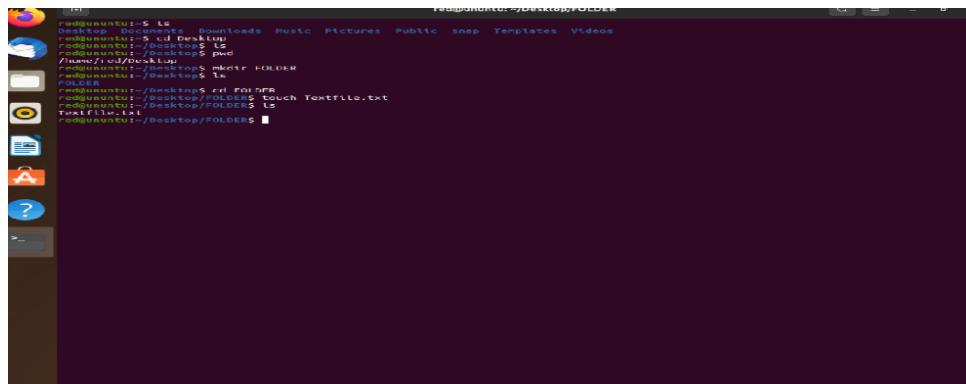
STEP 3:-We use pwd for printing the current directory which gives us the full location for our working directory and help us navigate to different directories.



```
red@ununtu:~$ ls
Desktop Documents Downloads Music Pictures Public snap Templates Videos
red@ununtu:~$ cd Desktop
red@ununtu:~/Desktop$ ls
red@ununtu:~/Desktop$ pwd
/home/red/ununtu/Desktop
red@ununtu:~/Desktop$ mkdir FOLDER
red@ununtu:~/Desktop$ ls
FOLDER
red@ununtu:~/Desktop$
```

Figure 3.4: -Nano – edit Text File

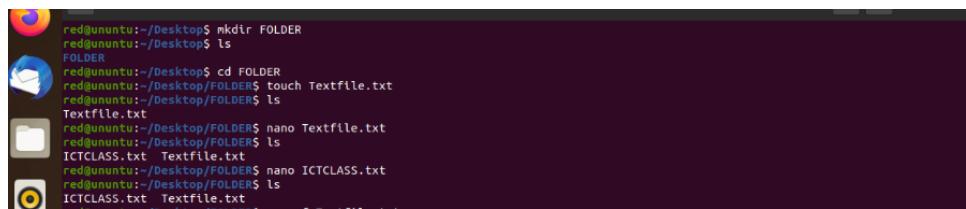
STEP 4:-We use nano to view and edit our text file and input our desired text and we can rename it.



```
red@ununtu:~$ ls
Desktop Documents Downloads Music Pictures Public snap Templates Videos
red@ununtu:~$ cd Desktop
red@ununtu:~/Desktop$ ls
red@ununtu:~/Desktop$ pwd
/home/red/ununtu/Desktop
red@ununtu:~/Desktop$ mkdir FOLDER
red@ununtu:~/Desktop$ ls
FOLDER
red@ununtu:~/Desktop$ cd FOLDER
red@ununtu:~/Desktop/FOLDER$ nano Textfile.txt
red@ununtu:~/Desktop/FOLDER$ touch Textfile.txt
red@ununtu:~/Desktop/FOLDER$ ls
Textfile.txt
red@ununtu:~/Desktop/FOLDER$ rm Textfile.txt
red@ununtu:~/Desktop/FOLDER$ ls
red@ununtu:~/Desktop/FOLDER$
```

Figure 3.5: -rm –To remove Files.

STEP 5:-We use rm to remove folders in linux and -rf for removing files this command can be interpreted to the Windows 10 delete option while this is CLI.



```
red@ununtu:~$ mkdir FOLDER
red@ununtu:~$ ls
FOLDER
red@ununtu:~$ cd FOLDER
red@ununtu:~/FOLDER$ touch Textfile.txt
red@ununtu:~/FOLDER$ ls
Textfile.txt
red@ununtu:~/FOLDER$ nano Textfile.txt
red@ununtu:~/FOLDER$ ls
ICTCLASS.txt Textfile.txt
red@ununtu:~/FOLDER$ nano ICTCLASS.txt
red@ununtu:~/FOLDER$ ls
ICTCLASS.txt Textfile.txt
red@ununtu:~/FOLDER$ cp ICTCLASS.txt ~/Desktop
red@ununtu:~/FOLDER$ ls
Textfile.txt
```

Figure 3.6: -cp – To copy files and directories

STEP 6:-We use cp to copy files or directories to different locations.we use here to move ICTCLASS.txt file to desktop.

```
[red@ubuntu: ~]$ ls
Desktop Documents Downloads Music Pictures Public snap Templates Videos
[red@ubuntu: ~]$ cd Desktop
[red@ubuntu: ~/Desktop]$ ls
[red@ubuntu: ~/Desktop]$ pwd
/home/red/Desktop
[red@ubuntu: ~/Desktop]$ mkdir FOLDER
[red@ubuntu: ~/Desktop]$ ls
[red@ubuntu: ~/Desktop]$ cd FOLDER
[red@ubuntu: ~/Desktop/FOLDER]$ touch Textfile.txt
[red@ubuntu: ~/Desktop/FOLDER]$ ls
Textfile.txt
[red@ubuntu: ~/Desktop/FOLDER]$ nano Textfile.txt
[red@ubuntu: ~/Desktop/FOLDER]$ ls
Textfile.txt
[red@ubuntu: ~/Desktop/FOLDER]$ nano ICTCLASS.txt
[red@ubuntu: ~/Desktop/FOLDER]$ ls
ICTCLASS.txt Textfile.txt
[red@ubuntu: ~/Desktop/FOLDER]$ rm -rf Textfile.txt
[red@ubuntu: ~/Desktop/FOLDER]$ ls
ICTCLASS.txt
[red@ubuntu: ~/Desktop/FOLDER]$ cp ICTCLASS.txt /home/red/Desktop/FOLDER
cp: missing destination file operand after 'ICTCLASS.txt'
Try "cp --help" for more information.
[red@ubuntu: ~/Desktop/FOLDER]$ pwd
/home/red/Desktop/FOLDER
[red@ubuntu: ~/Desktop/FOLDER]$ cp ICTCLASS.txt /home/red/Desktop/FOLDER/ICTCLASS.txt
cp: missing destination file operand after '/home/red/Desktop/FOLDER/ICTCLASS.txt'
Try "cp --help" for more information.
[red@ubuntu: ~/Desktop/FOLDER]$ cp ICTCLASS.txt /home/red/Desktop/FOLDER/ICTCLASS.txt
cp: invalid option -- 'h'
Try "cp --help" for more information.
[red@ubuntu: ~/Desktop/FOLDER]$ cp ICTCLASS.txt /home/red/Desktop
[red@ubuntu: ~/Desktop/FOLDER]$
```

Figure 3.7: -Cat – Display content Of files

STEP 7:-The cat command is used to display the content of files which helps us read the contents of our file ICTCLASS.txt..

```
red@ubuntu:~$ ls
Desktop Downloads Music Pictures Public snap Templates Videos
red@ubuntu:~$ cd Desktop
red@ubuntu:~/Desktop$ ls
Desktop FOLDER
red@ubuntu:~/Desktop$ pwd
/home/red/Desktop
red@ubuntu:~/Desktop$ mkdir FOLDER
red@ubuntu:~/Desktop$ ls
FOLDER
red@ubuntu:~/Desktop$ cd FOLDER
red@ubuntu:~/Desktop/FOLDER$ touch Textfile.txt
red@ubuntu:~/Desktop/FOLDER$ ls
Textfile.txt
red@ubuntu:~/Desktop/FOLDER$ nano Textfile.txt
red@ubuntu:~/Desktop/FOLDER$ ls
Textfile.txt
red@ubuntu:~/Desktop/FOLDER$ nano ICTCLASS.txt
red@ubuntu:~/Desktop/FOLDER$ ls
ICTCLASS.txt Textfile.txt
red@ubuntu:~/Desktop/FOLDER$ cp -rf Textfile.txt
red@ubuntu:~/Desktop/FOLDER$ ls
ICTCLASS.txt Textfile.txt
red@ubuntu:~/Desktop/FOLDER$ cp -rf Textfile.txt ICTCLASS.txt
red@ubuntu:~/Desktop/FOLDER$ cp -rf Textfile.txt ICTCLASS.txt
cp: missing destination file operand after `ICTCLASS.txt'
Try `cp --help' for more information.
red@ubuntu:~/Desktop/FOLDER$ pwd
/home/red/Desktop/FOLDER
red@ubuntu:~/Desktop/FOLDER$ cp /home/red/Desktop/FOLDER/ICTCLASS.txt
red@ubuntu:~/Desktop/FOLDER$ cp /home/red/Desktop/FOLDER/ICTCLASS.txt
Try `cp --help' for more information.
red@ubuntu:~/Desktop/FOLDER$ cp -rf ICTCLASS.txt
cp: invalid option `r'
Try `cp --help' for more information.
red@ubuntu:~/Desktop/FOLDER$ cp -rf ICTCLASS.txt /home/red/Desktop
red@ubuntu:~/Desktop/FOLDER$ cd Desktop
red@ubuntu:~/Desktop$ cp -rf ICTCLASS.txt Desktop
bash: cp: /home/red/Desktop/Desktop: Permission denied
bash: cp: Desktop: Permission denied
red@ubuntu:~/Desktop$ cp -rf ICTCLASS.txt /home/red/Desktop
red@ubuntu:~/Desktop$ cp -rf ICTCLASS.txt /home/red/Desktop
FOLDER$ cp -rf ICTCLASS.txt
red@ubuntu:~/Desktop$ cat ICTCLASS.txt
This file has been created in ICT we learned many new commands and useful use of Linux
```

Figure 3.8: -cp – Copy files or directories.

STEP 8:-This command is used to move or rename files in the linux terminal.

3.5. *Lab Task*

- Navigate through the file system using commands like cd, ls, and pwd.
 - Create and remove directories and files using mkdir and rm.
 - Modify file permissions using chmod and check file ownership using ls -l.
 - Use cp and mv to copy and move files.

3.6. *Observation*

- Linux commands provide a precise and efficient way to manage files and directories.
 - File permissions and ownership control access to system resources, ensuring security
 - System monitoring commands (top, df, etc.) give real-time insights into system performance.
 - The command-line interface is faster and more flexible than graphical interfaces for repetitive tasks.

3.7. Conclusion

Learning Linux basics equips users with essential skills for managing files, directories, and system resources. Linux's command-line tools are powerful for performing tasks efficiently and ensuring system security. Its versatility and open-source nature make it an invaluable tool for a variety of professional and personal applications.

3.8. Question

1. What are the benefits of using Linux over other operating systems?
2. How does the chmod command enhance file security?
3. Why is understanding the file system hierarchy important in Linux?
4. Explain the significance of top in monitoring system performance.

LAB ASSESSMENT 4: Slides Presentation

Lab title : Learning And Creating Excel Slides

Course name : Introduction to Information and Communication Technology

Author name : Mushaf Ali Mir

Submission date : 18 Oct 2024

INTRODUCTION

Creating effective presentations is an essential skill in both academic and professional settings. This experiment focuses on learning the basics of crafting visually appealing presentations, including inserting multimedia elements such as images, audio, and videos, and utilizing professional templates to enhance communication and engagement. By mastering these techniques, users can deliver impactful presentations tailored to their audience.

4.1. Objective

The purpose of this experiment is to develop skills in creating visually appealing and engaging presentations by learning to insert multimedia elements, use professional templates, and apply design principles.

4.2. Apparatus/Materials

1. Presentation software (e.g., Microsoft PowerPoint, Google Slides, Canva, or Prezi)
2. Access to multimedia resources (images, audio, and video files).
3. Internet connection (for downloading templates or assets)
4. Computer with basic input devices (mouse, keyboard)

4.3. Theory

A good presentation is not just about content but also about how the content is visually and audibly communicated. Multimedia elements like images, videos, and audio enhance engagement and help convey complex ideas effectively. Templates provide a structured and professional design framework, saving time while maintaining visual appeal. Theories of visual hierarchy, minimalism, and consistency guide effective presentation design.

4.4. Procedure

1. Creating Slides Presentation

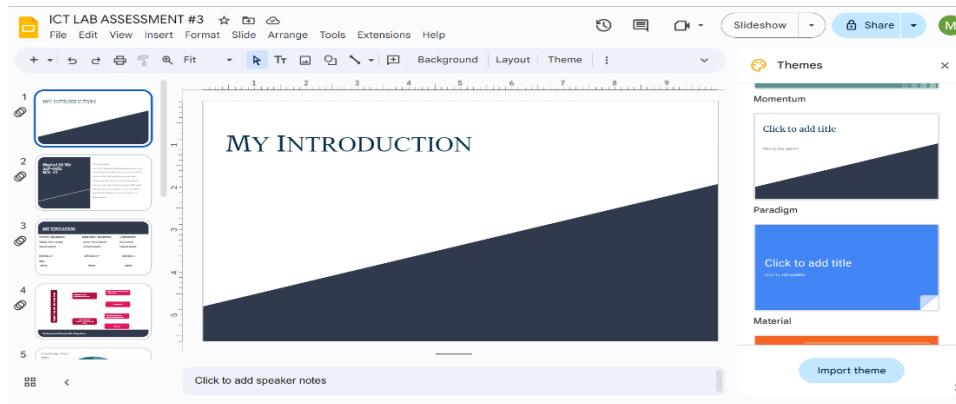


Figure 4.1: Theme Selection

STEP 1:-Selecting your preferred Theme from the them selection.I selected “paradigm”.

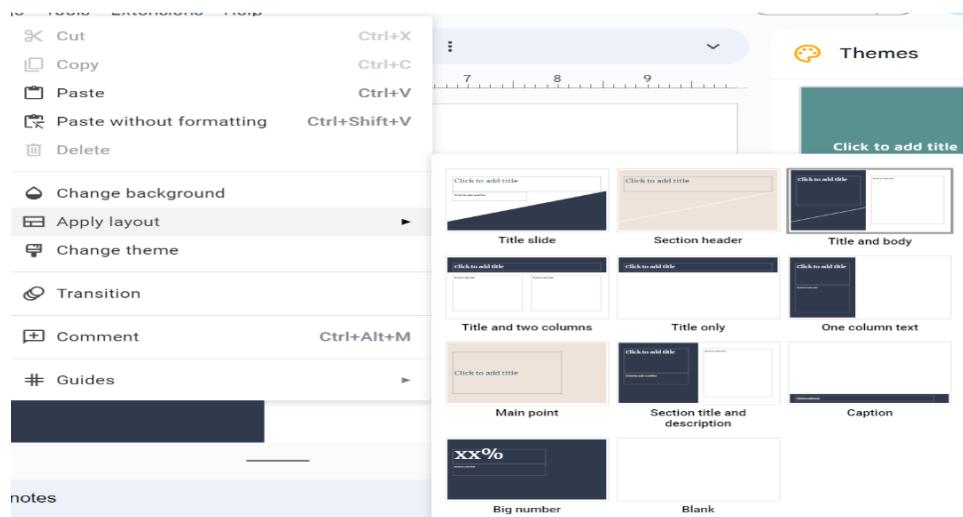


Figure 4.2: Layout Selection

STEP 2:-Select your desired layout by right click and going to layout tab and select the most appealing i selected “title and body”.

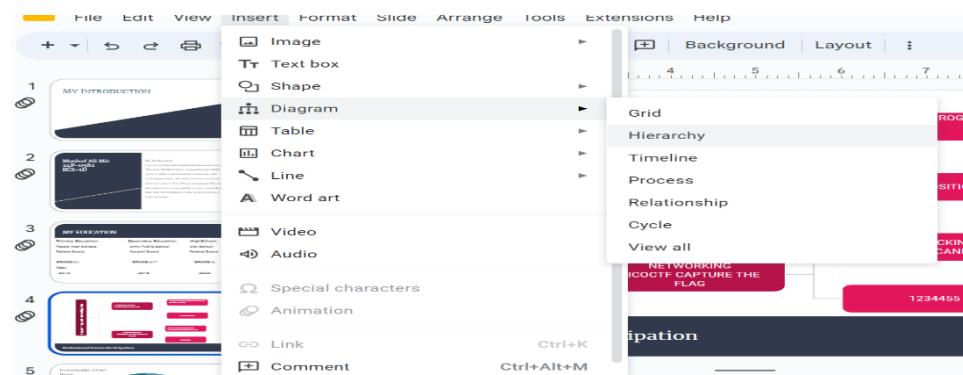


Figure 4.3: Hierarchy Diagram

STEP 3:-Select Your preferred Hierarchy diagram to meet your need.

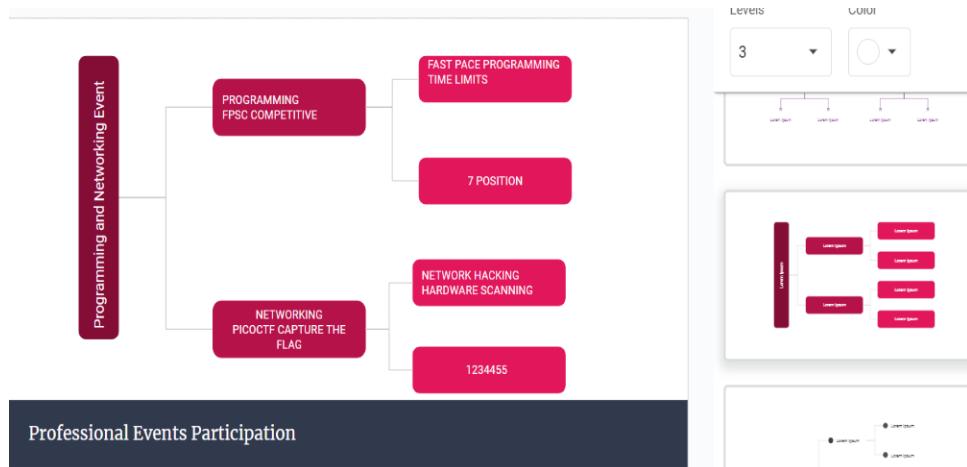


Figure 4.4: Diagram Selection

STEP 4:-Select Your preferred Hierarchy diagram to meet your need.

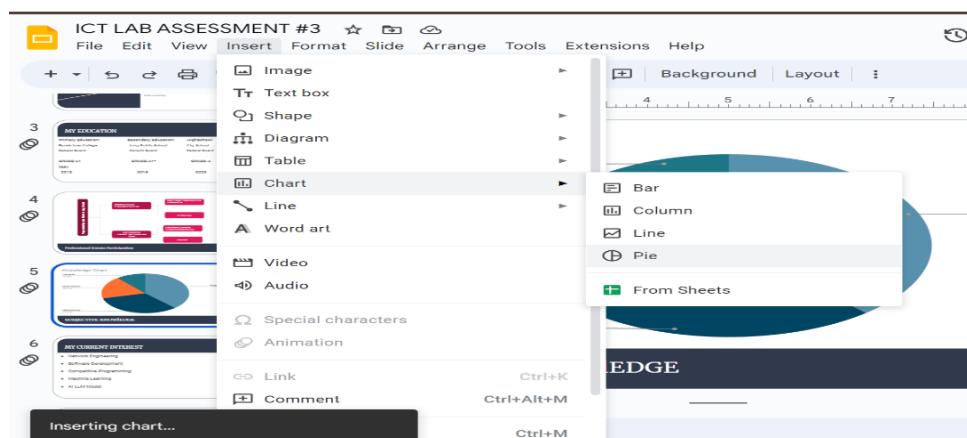


Figure 4.5: Pie Chart Selection

STEP 5:-Select the best pie chart to display information here i used pie chart to display my knowledge.

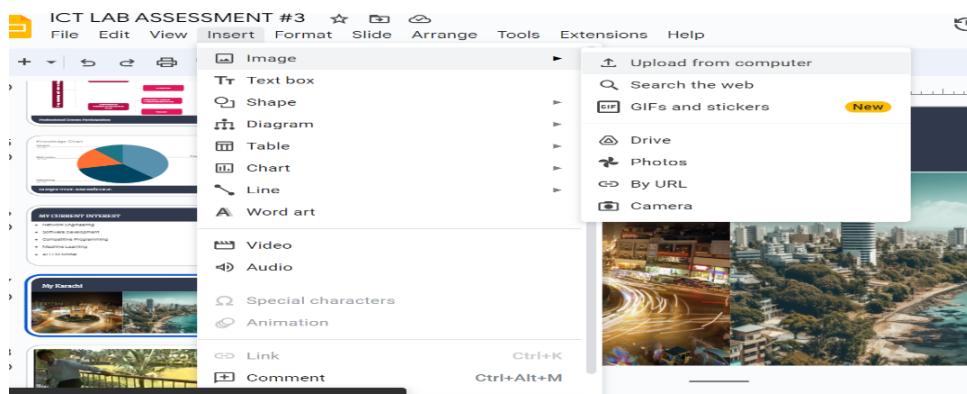


Figure 4.6: Uploading Image

STEP 6:-Upload your desired image into the presentation i used my karachi city image to display its beauty.

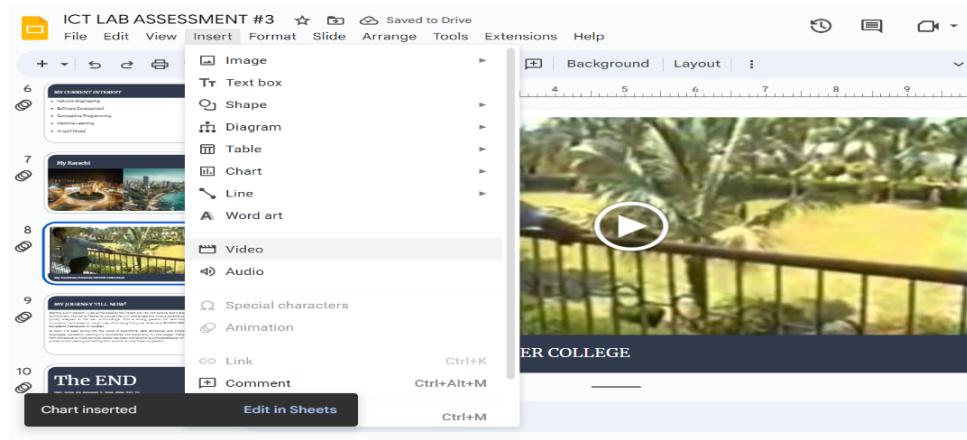


Figure 4.7: Uploading Video

STEP 7:-Insert your desired image onto presentation from insert tab and choosing a link for video..

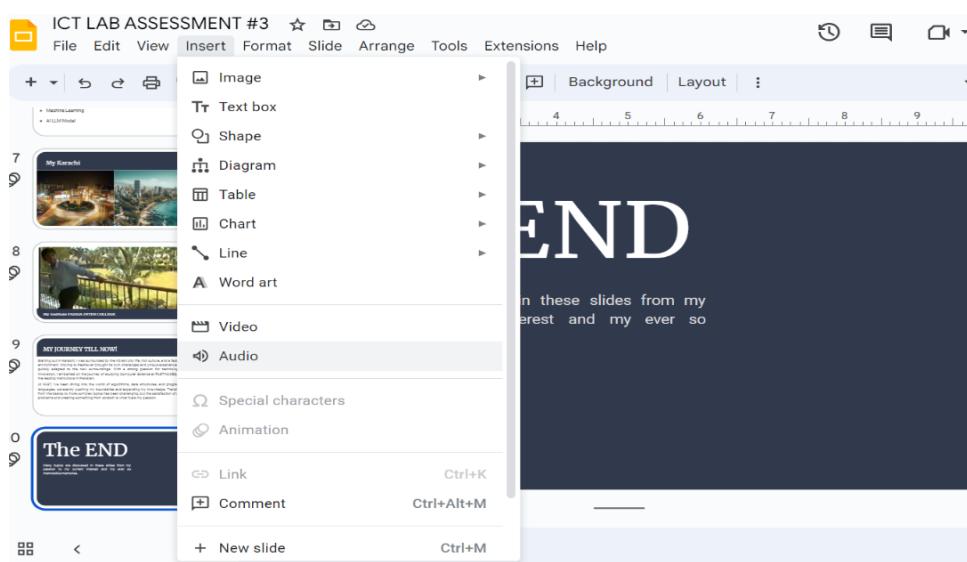


Figure 4.8: Uploading Audio

STEP 8:-Insert any audio in your presentation from insert tab and make your presentation more appealing.

4.5. Lab Task

- Insert and format images within slides to support key points.
- Add and configure audio files for background music or narration.
- Embed and play video clips relevant to the presentation topic.
- Experiment with different slide templates and themes for a cohesive design.

4.6. Observation

- High-quality templates significantly improve the visual appeal of a presentation.
- Images and videos help clarify and emphasize key points, increasing audience engagement.

- Overuse of animations and transitions can distract viewers from the main content..
- Adding multimedia requires attention to file compatibility and proper formatting.

4.7. Conclusion

Learning to create presentations with multimedia elements and professional templates enhances the ability to communicate ideas effectively. A well-designed presentation can capture and hold the audience's attention while delivering content in an organized and engaging manner. Mastering these techniques equips users with the tools to present confidently in various contexts.

4.8. Question

1. How do templates improve the efficiency of creating presentations?
2. What are the benefits of embedding videos in a presentation?
3. Explain the importance of consistency in font styles and color schemes.
4. What factors should be considered when choosing multimedia elements for a presentation?

LAB ASSESSMENT 5: Creating Google Sheets

Lab title : Learning And Creating Google Sheets

Course name : Introduction to Information and Communication Technology

Author name : Mushaf Ali Mir

Submission date : 7 Nov 2024

INTRODUCTION

Spreadsheet applications are essential tools for managing and analyzing data efficiently. This experiment focuses on creating and editing spreadsheets, adding charts and diagrams for data visualization, and applying formatting techniques to enhance clarity and presentation. These skills are widely applicable across academic, professional, and personal tasks.

5.1. Objective

The purpose of this experiment is to learn how to create, format, and edit spreadsheets, use formulas for data analysis, and incorporate charts and diagrams to effectively visualize data.

5.2. Apparatus/Materials

1. A spreadsheet application (e.g., Microsoft Excel, Google Sheets, LibreOffice Calc)
2. Sample data set (e.g., sales, survey results, or attendance records)
3. Basic understanding of spreadsheet navigation and structure
4. Computer or mobile device

5.3. Theory

Spreadsheet applications organize data in rows and columns, offering powerful tools for analysis and visualization. Charts, such as bar graphs, line graphs, and pie charts, highlight trends and patterns within the data, while diagrams add clarity and structure. Using formulas and functions like SUM, AVERAGE, and IF enables efficient data processing. Formatting tools improve readability and aesthetics, making the spreadsheet more user-friendly and professional.

5.4. Procedure

1. Creating Slides Presentation

A	B	C	D	E
1	1			
2	2			
3	3			
4	4			
5	5			
6	6			
7	7			
8	8			
9	9			
10	10			
11	11			
12	12			
13	13			
14	14			
15	15			
16				
17				

Figure 5.1: Row Expanding

STEP 1:-Expanding rows by dragging.

A	B	C	D	E	F	G	H	I	J	K	L
1	X	X**2	X**3	X*X	X*X**	X-30	X+10	Total(Sum Of All)			
2	1	34	1156								
3	2	32	1024								
4	3	112	12544								
5	4	332	110224								
6	5	56	3136								
7	6	22	484								
8	7	121.2	14689.44								
9	8	127.8285714	16340.14367								
10	9	134.4571429	18078.72327								
11	10	141.0857143	19905.17878								
12	11	147.7142857	21819.5102								
13	12	154.3428571	23821.71755								
14	13	160.9714286	25911.80082								
15	14	167.6	28089.76								
16	15	174.2285714	30355.5951								

Figure 5.2: Product Formula

STEP 2:-Applying Product Function.

	X	X**2	X**3	X*X	X*X**	X-30	X+10	Total(Sum Of All)
1	1	34	1156					
2	2	32	1024					
3	3	112	12544					
4	4	332	110224					
5	5	56	3136					
6	6	22	484					
7	7	121.2	14689.44					
8	8	127.8285714	16340.14367					
9	9	134.4571429	18078.72327					
10	10	141.0857143	19905.17878					
11	11	147.7142857	21819.5102					
12	12	154.3428571	23821.71755					
13	13	160.9714286	25911.80082					
14	14	167.6	28089.76					
15	15	174.2285714	30355.5951					

Figure 5.3: Square Function

STEP 3:-Square Function and expanding the column. diagram to meet your need.

	X**2	39304 ×	X*X
34	1156	=POW(B2,3)	
32	1024		
112	12544		
332	110224		
56	3136		
22	484		
121.2	14689.44		
127.8285714	16340.14367		
134.4571429	18078.72327		
141.0857143	19905.17878		
147.7142857	21819.5102		
154.3428571	23821.71755		
160.9714286	25911.80082		
167.6	28089.76		
174.2285714	30355.5951		

Figure 5.4: Pow Function

STEP 4:-Using Pow function For the Cube.

X	X**2	X**3	X*X	X*X*	X-30	X+10	Total(Sum Of All)
1	34	1156	39304	1156	39304	4	=SUM(B2,C2,D2,E2,F2,G2,H2)
2	32	1024	32768	1024	32768	2	42
3	112	12544	1404928	12544	1404928	82	122
4	332	110224	36594368	110224	36594368	302	342
5	56	3136	175616	3136	175616	26	66
6	22	484	10648	484	10648	-8	32
7	121.2	14689.44	1780360.128	14689.44	1780360.128	91.2	131.2
8	127.8285714	16340.14367	2088737.223	16340.14367	2088737.223	97.82857143	137.8285714
9	134.4571429	18078.72327	2430813.477	18078.72327	2430813.477	104.4571429	144.4571429

Figure 5.5: Sum Function

STEP 5:-Using the Sum function to Sum all the entities of the row. my knowledge.

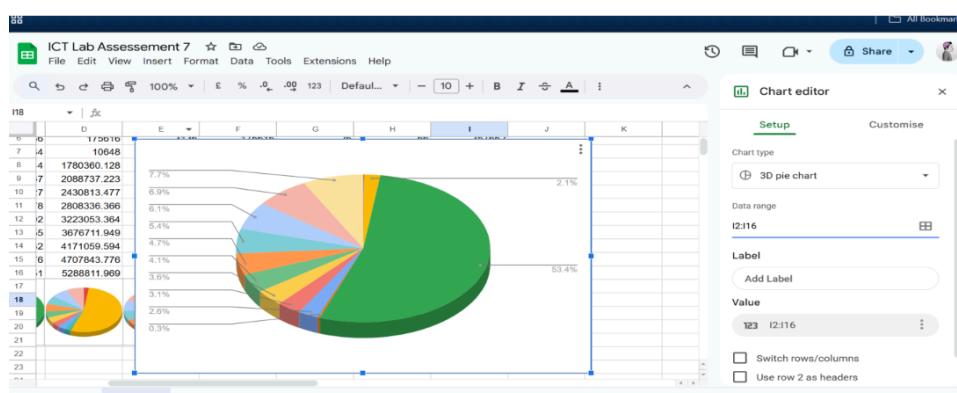


Figure 5.6: Pie Chart

STEP 6:-Inserting Pie Chart And Graph for overall comparison.

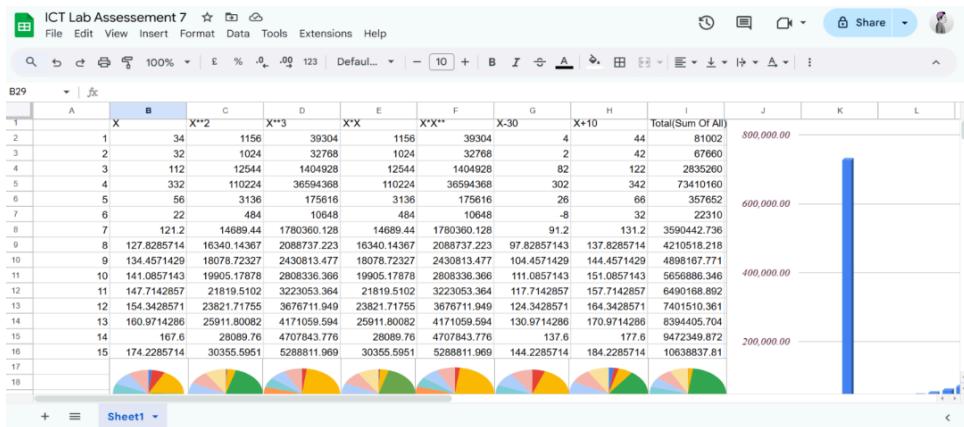


Figure 5.7: Sheet Ready

STEP 7:-The Final Result.

5.5. Lab Task

- Input and organize sample data into a spreadsheet.
- Create and customize charts (e.g., bar, line, and pie charts) to represent data visually.
- Insert diagrams to structure information clearly.
- Apply formatting to improve presentation, such as conditional formatting, borders, and cell shading..

5.6. Observation

- Spreadsheets provide a structured way to manage and analyze large datasets.
- Charts and diagrams effectively communicate trends and relationships in the data.
- Using formulas saves time and ensures accuracy in calculations.
- Proper formatting enhances data readability and professionalism.

5.7. Conclusion

Learning to create and edit spreadsheets is a fundamental skill for data management and visualization. By using charts, diagrams, and formulas, users can analyze and present data effectively. These tools are indispensable in various fields, including finance, education, and research.

5.8. Question

1. What are the benefits of using charts to represent data in a spreadsheet?
2. How do formulas improve efficiency when working with large datasets?
3. Explain the role of conditional formatting in spreadsheet presentation.
4. What is the difference between bar charts and pie charts in data visualization? ?

LAB ASSESSMENT 6: Creating LAN

Lab title : Learning And Creating Local Area Network

Course name : Introduction to Information and Communication Technology

Author name : Mushaf Ali Mir

Submission date : 16 Nov 2024

INTRODUCTION

A Local Area Network (LAN) is a network of computers and devices interconnected within a limited area such as an office, building, or campus. Setting up a LAN involves configuring various hardware components, network devices, and ensuring smooth communication between devices. This experiment focuses on understanding the fundamentals of creating a LAN, including hardware setup, IP addressing, and configuring network devices to enable communication.

6.1. Objective

The purpose of this experiment is to design and implement a Local Area Network (LAN), configure network devices, and understand the key components required for effective communication within the network.

6.2. Apparatus/Materials

1. Computers or Devices (PCs, laptops, or workstations) LibreOffice Calc)
2. Network Interface Cards (NICs)
3. Operating System (e.g., Windows, Linux) with network configuration tools
4. IP addressing scheme (static or dynamic IP addresses)

6.3. Theory

A Local Area Network (LAN) allows devices to communicate within a limited geographic area. The basic components of a LAN include routers, switches, and network cables that enable data transmission between devices. The LAN may use either static or dynamic IP addressing, with the latter relying on a DHCP server to assign IP addresses automatically. By establishing a LAN, devices within the network can share resources like files, printers, and internet connections.

6.4. Procedure

1. Creating Slides Presentation

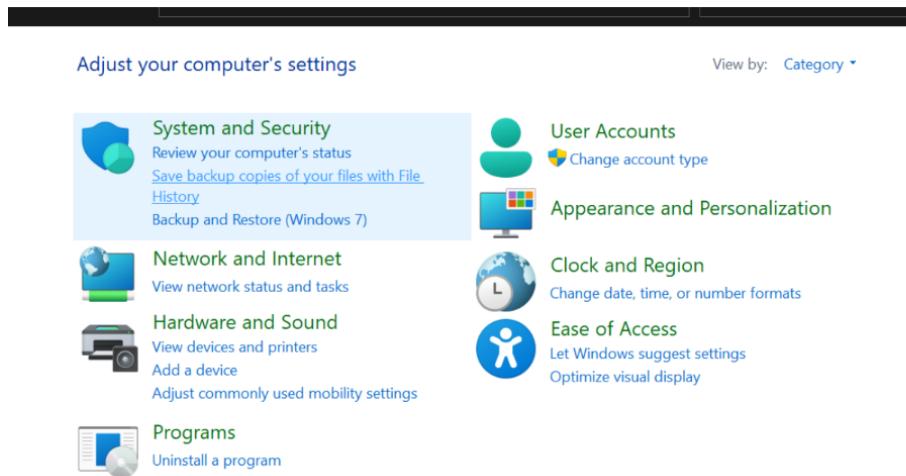


Figure 6.1: Lan Setup

STEP 1:-We Setup our lan for 2 windows devices first we connect both of them to save network in our case to my mobile network hotspot and then properly set their setting like in the following steps.After successful connection go to our control panel setting and there we select network and internet settings.

Advanced Sharing Setting

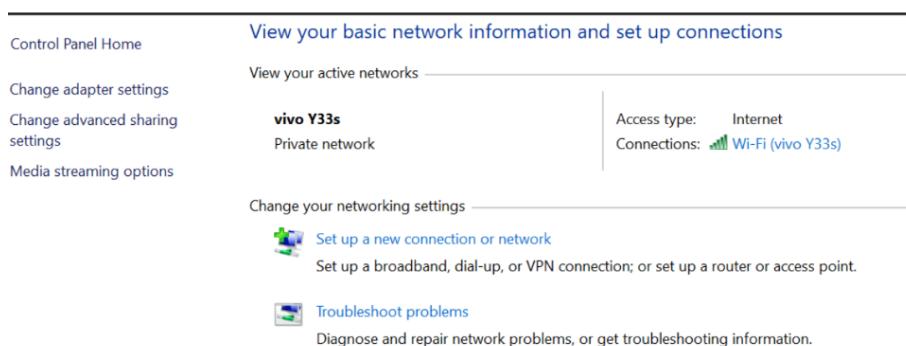


Figure 6.2: Advanced Sharing

STEP 2:-After Selecting network setting in our control panel we select advanced sharing setting in our left in the 3rd option.

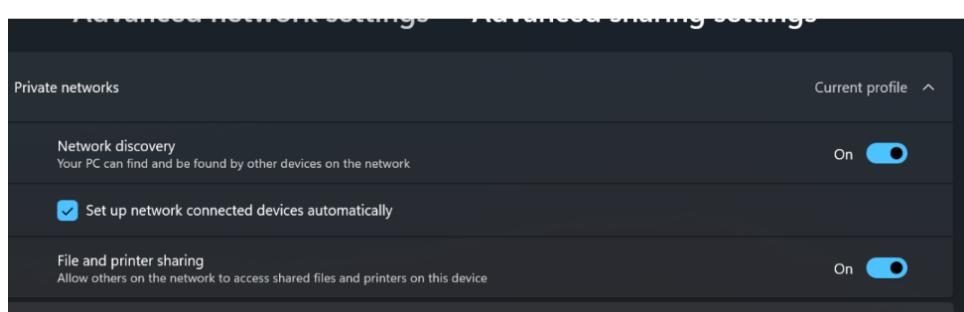


Figure 6.3: Enable File Sharing

STEP 3:-In our advanced sharing option we select Our current profile setting and select the network discov-

ery option and file sharing so we can share the files the other device on the lan must also enable these option for communication and data transfer.

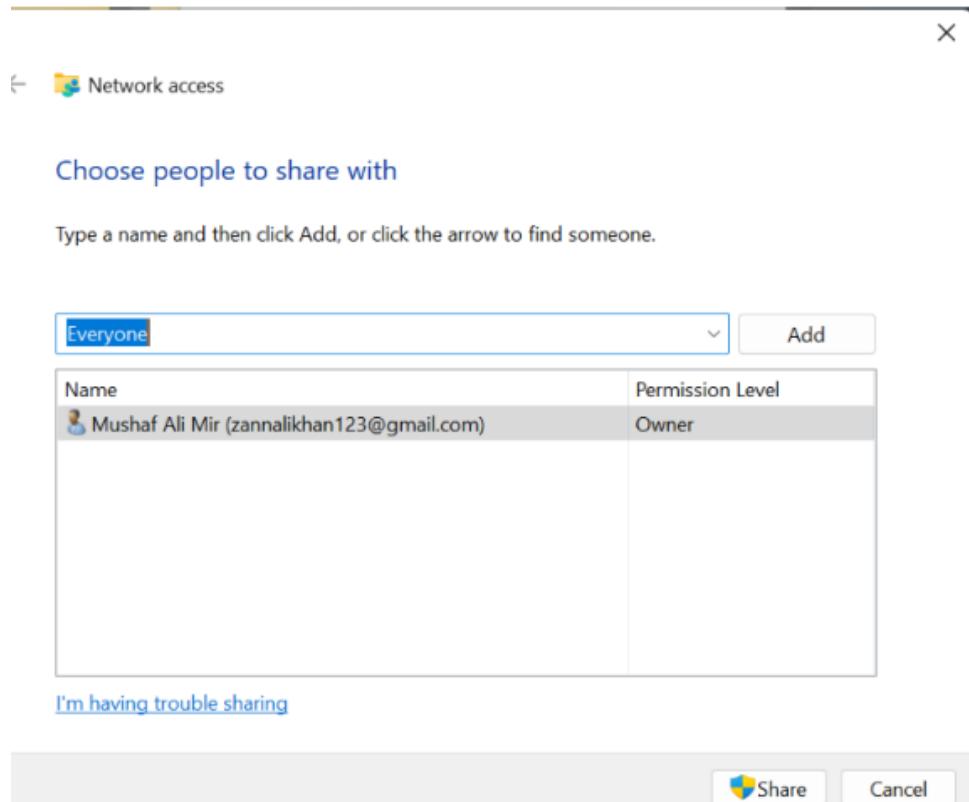


Figure 6.4: File Permission

STEP 4:-After enabling the setting we can share our files through the file or folder setting and going to the sharing section and selecting share to share our file or folder in our case we select everyone to share our file with everyone on the network on the network access setting in Fig [5] as it a privately owned and governed network we do not have unwanted access and use.

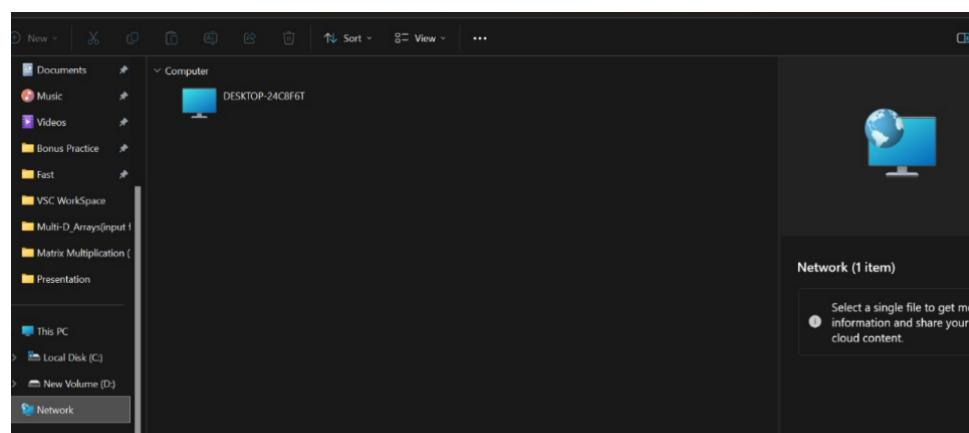


Figure 6.5: Access Device

STEP 5:-I access my device through the Network option in my pc. my knowledge.

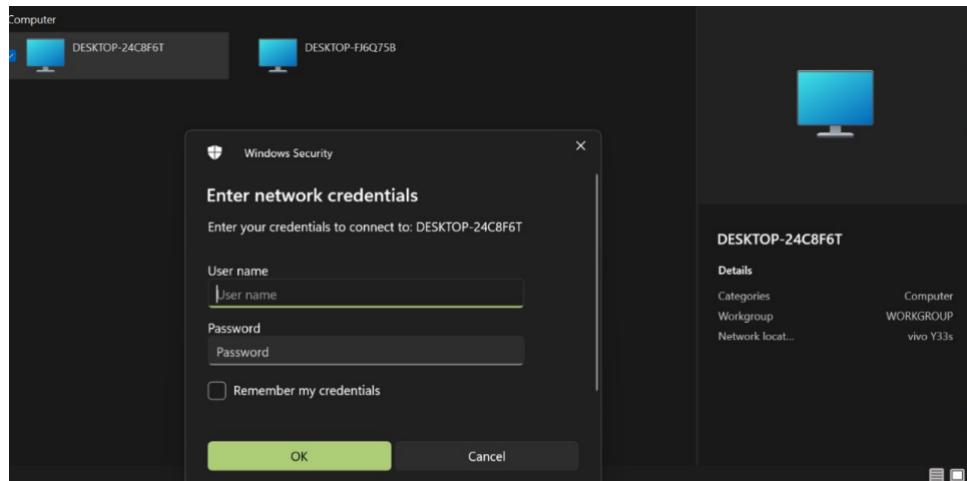


Figure 6.6: Network Credentials

STEP 6:-To make our lan safe for demonstration sake we require a username and password for access to our pc on the second computer.

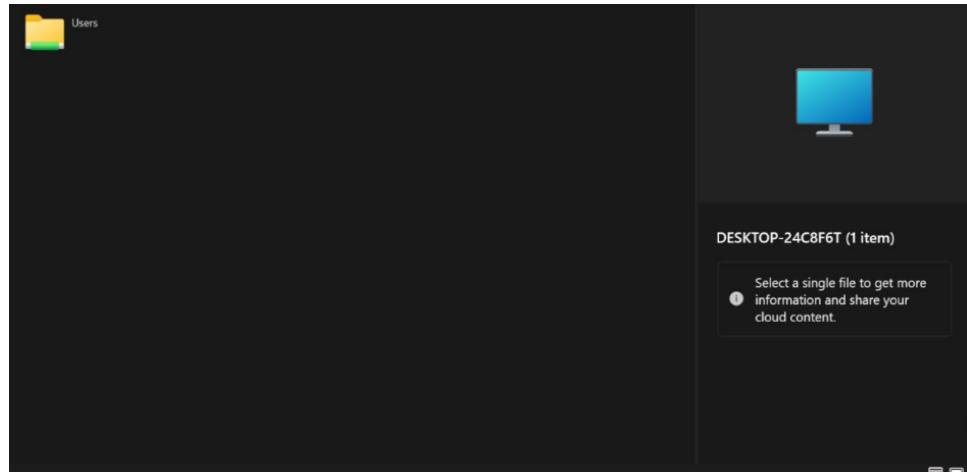


Figure 6.7: Accessing Files

STEP 7:-After successful access to the device we access our desired files for our use.The file should have share permission.

6.5. Lab Task

- Assign static or dynamic IP addresses to devices using the network configuration settings.
- Test network connectivity between devices using tools like ping.
- Configure file and printer sharing to enable resource sharing across the network.
- Connect multiple devices using Ethernet cables to the router or switch.

6.6. Observation

- Devices on the LAN are successfully able to communicate with each other after configuration.
- The router or switch manages the flow of data between devices.

- Resource sharing (files and printers) becomes functional after configuring the necessary settings.
- The choice of static or dynamic IP addressing influences network management and device communication.

6.7. Conclusion

Setting up a Local Area Network (LAN) provides a solid foundation for managing communication and resource sharing between multiple devices within a confined area. Understanding LAN architecture and configuring network devices is essential for enabling smooth, reliable network performance. This experiment demonstrates the importance of proper network design and device configuration for optimal functionality.

6.8. Question

1. What are the advantages of using a switch instead of a hub in a LAN setup?
2. How does DHCP simplify IP address management in a LAN?
3. How do static IP addresses differ from dynamic IP addresses in a network setup?
4. What security measures should be taken when setting up a LAN to protect sensitive data?

LAB ASSESSMENT 7: Number System

Lab title : Learning And Creating Google Sheets

Course name : Introduction to Information and Communication Technology

Author name : Mushaf Ali Mir

Submission date : 16 Nov 2024

INTRODUCTION

The number system forms the foundation of digital computing and mathematics, involving different bases such as binary (base 2), decimal (base 10), octal (base 8), and hexadecimal (base 16). Understanding the conversion between these systems is crucial for various applications in computing, digital logic design, and data representation. This experiment focuses on converting numbers between different systems, such as decimal to binary, binary to decimal, and others, while understanding the principles behind these conversions.

7.1. *Objective*

The purpose of this experiment is to understand the number systems used in computing and to perform conversions between different number systems, such as decimal, binary, octal, and hexadecimal.

7.2. *Apparatus/Materials*

1. Calculator (optional)
2. Spreadsheet application (optional, for automated calculations)
3. Pen and paper (for manual calculations)
4. Computer or reference material for number system tables

7.3. *Theory*

Spreadsheet applications organize data in Number systems represent numerical values using different bases:

Decimal (Base 10): Uses digits 0–9; most commonly used in everyday arithmetic. Binary (Base 2): Uses digits 0 and 1; fundamental in computing and digital systems. Octal (Base 8): Uses digits 0–7; often used in digital electronics. Hexadecimal (Base 16): Uses digits 0–9 and letters A–F; widely used in programming and memory addressing. Conversions between these systems rely on positional value and arithmetic rules. For example, to convert a decimal number to binary, divide the number repeatedly by 2, recording the remainders.

7.4. *Types Of Number System*

There are mainly four types of the number system in computer. Binary Number System: The binary number system is the most fundamental number system used in computer science. It uses only two digits, 0 and 1, to represent all numbers and data. Decimal Number System: The decimal number system is also used in computer science, but it is not as fundamental as the binary system. It uses ten digits, 0 through 9, to represent numbers. Octal

Number System: The octal number system uses eight digits, 0 through 7, to represent numbers. It is commonly used in computer programming and digital electronics. **Hexadecimal Number System:** The hexadecimal number system uses 16 digits, including 0 through 9 and A through F, to represent numbers. It is often used in computer programming and digital electronics.

7.5. Procedure

1. Binary Conversions

To convert a decimal number to binary, we divide the decimal number by 2 repeatedly and write the remainder in reverse order. $158 / 2 = 79$ remainder 0 $79 / 2 = 39$ remainder 1 $39 / 2 = 19$ remainder 1 $19 / 2 = 9$ remainder 1 $9 / 2 = 4$ remainder 1 $4 / 2 = 2$ remainder 0 $2 / 2 = 1$ remainder 0 $1 / 2 = 0$ remainder 1 Therefore, the binary equivalent of 158 is 10011110.

2. Octal Conversion

To convert a decimal number to an octal, we divide the decimal number by 8 repeatedly and write the remainder in reverse order. $158 / 8 = 19$ remainder 6 $19 / 8 = 2$ remainder 3 $2 / 8 = 0$ remainder 2 Therefore, the octal equivalent of 158 is 236

3. Hexadecimal Conversion

To convert a decimal number to hexadecimal, we divide the decimal number by 16 repeatedly and write the remainder in reverse order. For remainders greater than 9, we use letters A-F. $158 / 16 = 9$ remainder 14 (E) $9 / 16 = 0$ remainder 9 Therefore, the hexadecimal equivalent of 158 is 9E

7.6. Lab Task

- Convert a decimal number to binary, octal, and hexadecimal.
- Convert a binary number to decimal, octal, and hexadecimal
- Verify conversions using reverse operations (e.g., binary to decimal and back)
- Perform manual calculations for practice and compare results with automated tools.

7.7. Observation

- Decimal numbers can be successfully converted to binary by repeated division by 2.
- Binary numbers are converted to decimal using positional values and powers of 2.
- Hexadecimal values simplify representation of large binary numbers due to their compactness.
- Each number system has specific use cases, such as binary for machine language and hexadecimal for memory addressing.

7.8. Conclusion

Understanding number systems and their conversions is fundamental to computing and digital electronics. Mastering these conversions enables effective communication between humans and machines. This experiment highlights the methods and importance of number system conversions in various technical fields.

7.9. *Question*

1. How does the binary system represent numbers differently from the decimal system?
2. Why is the hexadecimal system preferred in memory addressing?
3. Explain the step-by-step process for converting a decimal number to binary.
4. How is the octal system related to binary, and why is it used in digital systems?

LAB ASSESSMENT 8: Html Development

Lab title : Learning And Creating HTML Web Pages

Course name : Introduction to Information and Communication Technology

Author name : Mushaf Ali Mir

Submission date : 27 Nov 2024

INTRODUCTION

HTML (HyperText Markup Language) is the standard language used to create and structure content on the web. It uses various commands, also known as tags, to define elements such as headings, paragraphs, links, images, and forms. This experiment focuses on learning the basic structure of HTML, understanding its commands, and applying them to create a simple web page.

8.1. Objective

The purpose of this experiment is to understand the fundamentals of HTML, learn commonly used commands (tags), and apply them to design and structure a basic web page.

8.2. Apparatus/Materials

1. Text editor (e.g., Notepad, Visual Studio Code, Sublime Text)
2. Web browser (e.g., Chrome, Firefox, or Edge)
3. Computer with internet access (optional for advanced resources)
4. Computer or mobile device

8.3. Theory

HTML is the backbone of web development, providing a structured way to organize and present content. It uses elements enclosed in tags to define content types and their roles on a webpage. Each tag serves a specific purpose: `<html>` defines the document as an HTML file, `<head>` includes metadata and external resources, and `<body>` contains visible content. Common tags such as `<h1>` to `<h6>` define headings of varying sizes, `<p>` structures paragraphs, `<a>` creates hyperlinks, and `` embeds images. HTML allows developers to create static layouts that can later be enhanced with CSS for styling and JavaScript for interactivity, making it a critical skill for web development.

8.4. Procedure

1. Creating Html Page



Figure 8.1: Title Setup

STEP 1:-Create Html Tag and Head Tag.

```
<html>
  <head>
    <title> Web Development</title>
  </head>
  <body>
    <h1>Web Development</h1>
    <p>Web development is the work involved in developing a website for the Internet (World Wide Web) or an intranet (a private network). Web development can range from developing a simple static page of plain text to complex web applications, electronic businesses, and social network services. A more comprehensive list of tasks to which web development commonly refers may include web engineering, web design, web content development, client liaison, client-side/server-side scripting, web server and network security configuration, and e-commerce development.</p>
    <h2>HTML: The building blocks of the Internet </h2>
    <p><font-size:150%><br></font-size:150%> align="justify"</p>
    HTML stands for HyperText Markup Language. It is a relatively simple language that allows developers to create the basic structure of a website. Even the most complex websites have HTML at their core. It's also the second-most-used programming language by developers, according to a recent Stack Overflow survey.
    <h2>CSS</h2><p><font-size:150%><br></font-size:150%> align="justify"</p>
    CSS represents the building blocks of a website, CSS is a way to shape and enhance those blocks. CSS is a style sheet language used to specify the way different parts of a webpage appear to users. In other words, it's a way to add some style and additional formatting to what you've already built with HTML.</p>
    <h2>JavaScript</h2>
    <p><font-size:150%><br></font-size:150%> align="justify"</p>
    JavaScript is a script language that adds interactivity to front end languages discussed in this article, building on top of both HTML and CSS. If you're trying to compare the languages, think of it like this: while HTML creates the basic structure for a website, CSS adds style to that structure, and JavaScript takes all of that work and makes it interactive and more functionally complex.
```

Figure 8.2: HTML Head Tag

STEP 2:-Creating Body Tag And Paragraph tag.

```
<h3 style="font-size:130%;" align="center">Most Used Programming Languages</h3>
<ol style="font-size:119%;" type="i";>
<li><b>Html</b></li>
<li><b>CSS</b></li>
<li><b>JavaScript</b></li>
<li><b>Python</b></li>
<li><b>SQL</b></li>
</ol>
<center>
<table width="750px" border="4">
<tr align="center">
<th>HTML Commands</th>
<th>CSS Commands</th>
<th>JavaScript Commands</th>
</tr>
```

Figure 8.3: Body And Paragraph Tag

STEP 3:-Creating List.

HTML Commands	CSS Commands	JavaScript Commands
<p>	border-style	let
<body>	padding	const
<table>	style	demo
<center>	background-color	function

Figure 8.4: Html Table

STEP 4:-Creating a table.

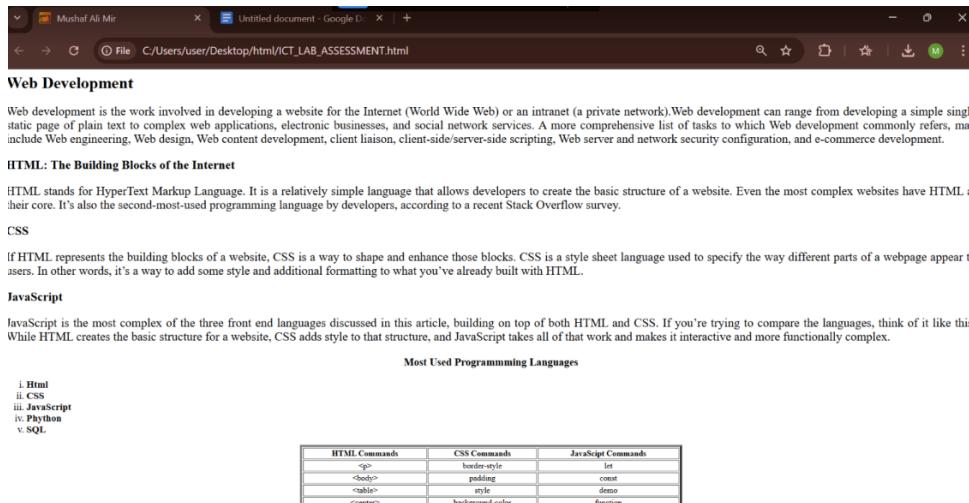


Figure 8.5: My Webpage

STEP 5:-Final Result

8.5. Lab Task

- Write a basic HTML document with a title and body content..
- Add headings, paragraphs, and a list (ordered or unordered)..
- Include a hyperlink using the `a` tag.
- Embed an image using the `img` tag with appropriate attributes.

8.6. Observation

- HTML commands allow the clear structuring of web content using tags.
- Proper nesting and closing of tags are crucial for rendering pages correctly.
- Links and multimedia elements enhance user interaction and experience.
- Simple forms enable data collection and basic user engagement.

8.7. Conclusion

HTML is an essential tool for creating and organizing web content. By mastering its commands and tags, developers can build static webpages that form the basis for advanced web applications. Understanding HTML commands enables efficient communication between developers and web browsers.

8.8. Question

1. What is the significance of the `head` and `body` tags in an HTML document?
2. How can hyperlinks be created and styled using the `a` tag?
3. Describe the attributes required for embedding images with the `img` tag.
4. Why is proper nesting of tags important in HTML?

LAB ASSESSMENT 9: Javascript Forms

Lab title : Creating Forms With JavaScript

Course name : Introduction to Information and Communication Technology

Author name : Mushaf Ali Mir

Submission date : 29 Nov 2024

INTRODUCTION

Creating interactive forms is a key aspect of web development. HTML provides the structure for form elements such as text fields, radio buttons, checkboxes, and submit buttons, while JavaScript enhances interactivity by validating user inputs and enabling dynamic functionality. This experiment focuses on designing forms using HTML and applying JavaScript to validate and process user input, ensuring better user experience and data accuracy.

9.1. Objective

The objective of this experiment is to learn how to create forms using HTML, integrate JavaScript for form validation and interactivity, and understand the importance of these tools in web development.

9.2. Apparatus/Materials

1. Text editor (e.g., Visual Studio Code, Sublime Text)
2. Web browser (e.g., Google Chrome, Mozilla Firefox)
3. Computer with basic hardware and software support

9.3. Theory

HTML forms are created using the `<form>` element, which serves as the container for all input elements such as `<input>`, `<textarea>`, `<select>`, and `<button>`. These elements enable users to input and submit data. JavaScript complements this setup by adding client-side validation to ensure that user inputs meet specified criteria before submission. For instance, JavaScript can verify email formats, ensure required fields are not left empty, and confirm password matching. Additionally, JavaScript provides dynamic interactivity, such as displaying error messages, enabling or disabling buttons, and giving real-time feedback. By combining HTML and JavaScript, developers can create efficient, user-friendly forms that enhance data accuracy and usability.

9.4. Procedure

1. Creating JavaScript Forms

```

<html>
<head>
<title>Mushaf</title>
</head>
<body>

<form>
<label for="text1">Input1:</label>
<input type="text" id="text1" name="input1"/>
<label for="text2">Input2:</label>
<input type="text" id="text2" name="input2"/>
<br>
<button type="button" onclick="ftnequalcheck()">Check Equal</button>

</form>
<script>

```

Figure 9.1: Form Tag

STEP 1:-In this Section i have used html tag 'Form' to create a form in my html page with this tag two input fields are generated for user to give input and the tag includes. Label Label tag to label our input fields in the html page. Input Input tag to create a input field for user to input data.

```

function ftnequalcheck(){
var text1=document.getElementById("text1").value;
var text2=document.getElementById("text2").value;

if(text1==text2){
alert("Matched Correct Input");
}else{
alert("No Match Wrong Input")
}

}

</script>
</body>

```

Figure 9.2: JavaScript Functions

STEP 2:-In this section i have used the script tag to use Javascript and have made use of a function and the if and else structures to check weather the two input by the user are equal or not. Var In the code we have used var to declare a varible type which has global scope. Get element In by this function we get the value of the input by its ID. If-else By this function we do decision making thus by the output of true or false we give different outputs.



Figure 9.3: My Web Page

STEP 3:-FINAL RESULT.

9.5. Lab Task

- Design a basic form using HTML: Include fields such as name, email, and password with the `<input>` element.
- Add dropdown menus and checkboxes: Use `<select>` and `<input type="checkbox">` elements.
- Implement form validation using JavaScript: Validate email formats, check required fields, and provide error messages.
- Enable real-time feedback: Use JavaScript to show success or error messages dynamically.

9.6. Observation

- HTML provides a clear and structured framework for creating forms using elements such as `<input>`, `<textarea>`, and `<button>`.
- JavaScript enhances forms by adding interactivity, enabling real-time validation, and improving user experience.
- Proper integration of HTML and JavaScript ensures seamless functionality.

9.7. Conclusion

This experiment highlights the importance of combining HTML and JavaScript to create interactive forms. HTML establishes the structural foundation, while JavaScript adds interactivity and validation, enabling effective and user-friendly web forms. Mastering these technologies is essential for modern web development.

9.8. Question

1. What is the purpose of the `<form>` element in HTML?
2. How does JavaScript validate user inputs before form submission?
3. What attributes can be used with `<input>` to enhance form usability?.
4. How can JavaScript provide real-time feedback during form interaction?

LAB ASSESSMENT 10: Link Html Pages

Lab title : Linking Multiple Html Pages

Course name : Introduction to Information and Communication Technology

Author name : Mushaf Ali Mir

Submission date : 30 Nov 2024

INTRODUCTION

Linking multiple pages in HTML is a fundamental concept in web development, enabling users to navigate seamlessly between different sections of a website. The `<a>` (anchor) tag is used to create hyperlinks that connect one page to another or to specific sections within a page. This experiment focuses on understanding the use of the `<a>` tag, working with the `href` attribute, and organizing multiple pages into a cohesive website structure.

10.1. Objective

The objective of this experiment is to learn how to link multiple HTML pages using the `<a>` tag, create navigation menus, and establish a logical flow between web pages.

10.2. Apparatus/Materials

1. Text editor (e.g., Visual Studio Code, Sublime Text).
2. Web browser (e.g., Google Chrome, Mozilla Firefox).
3. Computer with basic hardware and software support

10.3. Theory

Linking pages in HTML is achieved using the `<a>` tag, which defines a hyperlink. The `href` attribute specifies the location of the target page or resource. For example, `About Us` links to a page named `about.html`. Links can be:

Relative links: Use file paths relative to the current document (e.g., `` for a file in a subfolder). Absolute links: Use full URLs to link to external resources (e.g., ``). Additionally, navigation menus can be created using a list structure (`` and ``) combined with multiple `<a>` tags. By linking multiple pages, developers can provide an intuitive user experience.

10.4. Procedure

1. Linking Html Pages

Lab Assessment 12

Index Page

Page D

Page B

Page C

Figure 10.1: Page 1

Lab Assessment 12

Page B

Page D

Index

Page C

Figure 10.2: Page 2

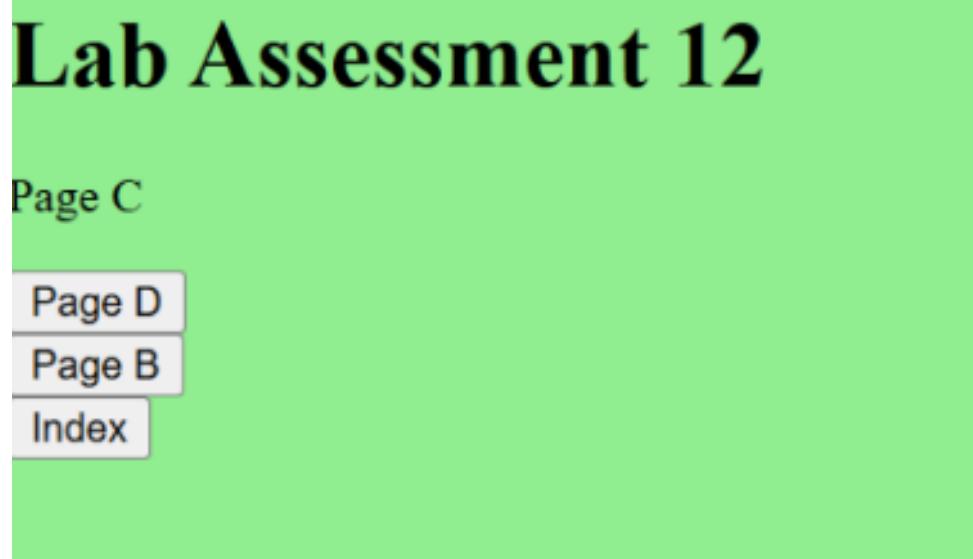


Figure 10.3: Page 3

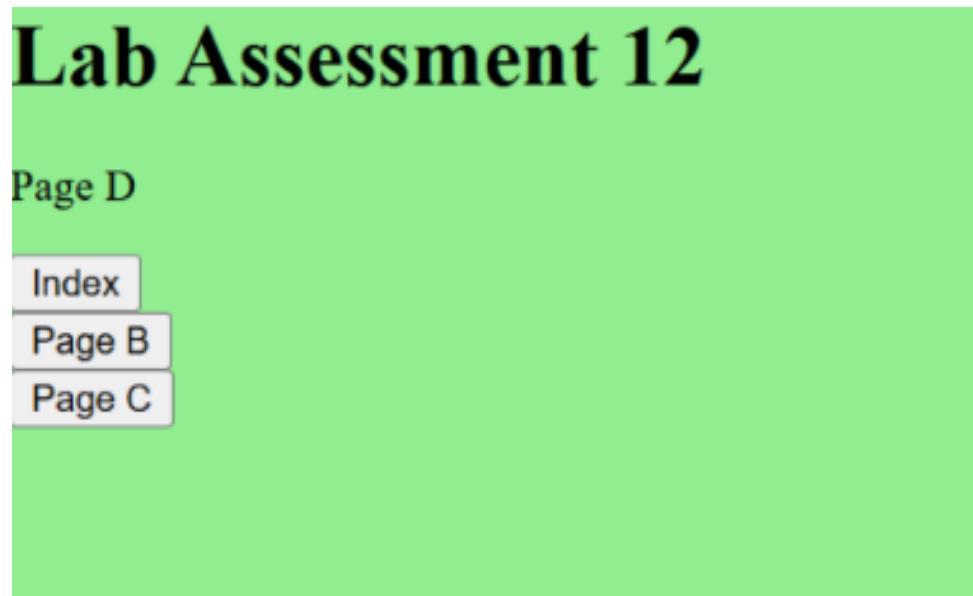


Figure 10.4: Page 4

The `<a>` tag is used to link different HTML pages. The syntax of the tag is: `Text`. We use this tag to link multiple pages and create buttons to navigate between pages. The pages are designed with a background color using the tag: `style="background-color: #92A8D1;"`. The `<button>` tag in HTML is used to create clickable buttons that can perform actions. The final result is shown below.

10.5. Lab Task

- Create three HTML pages (e.g., Home, About Us, and Contact Us).
- Link the pages together using the `<a>` tag: Add a navigation menu on each page with links to the other pages. Use relative paths for linking.

- Test the navigation to ensure all links are functional and correctly directed.
- Add anchor links within a single page to navigate between sections using IDs.

10.6. Observation

- The `<a>` tag effectively links pages and provides smooth navigation.
- Navigation menus make websites user-friendly and organized.
- Proper use of relative paths simplifies linking within a project folder structure.

10.7. Conclusion

Linking multiple HTML pages is a core skill in building websites. The `<a>` tag enables seamless navigation, ensuring an organized and accessible website structure. By understanding relative and absolute linking methods, developers can efficiently create multi-page websites.

10.8. Question

1. What is the purpose of the `<a>` tag in HTML?
2. Explain the difference between relative and absolute links.
3. Why is it important to structure your project files logically for linking?
4. Describe how anchor links work within a single page.

LAB ASSESSMENT 11: HTML Login Page

Lab title : Creating Html Login Page

Course name : Introduction to Information and Communication Technology

Author name : Mushaf Ali Mir

Submission date : 30 Nov 2024

INTRODUCTION

In web development, creating a login page is a crucial task for enabling user authentication. This experiment involves creating an HTML login page that includes username and password input fields. JavaScript is used to validate these credentials on the client side before submitting the form. This validation ensures the entered credentials match the predefined ones and provides real-time feedback to the user if they are incorrect.

11.1. Objective

The objective of this experiment is to design and implement a simple HTML login page and use JavaScript to validate the user credentials (username and password). The JavaScript code will check if the entered credentials match predefined values before submitting the form.

11.2. Apparatus/Materials

1. Text editor (e.g., Visual Studio Code, Sublime Text)
2. Web browser (e.g., Google Chrome, Mozilla Firefox)
3. Computer with basic hardware and software support

11.3. Theory

An HTML login page typically includes <input> fields for the username and password, organized within a <form> element. JavaScript is used to validate the input values. When the user submits the form, JavaScript ensures that the credentials match a predefined username and password. This helps to prevent incorrect data submission and enhances user experience by providing immediate feedback on failed attempts. The validation is performed in the browser, ensuring faster response times and less load on the server..

11.4. Procedure

1. Creating Slides Presentation

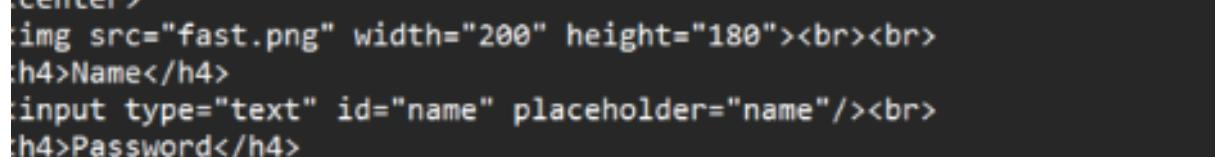
```
<form>
<center>

<h4>Name</h4>
<input type="text" id="name" placeholder="name"/><br>
<h4>Password</h4>
<input type="password" id="password" placeholder="password"/><br><br>
<button type="button" onclick="func()">Submit</button>
</form>
```

Figure 11.1: Form Tag

STEP 1:-<form>Tag The <form>tag is an HTML tag used to create a form (a square input field) for the user to enter data and information into.

type: Specifies the type of input the form will accept. id: Assigns an ID to the input field, which can be referred to later for additional functionality and operations. script: The <script>tag is used to write JavaScript code and functionality within an HTML file.

```
if(password==="fast"&&name==="MushafAliMir")
window.location.href=("Success.html");

}else{
window.location.href=("Failed.html");
}
```

Figure 11.2: Windows Tag

STEP 2:-<window.location.href = ("link")> The window.location property is used to link pages together in a manner that allows each page to be directly accessed if specific conditions are met.

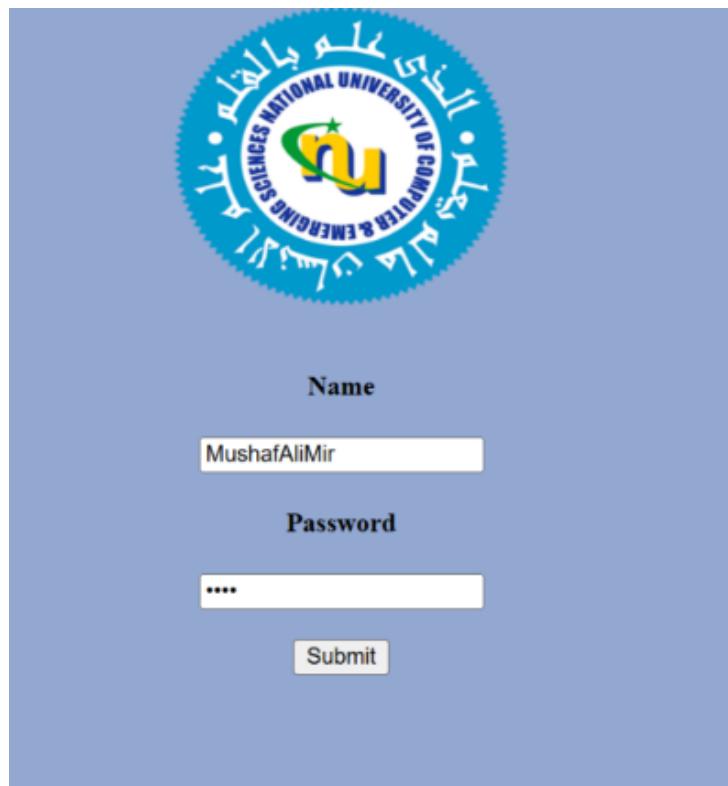


Figure 11.3: Login Page



Figure 11.4: Successful Access

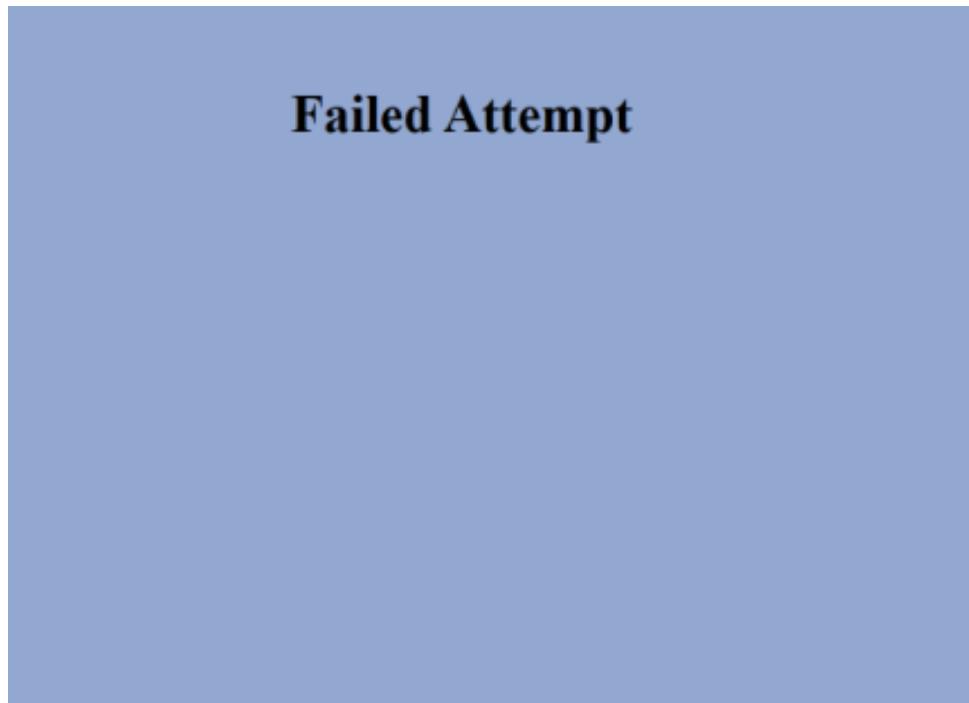


Figure 11.5: Failed Access

Final Linked Login Pages.

11.5. Lab Task

- < Create an HTML login page >with two input fields for the username and password.
- < Use JavaScript to validate >if the entered credentials match predefined values (e.g., username: "admin", password: "password123").
- < Display an alert or message >if the login fails, instructing the user to try again.
- < Ensure the page does not reload >unless the credentials are correct.

11.6. Observation

- The HTML page correctly displays the input fields and the login button.
- JavaScript validation runs when the user clicks the submit button, checking if the entered credentials match the expected values. .
- If the credentials are incorrect, the page shows a validation message or alert, as intended..
- The form only submits successfully when valid credentials are entered.

11.7. Conclusion

Creating a login page using HTML and JavaScript for client-side validation enhances the user experience by providing immediate feedback on incorrect credentials. This experiment successfully demonstrated how JavaScript can be used to validate user input on the client side before form submission.

11.8. Question

1. What is the purpose of client-side validation in a login form?
2. How can you modify the JavaScript code to allow multiple sets of usernames and passwords?
3. Explain why it's important to not rely solely on client-side validation for security.
4. How could you improve this login page to store and retrieve credentials securely?