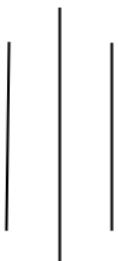




**Lab Assignment for Introduction to Information
Technology**
A Project Report



Submitted By
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Roll No. 10
Date: March 5, 2021

Submitted To
Department of Computer Science and Information Technology
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Under the Supervision of
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1 Intro To DOS

In the personal computer operating systems MS-DOS and PC DOS, a number of standard system commands were provided for common tasks such as listing files on a disk or moving files. Some commands were built into the command interpreter, others existed as external commands on disk. Over the several generations of DOS, commands were added for the additional functions of the operating system. In the current Microsoft Windows operating system a text-mode command prompt window can still be used. The command interpreter for DOS runs when no application programs are running. When an application exits, if the transient portion of the command interpreter in memory was overwritten, DOS will reload it from disk. Some commands are internal and built into COMMAND.COM, others are external commands stored on disk. When the user types a line of text at the operating system command prompt, COMMAND.COM will parse the line and attempt to match a command name to a built-in command or to the name of an executable program file or batch file on disk. If no match is found, an error message is printed and the command prompt is refreshed.

2 Different types of DOS commands

2.1 DIR

This command lists all directory and files from given directory.

Syntax:

```
DIR [pathname] [display_format] [file_attributes] [sorted] [time] [options]
```

Figure 1: Example of a DIR command on DOSBOX

```
C:\>mkdir test-directory
C:\>dir
Directory of C:\.
.
..
TEST-DIR      <DIR>        01-03-2021 19:23
               0 File(s)      0 Bytes.
               3 Dir(s)       262,111,744 Bytes free.

C:\>
```

2.2 MKDIR

This command created directory in given path.

Syntax:

```
DIR DRIVE:\path] [DRIVE:\path]
```

Figure 2: Example of a MKDIR command on DOSBOX

```
C:\>mkdir test-directory
C:\>dir
Directory of C:\.
.
..
TEST-DIR      <DIR>        01-03-2021 19:23
               0 File(s)      0 Bytes.
               3 Dir(s)     262,111,744 Bytes free.

C:\>
```

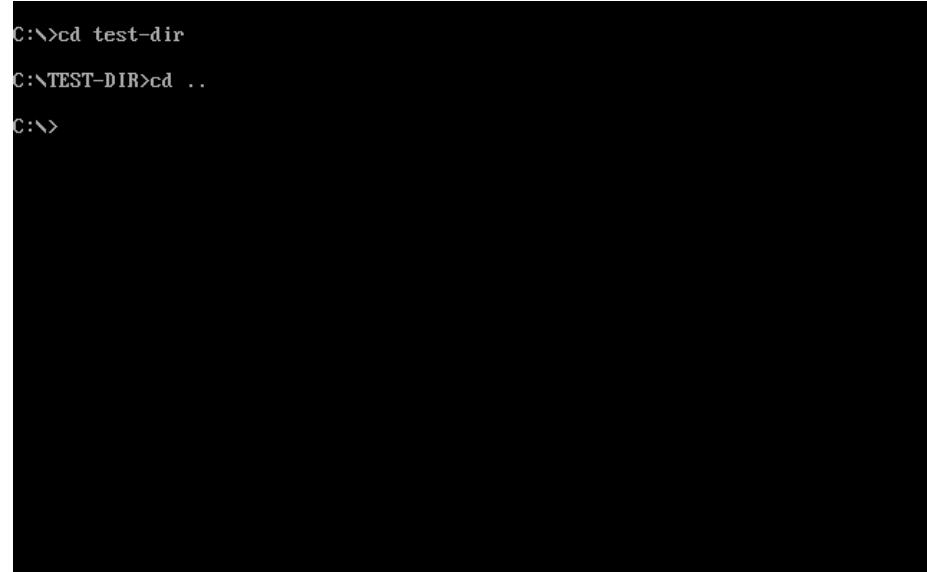
2.3 CD

This command changes directory to given path.

Syntax:

```
CD [\path]
```

Figure 3: Example of a CD command on DOSBOX



```
C:\>cd test-dir
C:\TEST-DIR>cd ..
C:\>
```

The image shows a screenshot of a DOSBOX terminal window. The window has a black background and white text. At the top, it says "DOSBox - Microsoft Windows". In the main area, there are three lines of text: "C:\>cd test-dir", "C:\TEST-DIR>cd ..", and "C:\>". The cursor is at the end of the third line.

2.4 TYPE

This command prints out the contents of the file(s) from given path.

Syntax:

```
TYPE [\path\filename]
```

Figure 4: Example of a TYPE command on DOSBOX



```
C:\>type now.txt
now now now
C:\>
```

The screenshot shows a DOSBOX terminal window. The command 'type now.txt' is entered, followed by three lines of text 'now now now'. The prompt 'C:\>' appears at the bottom left.

2.5 ECHO

This command echoes out the text written after the first argument(echo itself) and prints to stdout. Echo serves multipurpose function, when paired with pipe command it writes to file the contents that was supposed to be echoed to stdout.

Syntax:

```
ECHO "...some text..."
```

Figure 5: Example of a ECHO command on DOSBOX

```
C:\>echo > create-text-file.txt
C:\>echo this is going to be written to text file. > create-text-file.txt
C:\>echo i just created and wrote to it using just one command echo yay.
i just created and wrote to it using just one command echo yay.
C:\>type create-text-file.txt
this is going to be written to text file.

C:\>_
```

2.6 COPY

This command copies the file from one location to another, meanwhile it can be used to rename file too.

Syntax:

```
COPY [path\source\filename.extension] [path\destination\filename.extension]
```

Figure 6: Example of a COPY command on DOSBOX

```
C:\>copy thisistextfile.txt thisiscopyoftextfile.txt
THISISTE.TXT
    1 File(s) copied.

C:\>
```

2.7 MEM

This command displays the amount of installed and available memory, including extending, expanded, and upper memory.

Syntax:

```
MEM [/program|/debug|/classify|/free|/module(name)] [/page]
```

Figure 7: Example of a MEM command on DOSBOX



```
C:\>mem
      632 Kb free conventional memory
      63 Kb free upper memory in 1 blocks (largest UMB 63 Kb)
    15168 Kb free extended memory
    15168 Kb free expanded memory

C:\>_
```

2.8 DEL

This command deletes the file from given path.

Syntax:

```
DEL [\path\filename.extension]
```

Figure 8: Example of a DEL command on DOSBOX

```
C:\>del thisistextfile.txt  
C:\>dir  
Directory of C:\.  
.. <DIR> 01-03-2021 19:59  
. <DIR> 01-03-2021 19:21  
TEST-DIR <DIR> 01-03-2021 19:23  
HELLO TXT 13 01-03-2021 19:57  
HELLOT XT 13 01-03-2021 19:57  
HELP TXT 13 01-03-2021 19:57  
THISISCO TXT 13 01-03-2021 19:59  
 4 File(s) 52 Bytes.  
 3 Dir(s) 262,111,744 Bytes free.  
  
C:\>_
```

2.9 CLS

This command clears all previous command output from the screen.

Syntax:

CLS

```
Z:\>dir
Directory of Z:\.
COMMAND.COM               20 01-10-2002 12:34
AUTOEXEC.BAT              32 01-10-2002 12:34
KEYB.COM                  20 01-10-2002 12:34
IMGMOUNT.COM              20 01-10-2002 12:34
BOOT.COM                  20 01-10-2002 12:34
INTRO.COM                 20 01-10-2002 12:34
RESCAN.COM                20 01-10-2002 12:34
LOADFIX.COM               20 01-10-2002 12:34
MEM.COM                   20 01-10-2002 12:34
MOUNT.COM                 20 01-10-2002 12:34
MIXER.COM                 20 01-10-2002 12:34
CONFIG.COM                20 01-10-2002 12:34
   12 File(s)             252 Bytes.
   0 Dir(s)                0 Bytes free.

Z:\>echo hello
hello

Z:\>echo testing clearing the screen
testing clearing the screen

Z:\>
```

Figure 9: Example before using CLS command on DOSBOX

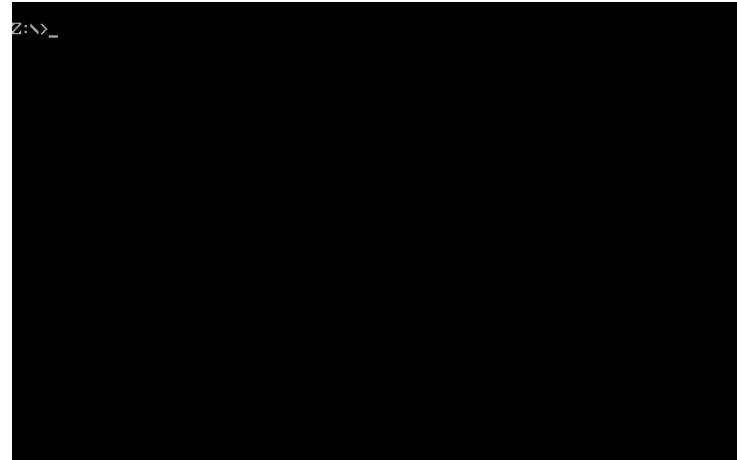


Figure 10: Example after using CLS command on DOSBOX

2.10 HELP

This command shows all the files that can be used in DOS.

Syntax:

```
HELP
```

Figure 11: Example of a HELP command on DOSBOX

```
Z:\>help
If you want a list of all supported commands type help /all .
A short list of the most often used commands:
<DIR>      > Directory View.
<CD>        > Displays/changes the current directory.
<CLS>       > Clear screen.
<COPY>      > Copy files.
<DEL>        > Removes one or more files.
<EXIT>      > Exit from the shell.
<MD>        > Make Directory.
<RD>        > Remove Directory.
<REN>       > Renames one or more files.
<TYPE>      > Display the contents of a text-file.
<VER>       > View and set the reported DOS version.

Z:\>_
```

3 Project Work On Word Processor

3.1 Bio-Data

Biodata



Name: Anukul Adhikari

DOB: 2002/02/15

Nationality: Nepali

Religion: Hindu

Language: Nepali/English

Father: Shes Raj Adhikari

Mother: Maya Devi Dhakal

Marital Status: Unmarried

Interest: Technology, Decentralization, Freedom, Privacy

Skills

- 1) Languages
 - a) Python, C, LaTeX
- 2) Frameworks
 - a) Django, Flask
- 3) Tools
 - a) Vim, Nginx, Linux, Bash, Docker, SNMP, Zabbix

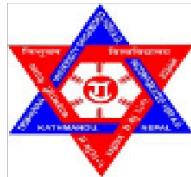
Contacts

Email: hi@anukul.com.np

Address: Sanothimi, Bhaktapur

3.2 Identity Card

B.Sc.CSIT



TRIBHUBHAN UNIVERSITY
BHAKTAPUR MULTIPLE CAMPUS

Doodhpatti-17, Bhaktapur : 01-6610200



Name: **Anukul Adhikari**

Card No: 01234

Roll No: 61

Program: B.Sc.CSIT

Year: Second Semester

Address: Sanothimi, Bhaktapur

Contact: 9800000000

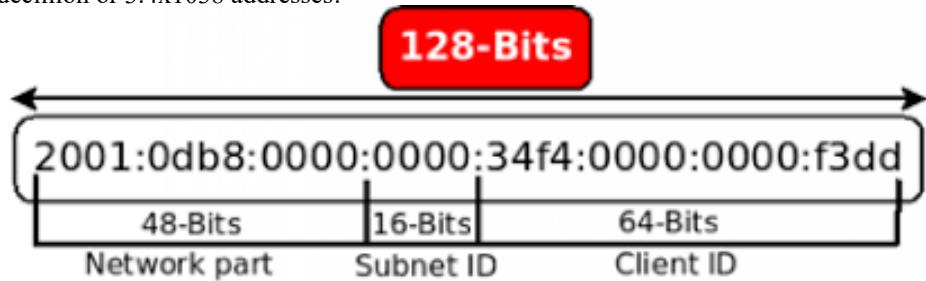
Validity: 2021/08/30



STUDENT IDENTITY CARD

3.3 Introduction to IPv6

Internet Protocol version 6 is the next addressing system for Internet-connected devices. The explosive growth of the Internet has exceeded the capacity of the 30-year-old standard, known as IPv4, to handle all the network tools, websites, cell phones, and other devices that need unique addresses out in the World Wide Web. IPv4 has been a very successful standard with impressive durability. Not much else on the Internet has lasted 30 years unchanged, so they must have gotten a few things right when they designed it. However, the massive growth in the number and types of devices that use an Internet address has finally made a change necessary. IPv6 is that change. IPv4 uses a 32-bit address, usually expressed as a group of four address numbers from 0 to 255, which made around 4.3 billion addresses available. The vast majority of these addresses have already been assigned to Internet service providers. IPv6's 128-bit address provides for many times that amount of addresses. To be exact, IPv6 will supply 2¹²⁸ or 340 undecillion or 3.4x10³⁸ addresses!



3.4 Class Routine

SHIFT DAY	10:30 11:30 (AM)	11:30 12:30 (AM-PM)	12:30 1:30 (PM)	1:30 2:00 (PM)	2:00 3:00 (PM)	3:00 4:00 (PM)
Sunday	Physics	Mathematics	Introduction to I.T	BREAK	C programming	Digital Logic
Monday	Physics	Mathematics	Introduction to I.T	BREAK	C programming	Digital Logic
Tuesday	Physics	Mathematics	Introduction to I.T	BREAK	C programming	Digital Logic
Wednesday	Physics	Mathematics	Introduction to I.T	BREAK	C programming	Digital Logic
Thursday	Physics	Mathematics	Introduction to I.T	BREAK	C programming	Digital Logic
Friday	Physics	Mathematics	Introduction to I.T	BREAK	C programming	Digital Logic
Saturday	PUBLIC HOLIDAY					

3.5 Mark Sheet of SEE

GOVERNMENT OF NEPAL NATIONAL EXAMINATION BOARD OFFICE OF THE CONTROLLER OF THE EXAMINATIONS							
SECONDARY EDUCATION EXAMINATION, GRADE-10							
GRADE-SHEET							
THE MARKS SECURED BY ...ANUKUL ADHIKARI							
DATE OF BIRTH ...2058/11/03 ROLL.....							
DHANKUTA..... SYMBOL NO...8070006 V.....							
OFTRIBENI.....MA.....VI.....IN THE ANNUAL SE EXAMINATION, GRADE-10 OF2073BS..... ARE GIVEN BELOW:							
SN	SUBJECT	CREDIT HOUR	OBTAINED MARKS		FI NA L GR AD E	GRADE POINT	REMARKS
			TH	PR			
01	COMP. ENGLISH	4	A+	A+	A+	4.0	
02	COMP. NEPALI	4	A+	A+	A+	4.0	
03	COMP. MATHEMATICS	4	A+	A+	A+	4.0	
04	COMP. SCIENCE	4	A+	A+	A+	4.0	
05	COMPUTER REPAIR &	4	A+	A+	A+	4.0	
06	MAINTAINANCE	4	A+	A+	A+	4.0	
07	COMPUTER NETWORKS	4	A+	A+	A+	4.0	
08	DATABASE MANAGEMENT	4	A+	A+	A+	4.0	
09	SYSTEM	4	A+	A+	A+	4.0	
10	ELECTRONIC DEVICES &	4	A+	A+	A+	4.0	
11	CIRCUITS MICROPROCESSOR OBJECT ORIENTED PROGRAMMING EXTRA MATHEMATICS	4	A+	A+	A+	4.0	
GRADE POINT AVERAGE (GPA): 4.0							
1. One Credit Hour equals 32 Clock Hours 2. TH : Theory, PR: Practical 3. *@ : Absent *T : Theory Grade Missing *P : Practical Grade Missing # : Subject(s) appeared in the Supplementary Examination							
CHECKED BY. NEB, SANOTHIMI, BHAKTAPUR DATE OF ISSUE: 25-JUNE-2017				CONTROLLER			

4 Project Work on Spreadsheet

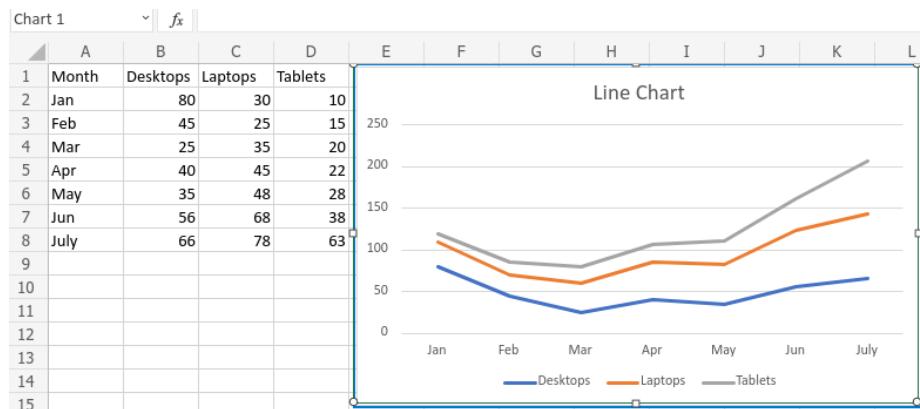
4.1 Find out Bonus, TAX,P.F. and net salary.

	A	B	C	D	E	F	G	H
1	E. No	Name	Job Status	Salary	Bonus	Tax	P.F	Net Salary
2	1	Mohan	P	8000	1200	800	800	10800
3	2	Anup	T	6000	300	0	0	6300
4	3	Ram	P	7000	1050	0	700	8750
5	4	Sita	T	3000	150	0	0	3150
6	5	Hari	T	2000	100	0	0	2100

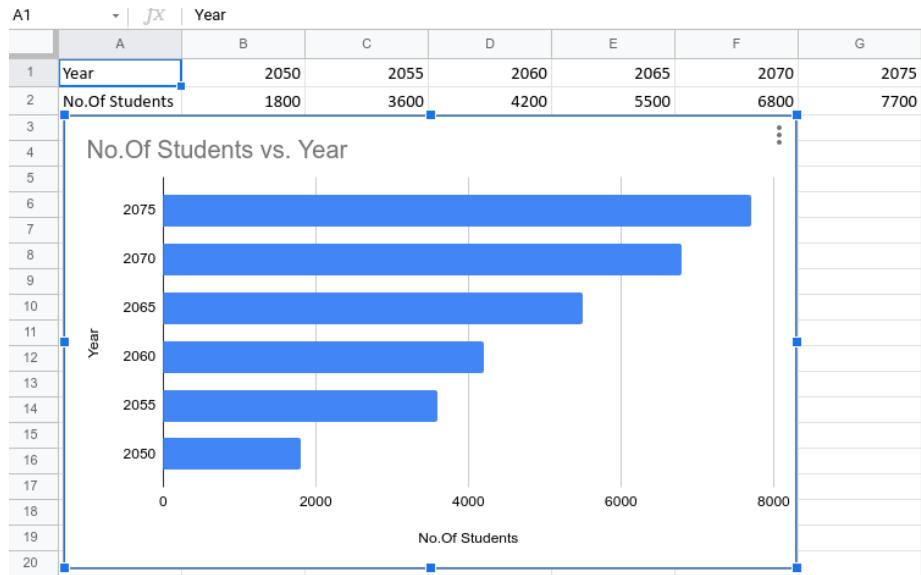
4.2 Find out Total, Percentage, Division and Result.

	A	B	C	D	E	F	G	H	I	J	K
1	Roll	Name	Eng	Nep	Math	Sci	Comp	Total	Percentage	Division	Result
2	1	AAA	50	50	50	50	50	250	50	Third Division	Pass
3	2	bbb	60	80	20	80	100	340	68	Second Division	Fail
4	3	ccc	100	100	100	100	100	500	100	Distinction	Pass

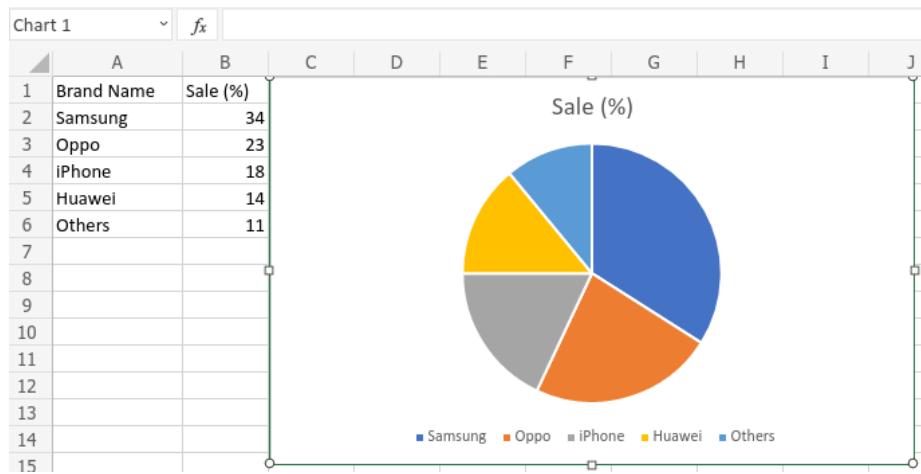
4.3 Create a line chart.



4.4 Create a bar graph.



4.5 Design Pie Chart.



5 Project work on Presentation

5.1 Input Devices

Input Devices

Commonly used input devices.

Mouse

Mouse is a input device. Mouse is used to click and point things in GUI.

A mouse consists of 3 primary buttons left, right and scroll wheel.



Keyboard

A keyboard is a input device. Keyboard is used to input all characters and symbols to computer. A keyboard primarily contains 104 keys.



Scanner

Scanner is input device that scans documents and saves that digitally in computer.



Joystick

A joystick is an input device consisting of stick that pivots on a base and reports its angle or direction to device it is controlling.



Touch Screen

A touch screen or touch screen is the assembly of both input and output devices. The touch panel is normally layered on the top of electronic visual display of an information processing system.



Microphone

A microphone is a input device that takes audio as input to the computer.

It takes analog signal as input and feeds cpu digital signal.



Light Pen

A light pen is a light-sensitive pointing input device commonly used to select or otherwise modify text or data on a screen.



5.2 Multimedia

Multimedia

Multimedia that we daily consume.

Any visual representation with a combination of audio, video, animation or graphics is multimedia. Multimedia plays important role in our daily life. And we consume it everyday.

Multimedia

Characteristics of Multimedia

1. Multimedia systems are computer controlled.
2. They are integrated with each other.
3. They represent information digitally.
4. The user interface allows to interact with it directly.

Video

There are different types of video files encoded in different formats designed for specific tasks.

Most modern video codecs try to achieve highest quality and lossless quality that can be streamed or has less memory footprint.

Commonly used video format is mp4, avi, mkv etc.



Audio

Audio represents recorded or sound wave produced by speaker.

Most commonly used audio formats are mp3 and lossless format flac.

Audio files are smaller compared to video and serves their purpose well.



Text

A text is a collection of words that are understandable by the user. Text used to be represented by ASCII

The widely used character encoding format is UTF-16 and it supports 1,112,064 non-surrogate code points of Unicode.



Animation

Animation involves the appearance of motion caused by displaying still images one after another. Often, animation is used for entertainment purposes.



Graphics

Todays most space consuming multimedia data is digitalize video.

Digital videos are stored as sequence of frames. Depending upon its resolution and size as single frame can consume up to 1MB.



5.3 Cloud Computing

The image shows a vertical stack of four slides related to Cloud Computing:

- Slide 1:** Title "Cloud Computing" and subtitle "Someone Else's Computer".
- Slide 2:** Title "Cloud Computing".

Text:
Cloud computing refers to renting computer from someone else usually public cloud provider for certain amount of time without owning any actual hardware upfront.
Thus creating easy entry barrier to users towards high performance computing/gears for cheap.
- Slide 3:** Title "Cloud Computing".

Text:
Cloud providers provide their services in different ways.
Some of the widely used terms are
1. IaaS > Infrastructure As a Service
2. SaaS> Software As a Service
3. PaaS > Platform As a Service
Some of well known public cloud providers are
AWS, Azure, GCP, Oracle, Digital Ocean.


- Slide 4:** Title "IaaS".

Text:
Offering virtualized software and servers to people. It will be hosted within the Cloud data centres, and those beneficiaries pay only the agreed on cost, and do not have to purchase any hardware, software and licensing.

PaaS

PaaS is same as IaaS, but with the addition of the application layer, which the customer intends to use.

SaaS

SaaS is offering software to the others remotely as a Web-Based Service. Software as a Service allows organizations to access business functionality at a cost typically less than paying for licensed applications and using hardware for that application.

Types Of Cloud Providers

Private Cloud

> Private clouds are signature of already made solutions, offered by many vendors, such as Microsoft, VMWare and Citrix.

Public Cloud

> AWS, GCP, Azure are the well known Public Cloud Providers

Hybrid Cloud

> It allows you to retain cost sensitive data within your organization, while taking advantage of the lower cost and flexibility of public cloud.

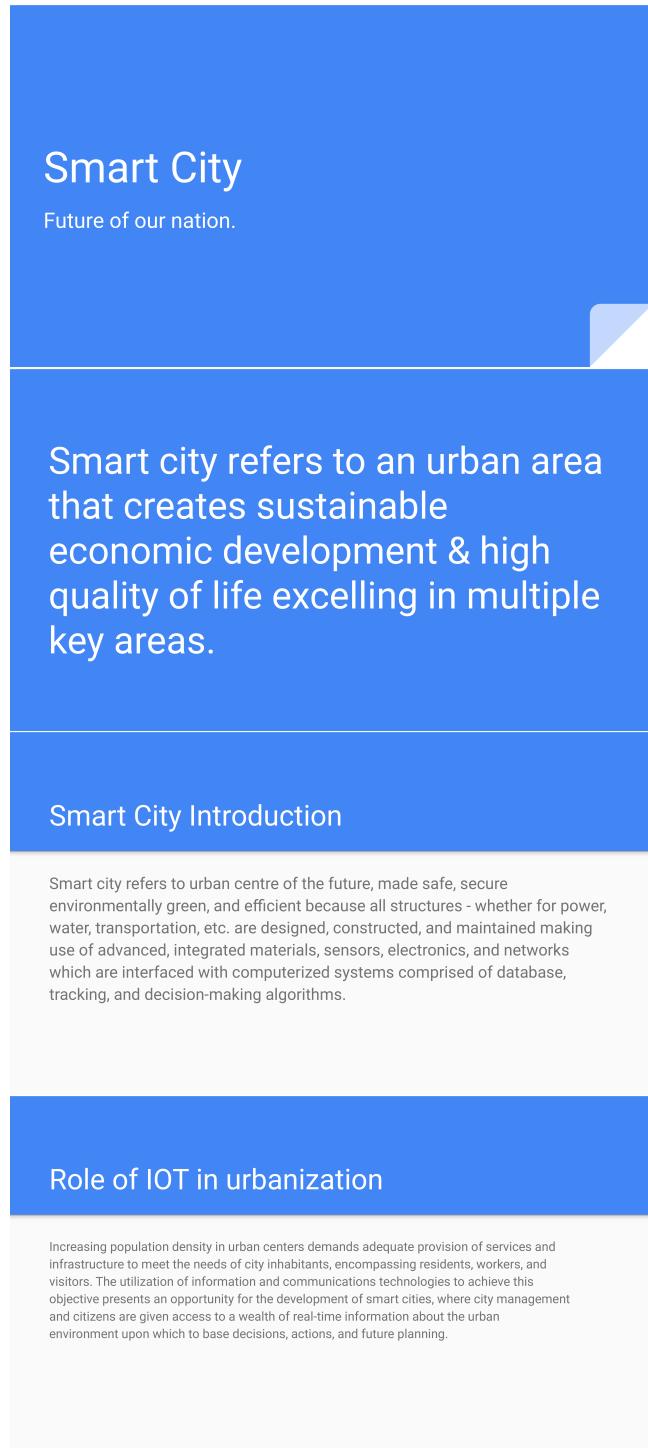
Community Cloud

> These cloud are designed for businesses and organizations working on joint projects, applications, or research, which requires a central cloud computing facility for building managing and executing such projects.

Final Note

Most cloud providers have monopoly in cloud market, for example amazon, google, microsoft.

5.4 Smart City



The slide features a blue header section with the title 'Smart City' and a subtitle 'Future of our nation.' Below this is a white content area containing a definition of a smart city. At the bottom is a blue footer section with the title 'Smart City Introduction' and a detailed description of smart city characteristics.

Smart City

Future of our nation.

Smart city refers to an urban area that creates sustainable economic development & high quality of life excelling in multiple key areas.

Smart City Introduction

Smart city refers to urban centre of the future, made safe, secure environmentally green, and efficient because all structures - whether for power, water, transportation, etc. are designed, constructed, and maintained making use of advanced, integrated materials, sensors, electronics, and networks which are interfaced with computerized systems comprised of database, tracking, and decision-making algorithms.

Role of IOT in urbanization

Increasing population density in urban centers demands adequate provision of services and infrastructure to meet the needs of city inhabitants, encompassing residents, workers, and visitors. The utilization of information and communications technologies to achieve this objective presents an opportunity for the development of smart cities, where city management and citizens are given access to a wealth of real-time information about the urban environment upon which to base decisions, actions, and future planning.

Smart Solutions

Smart solutions are application of IT&C to municipal services and infrastructure to make them better. Examples:

- Smart water meters and billing systems online systems of monitoring water quality
- City-wide intelligent video surveillance network
- Using mobile phones for cyber tour of worksites

Advantages Of Smart City

- Better transport services
- Safer communities
- Efficient public services
- Making more effective and data-based decisions

Disadvantages Of Smart City

- Very limited privacy
- Excess network trust
- Social control



5.5 Network Topology

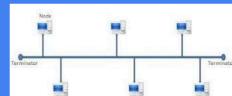
Network Topology

p2p is the future of internet.

Network Topology represents logical and physical appearance of a Network.

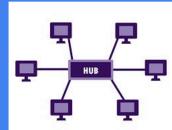
Bus Topology

Bus topology consists of single cable connecting all computer/nodes in single network.



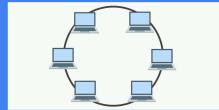
Star Topology

Star topology consists of central hub connecting all nodes in star like pattern.



Ring Topology

Ring topology consists all nodes connected in a continuous loop making ring like pattern.



Mesh Topology

Mesh topology consists of all nodes connected directly to each other creating mesh like structure.



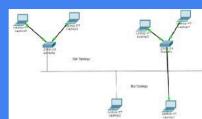
Tree Topology

Tree topology connects nodes in hierarchical manner creating upside down tree like structure.



Hybrid Topology

Hybrid topology is combination of two or more than two topologies.



6 Project work on Ms Access

6.1 Customer Table

C_ID	Fname	Lname	Caddress	Cphone	Cgender
1	Anukul	Adhikari	Dharan	*****	Male
2	Ankita	Nepal	Janakpur	9844556632	Female
3	Ajay	Kale	Vanasthali	00000	male
4	Gaurav	Addrash	Bhaktapur	-----	male
5	Karki	Dai	Sanothimi	9877665532	male
6	Gaurav	Shah	Sindhuli	0000000000	male
7	Shyam	Paudel	Chabel		male
8	Thor	Gautam	Soltimode		male
9	Vijay	Raaz	Bhaktapur		male
10	Santosh	Sharma	Kavre	981527754	male

6.2 Orders Table

Order_ID	C_ID	Order_date	Quantity	B_ID	Click to Add
1	1	4/13/2020	11	1101	
2	1	4/14/2020	1	1103	
3	2	4/7/2020	15	1110	
4	3	4/2/2020	2	1106	
5	5	4/9/2020	22	1102	
6	9	4/10/2020	13	1105	
7	8	4/15/2020	15	1104	
8	7	4/14/2020	18	1107	
9	5	4/17/2020	12	1105	
10	10	4/13/2020	11	1109	

6.3 Book Table

Order_ID	B_ID	Bname	ISBN	Publisher
1	1101	Social	9999	Earth
2	1102	Mathematics	4455	Moon
3	1103	Opt.Mathemat	666	Asmita
4	1104	Karodau Kasturi	9988	abc
5	1105	Sociology	1122	Heritage
6	1106	Digital Logic	6756	Heritage
7	1107	C programming	8888	Buddha
8	1108	Java	6666	123
9	1109	Physics	8888	111
10	1110	Science	7777	Heritage

6.4 Relationship among Table

	Fname	Bname	Ordere_date	Publisher
	Anukul	Social	4/13/2020	Earth
	Anukul	Opt.Mathemat	4/14/2020	Asmita
	Ankita	Science	4/7/2020	Heritage
	Ajay	Digital Logic	4/2/2020	Heritage
	Karki	Mathematics	4/9/2020	Moon
	Vijay	Sociology	4/10/2020	Heritage
	Thor	Karodau Kasturi	4/15/2020	abc
	Shyam	C programming	4/14/2020	Buddha
	Karki	Sociology	4/17/2020	Heritage
	Santosh	Physics	4/13/2020	111

6.5 First name of Customer

	customer	
	Fname	
	Anukul	
	Ankita	
	Ajay	
	Gaurav	
	karki	
	Gaurav	
	Shyam	
	Thor	
	Vijay	
	Santosh	

6.6 Book written by abc

	Bname	Publisher
	Karodau Kasturi	abc
*		

6.7 Books ordered by specific date

	Bname	Ordere_date
	Social	4/13/2020
	Physics	4/13/2020

6.8 Report for particular customer

C_ID	8
Fname	bikram
Lname	koirala
Caddress	salaghari
Cphone	9876503214
Cgender	Male
Order_ID	7
Ordere_date	4/15/2020
Quantity	2
B_ID	1104
Bname	Karodau Kasturi
ISBN	
Publisher	abc

6.9 Form for particular book

Book

Order_ID	1104
B_ID	1104
Bname	Karodau Kasturi
ISBN	9988
Publisher	abc