

A.S.D.GOVERNMENT DEGREE COLLEGE FOR WOMEN (A)

**Affiliated to Adikavi Nannaya University
Jagannaickpur, Kakinada.**

DEPARTMENT OF COMPUTER SCIENCE



CERTIFICATE COURSE

on

**“Excel Essentials:
From Basics to Problem Solving”**

2024-2025

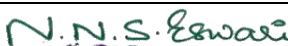
A.S.D.GOVERNMENT DEGREE COLLEGE FOR WOMEN (A)

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DEPARTMENT OF COMPUTER SCIENCE

Activity Register 2024-2025

Date	27-01-2025 to 24-03-2025
Conducted through (DRC/JKC/ELF/NCC/NSS/Department etc.,)	Department of Computer Science
Nature of Activity (seminar/workshop/exten Lecture etc)	Certificate Course
Title of the Activity	Excel Essentials: From Basics to Problem solving
Name of the Department/ Committee	Department of Computer Science
Details of Resourc persons (Name, Designation etc.,)	N.Naga Subrahmanyeswari Lecturer in Computer Science K.Surya Lakshmi Lecturer in Computer Science A. Jaya Lakshmi Lecturer in Computer Science V.Rama Tulasi Lecturer in Computer Applications
No. of students participated	20
Brief Report on the activity	To get the students acquainted with the Programming Languages and Programming Constructs.
Name of the Lecturers who planned & conducted the activity	N.Naga Subrahmanyeswari Lecturer in Computer Science K.Surya Lakshmi Lecturer in Computer Science A. Jaya Lakshmi Lecturer in Computer Science V.Rama Tulasi Lecturer in Computer Applications
Signature of the Department In-charge/ Convener of the Committee	 IN-CHARGE DEPT OF COMPUTER SCIENCE A.S.D.GOV.T DEGREE COLLEGE (W/AUTONOMOUS) KAKINADA
Signature of the Principal	 PRINCIPAL A.S.D.GOV.T DEGREE COLLEGE (W/AUTONOMOUS) KAKINADA
Remarks	

PERMISSION LETTER

Kakinada,

Date: 20-01-2025.

To,

Dr. V.Anantha Lakshmi,
Principal,
A.S.D. Govt. Degree College for Women (A),
Kakinada.

From,

N.N.Subrahmanyeswari,
Incharge of Department of Computer Science,
A.S.D. Govt. Degree College for Women (A),
Kakinada.

Sub: Request to conduct the Certificate Course on “*Excel Essentials: From Basics to Problem Solving*” for I B.Sc. (Computer Science-Honors) Students from **27-01-2025 to 24-03-2025** -Reg.

Respected Madam,

The Department of Computer Science wishes to organize the Certificate course on “*Excel Essentials: From Basic to Problem Solving*” with a duration of 45 days from **27-01-2025 to 24-03-2025** for I B.Sc. (computer Science-Honors) students. This course aims to make the students get acquainted with the foundation skills and logic for communicating with programming languages. Please consider the request to conduct the Certificate course for the students.

Thanking you, Madam.

Yours faithfully,


N.N.S. Eswari
INCHARGE
DEPT. OF COMPUTER SCIENCE
A.S.D. GOVT. DEGREE COLLEGE (W) AUTONOMOUS
KAKINADA

CIRCULAR

A.S.D.GOVERNMENT DEGREE COLLEGE FOR WOMEN (A)

Affiliated to Adikavi Nannaya University

Jagannaickpur, Kakinada.

DEPARTMENT OF COMPUTER SCIENCE

CIRCULAR



Date: 21-01-2025

The Department of Computer Science wishes to organize the Certificate Course on “*Excel Essentials: From Basics to Problem Solving*” with the duration from **27-01-2025 to 24-03-2025** for I B.Sc.(Computer Science-Honors) students to enhance their Computer Skills.

Note:

- Interested students can give their names to Ms. R.Veera Veni, Programmer, Department of Computer Science on or before 24-01-2025.
- Timings : 3.00 PM to 4.00 PM

N.N.S. Eswari
IN-CHARGE
DEPT. OF COMPUTER SCIENCE
A.S.D. GOVT. DEGREE COLLEGE (W) (AUTONOMOUS)
KAKINADA

In-charge of the Department

V. R. D.
PRINCIPAL
A.S.D. GOVT. DEGREE COLLEGE (W)
AUTONOMOUS
KAKINADA
Principal

BROCHURE



A.S.D.GOVERNMENT DEGREE COLLEGE FOR WOMEN(A)

Affiliated to Adikavi Nannaya University
Jagannaickpur, Kakinada.



Department of Computer Science

Certificate Course

On

“Excel Essentials: From Basics of Problem Solving”

Objectives:

- To help students to become competent and confident users of computers.
- To enable the student, utilize the basic knowledge and skills acquired which assists them in their daily lives.
- To prepare students ready for the digital world.

Course Fee

Rs. 300/-

Course Duration

27-01-2025 to 24-03-2025

Timings:

3.00 PM to 4.00PM

Venue:

Computer Lab:II

Contact:

N. Naga Subrahmanyeswari

Lecture in Computer Science

A.S.D.GOVERNMENT DEGREE COLLEGE FOR WOMEN (A)

Affiliated to Adikavi Nannaya University

Jagannaickpur, Kakinada.

DEPARTMENT OF COMPUTER SCIENCE

Certificate Course

on

“Excel Essentials: From Basics to Problem Solving”

Course Duration: 45 Hours

Eligibility: Any I / II / III Year B.Sc. / B.Com. / B.A. students.

Students Intake: 40

Course Objectives:

- To help students to become competent and confident users of Computers.
- To enable the students utilize the basic knowledge and skills acquired which assists them in their daily lives.
- To prepare students ready for the Digital world.

Course Outcomes:

After the completion of the course, the student will be able to

CO1: Acquire the knowledge on basic computer terminology

CO2: Efficiently learn and use MS-Excel

CO3: Work with MS-Excel and its applications

CO4: Format, organize and calculate data in a spreadsheet

CO5: Protect data in worksheets and workbooks and create simple PivotTable reports

Evaluation Process:

Assessment will be done based on the Periodical Assignments given during the course and a Final Assessment will be done by conducting a test at the end of the course.

Syllabus

Module 1 (5 Hours)

Fundamentals of Computer: Introduction to Computers, Characteristics of Computers and Limitations of Computers, Block Diagram of Computer, Architecture of Computer, Types of Computers, Input and output devices, Memories, Types of Memories, Types of Software, Programming Languages and its types, Operating Systems and its types.

Module 2 (10 Hours)

MS- Excel: Introduction, Features of Ms-Excel & Parts of MS-Excel window, Entering and editing data in worksheet, Workbook – Cell - Parts of a window-Saving, Closing, Opening of a Work Book – Editing – Advantages – Create Worksheets and workbooks, Import data from a delimited text file, Add a worksheet to an existing workbook, Copy and move a worksheet

Module 3 (10 Hours)

Types of Functions - Formulas and Functions, Formatting options, Data Filtering, Perform Conditional Operations by using Functions, Format and Modify Text by using Functions, Summarize Data by using Functions

Module 4 (10 Hours)

Apply Custom Data Formats and Validation, Apply Advanced Conditional Formatting and Filtering, Create and Modify Custom Workbook Elements, Create and modify simple macros, Insert and configure form controls

Module 5 (10 Hours)

Create Charts: Create a new chart, Add additional data series, Switch between rows and columns in source data, Analyze data by using Quick Analysis, Format Charts, Resize charts, Add and modify chart elements, Apply chart layouts and styles, Move charts to a chart sheet.

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Jagannaickpur, Kakinada.

DEPARTMENT OF COMPUTER SCIENCE

Certificate Course

on

“Excel Essentials: From Basics to Problem Solving”

BLUE PRINT

S.No	Unit	Sec-A Questions 2 marks	Sec-B Questions 5 marks	Marks Allotted
1	Unit – I	4	2	18
2	Unit – II	4	2	18
3	Unit – III	4	2	18
Total Marks				54

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DEPARTMENT OF COMPUTER SCIENCE

MODEL QUESTION PAPER

Certificate Course

on

“Excel Essentials: From Basics to Problem Solving”

Time: 2 Hrs

Max. Marks: 40

SECTION-A

I. Answer any TEN of the following questions.

10 X 2 = 20

1. Define Computer.
2. List the input devices.
3. What is the function of CPU?
4. List the types of memories.
5. Give the features of MS-Excel.
6. What are the parts of Excel Worksheet?
7. What is meant by Cell?
8. How to copy and move the sheets in Excel Workbook?
9. What is meant by Filtering?
10. Define Macro.
11. How to format the data in Excel Workbook?
12. List the steps used to create a Chart.

SECTION-B

II. Answer any FOUR questions.

4 X 5 = 20

13. Explain about the architecture of a computer with block diagram.
14. Discuss about types of Computers.
15. Give the procedure to perform operations on Worksheet in Ms-Excel.
16. Explain different functions in Ms-Excel.
17. Discuss about different types of Charts in Excel.
18. Explain working with Macros.

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DEPARTMENT OF COMPUTER SCIENCE

Certificate Course

on

“Excel Essentials: From Basics to Problem Solving”

2024-2025

I B.Sc. (Computer Science)-Signature Sheet

S.no.	Regd. No.	Name of the Student	Signature
1	2474001	DAMALANKA LAKSHMI RAGINI	D. Lakshmi Ragini
2	2474002	ISUKAPATLA SANJANA	T. Sanjana
3	2474003	MOHAMMAD AYESHA BIBI	Md. Ayesha Bibi
4	2474004	SEELA RAMYA	S. Ramya
5	2474006	SHAIK BASHEERAMMA	Sh. Basheeramma
6	2474008	VADIKELA GOWRISRI	V. Gowri Sri
7	2474020	ANISETTI SATYAVENI	A. Satyaveni
8	2474023	CHILAKA SPOORTHY	Ch. spoorthi
9	2474024	DEVARAPU SAILAJA	D. Sailaja
10	2474026	GUDAPATI KAVYA SRI	G. kavya Sri
11	2474027	KANNURU LAKSHMI SIREESHA	K. L. Sireesha
12	2474028	KONDAGUNTURI DHANA SAI LAKSHMI	K. Lakshmi
13	2474029	KOTLA AKHILA	K. Akhila
14	2474031	MADAKAM LOVA SRI	M. Lova Sri
15	2474032	MADDILA MADHAVI	M. Madhavi
16	2474034	NEMMADI NAGA SRAVANI	N. Naga sravani
17	2474036	PALLA AMRUTHA	P. Amrutha
18	2474037	POTNURI HARIKA SATYA DEVI	P. H. S. Devi
19	2474039	TURANGI DURGA BHAVANI	T. D. Bhavani
20	2474041	VAKAPALLI SANJANA	V. Sanjana

N.N.S. Eswari
IN-CHARGE
DEPT. OF COMPUTER SCIENCE
A.S.D.GOV'T DEGREE COLLEGE (WOMEN) KAKINADA

In-Charge of the Department

A.S.D.GOVERNMENT DEGREE COLLEGE FOR WOMEN (A)

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DEPARTMENT OF COMPUTER SCIENCE

Certificate Course

on

“Excel Essentials: From Basics to Problem Solving”

2024-2025

I B.Sc. (Computer Science)-Attendance Sheet

S.no.	Regd. No.	Name of the Student	27/1	28/1	29/1	30/1	31/1
1	2474001	DAMALANKA LAKSHMI RAGINI	P	P	P	A	P
2	2474002	ISUKAPATLA SANJANA	P	P	P	P	P
3	2474003	MOHAMMAD AYESHA BIBI	A	P	P	P	P
4	2474004	SEELA RAMYA	P	P	P	P	P
5	2474006	SHAIK BASHEERAMMA	P	P	A	P	P
6	2474008	VADIKELA GOWRISRI	P	P	P	P	P
7	2474020	ANISSETTI SATYAVENI	P	P	P	P	P
8	2474023	CHILAKA SPOORTHY	P	A	P	P	P
9	2474024	DEVARAPU SAILAJA	P	P	P	P	P
10	2474026	GUDAPATI KAVYA SRI	P	P	P	P	P
11	2474027	KANNURU LAKSHMI SIREESHA	P	P	P	P	A
12	2474028	KONDAGUNTURI DHANA SAI LAKSHMI	P	P	P	P	P
13	2474029	KOTLA AKHILA	P	P	A	P	P
14	2474031	MADAKAM LOVA SRI	P	P	P	P	P
15	2474032	MADDILA MADHAVI	A	P	P	P	P
16	2474034	NEMMADI NAGA SRAVANI	P	P	P	P	A
17	2474036	PALLA AMRUTHA	P	P	P	P	P
18	2474037	POTNURI HARIKA SATYA DEVI	P	A	P	P	P
19	2474039	TURANGI DURGA BHAVANI	P	P	P	A	P
20	2474041	VAKAPALLI SANJANA	P	P	P	P	P

N.N.S. Swari 31/1/25

S.no.	Regd. No.	1/2	3/2	4/2	5/2	6/2	7/2	10/2	11/2	12/2	13/2	14/2
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2	2474002	P	P	P	P	P	P	P	P	P	P	P
3	2474003	A	P	A	P	P	A	P	A	P	P	P
4	2474004	P	P	P	P	P	P	P	P	P	P	P
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19	2474039	P	P	P	P	P	P	P	P	P	P	P
20	2474041	P	P	P	P	P	P	P	P	P	P	P

N.N.S. Edward
14/02/25

S.no.	Regd. No.	15/2	17/2	18/2	19/2	20/2	21/2	22/2	24/2	25/2	27/2	28/2
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6	2474008	P	P	P	P	A	P	P	P	P	P	P
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10	2474026	P	P	P	P	P	P	A	A	P	P	P
11	2474027	P	P	P	P	P	P	P	P	P	P	P
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15	2474032	P	P	A	P	P	P	P	P	P	A	P
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18	2474037	A	P	P	A	P	P	P	P	P	P	P
19	2474039	P	P	P	P	P	P	P	P	P	P	P
20	2474041	P	P	A	P	P	P	P	P	P	P	P

S.no.	Regd. No.	1/3	3/3	4/3	5/3	6/3	7/3	10/3	11/3	12/3	13/3	15/3
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5	2474006	A	P	A	P	P	P	P	P	P	A	P
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19	2474039	P	P	P	P	P	P	P	P	P	P	P
20	2474041	P	P	P	P	P	P	P	P	P	P	P

N.N.S. Eswari
15/3/25

S.no.	Regd. No.	17/3	18/3	19/3	20/3	21/3	22/3	24/3
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16	2474034	P	P	P	P	P	P	A
17	2474036	P	P	P	P	P	A	P
18	2474037	A	P	P	A	P	P	P
19	2474039	P	P	P	P	P	A	P
20	2474041	A	P	P	P	A	P	P

N.N.S. Eswari
IN-CHARGE
DEPT OF COMPUTER SCIENCE
GOVT DEGREE COLLEGE (MMAUTONOMOUS)
KAKINADA

In-Charge of the Department

COURSE MATERIAL

“Excel Essentials: From Basics to Problem Solving”

1.1 Introduction to Computers

Definition of a Computer:

A computer is an electronic device that manipulates information, or data. It has the ability to store, retrieve, and process data. You may already know that you can use a computer to type documents, send email, play games, and browse the Web. You can also use it to edit or create spreadsheets, presentations, and even videos. The basic parts of a desktop computer are the computer case, monitor, keyboard, mouse, and power cord. Each part plays an important role whenever we use a computer.

1.2 Characteristics and Limitations of Computer

Speed

Speed means the duration computer system requires in fulfilling a task or completing an activity. It is well-known that computers need very little time than humans in completing a task. Generally, humans take into account a second or minute as a unit of time.

Accuracy

Accuracy means the level of precision with which calculations are made and tasks are performed. One may invest years of his life in detecting errors in computer calculations or updating a wrong record.

Reliability

Reliability is the quality due to which the user can stay dependable on the computer. Computers systems are well-adjusted to do repetitive tasks.

Adaptability

Adaptability of computer system means the quality of it to complete a different type of tasks: simple as well as complex.

Storage

Storage is the ability of the computer to store data in itself for accessing it again in future. Nowadays, apart from having instantaneous access to data, computers have a huge ability to store data in a little physical space.

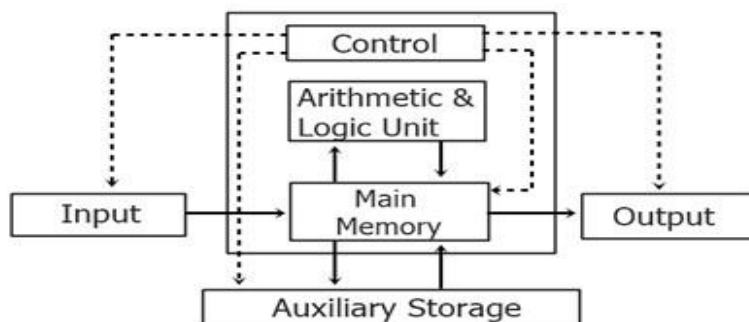
1.3 Limitations of Computer Systems

Limitations are the drawbacks of the computer system in which humans outperform them.

Lack of common-sense

This is one of the major limitations of computer systems. No matter how efficient, fast and reliable computer systems might be but yet do not have any common sense because no full-proof algorithm has been designed to programme logic into them. As computers function based on the stored programme(s), they simply lack of the limitations of computer systems is that they have zero Intelligence Quotient (IQ).

1.4 Block Diagram of a Computer



Block Diagram of Computer

1.5 Architecture of a Computer

1. Input: This is the process of entering data and programs in to the computer system. You should know that computer is an electronic machine like any other machine which takes as inputs raw data and performs some processing giving out processed data. Therefore, the input unit takes data from us to the computer in an organized manner for processing.

2. Storage: The process of saving data and instructions permanently is known as storage. Data has to be fed into the system before the actual processing starts. It is because the processing speed of Central Processing Unit (CPU) is so fast that the data has to be provided to CPU with the same speed. Therefore the data is first stored in the storage unit for faster access and processing. This storage unit or the primary storage of the computer system is designed to do the above functionality. It provides space for storing data and instructions. The storage unit performs the following major functions:

All data and instructions are stored here before and after processing.

- Intermediate results of processing are also stored here.

Processing: The task of performing operations like arithmetic and logical operations is called processing. The Central Processing Unit (CPU) takes data and instructions from the storage unit and makes all sorts of calculations based on the instructions given and the type of data provided. It is then sent back to the storage unit.

Control: The manner how instructions are executed and the above operations are performed. Controlling of all operations like input, processing and output are performed by control unit. It takes care of step by step processing of all operations inside the computer. **Output:** This is the process of producing results from the data for getting useful information. Similarly the output produced by the computer after processing must also be kept somewhere inside the computer before being given to you in human readable form. Again the output is also stored inside the computer for further processing.

Arithmetic Logical Unit (ALU)

Logical Unit :After you enter data through the input device it is stored in the primary storage unit. The actual processing of the data and instruction are performed by Arithmetic Logical Unit. The major operations performed by the ALU are addition, subtraction, multiplication, division, logic and comparison. Data is transferred to ALU from storage unit when required. After processing the output is returned back to storage unit for further processing or getting stored.

Control Unit (CU)

The next component of computer is the Control Unit, which acts like the supervisor seeing that things are done in proper fashion. Control Unit is responsible for co ordinating various operations using time signal. The control unit determines the sequence in which computer programs and instructions are executed. Things like processing of programs stored in the main memory, interpretation of the instructions and issuing of signals for other units of the computer to execute them. It also acts as a switch board operator when several users access the computer simultaneously. Thereby it coordinates the activities of computer's peripheral equipment as they perform the input and output.

Central Processing Unit (CPU)

The ALU and the CU of a computer system are jointly known as the central processing unit. You may call CPU as the brain of any computer system. It is just like brain that takes all major decisions, makes all sorts

of calculations and directs different parts of the computer functions by activating and controlling the operations.

1.6 Types of Computers

Personal Computer:

A single person defines the personal computer, or PC, as any computer designed for general use by one person. While a Mac is a PC, most people relate the term with computers that run the Windows operating system. PCs were first known as microcomputers because they were a complete computer but built on a smaller scale than the huge systems in use by most businesses. Personal computers come in many forms, including the new Apple iPad.

Desktop PC:

that is not designed for portability is a desktop computer. The expectation with desktop systems is that you will set the computer up in a permanent location, like a desk or table. Most desktops offer more power, storage and versatility for less cost than their portable brethren.

Laptop:

Also called notebooks, laptops are portable computers that mix the display, keyboard, a pointing device or trackball, processor, memory and hard drive all in a battery-operated package slightly larger than an average hardcover book. On the left is a picture of Apple CEO Steve Jobs holding up the MacBook Pro Air.

Tablet Computers:

Tablet Computers are ultra--portable computers that are even smaller than traditional laptops. Their low cost means they're cheaper than almost any brand--new laptop you'll find at retail outlets. However, the internal components are less powerful than those in regular laptops. Recent improvements to tablet computers have allowed users to view HD video, get high quality sound, great photo capabilities, and the ability to share information, photos, and videos with anyone.

Smart Phones:

Smart phones are handheld--sized computers that often use flash memory instead of a hard drive for storage. These devices usually do not have keyboards but rely on touch screen technology for user input. Smart phones are typically smaller than a paperback novel, very lightweight with a reasonable battery life. Smartphones have the same capabilities as tablet computers, but also allow users to text or make phone calls.

Workstation:

Another type of computer is a workstation. A workstation is simply a desktop computer that has a more powerful processor, additional memory and enhanced capabilities for performing a special group of task, such as 3D Graphics or game development. They may even use multiple screens to enhance their viewing.

Server:

A computer that has been optimized to provide services to other computers over a network. Servers usually have powerful processors, lots of memory and large hard drives. Servers allow many computers to share a printer or other devices without the cost of having to buy one for every computer. Servers also allow users to share information and files with each other. The computers in this lab are part of a network.

Mainframe:

In the early days of computing, mainframes were huge computers that could fill an entire room or even a whole floor! As the size of computers has diminished while the power has increased, the term mainframe has fallen out of use in favor of enterprise server. You'll still hear the term used, particularly in large companies to describe the huge machines processing millions of transactions every day. Mainframes store vast amounts of information.

Super Computer:

This type of computer usually costs hundreds of thousands or even millions of dollars. Although some supercomputers are single computer systems, most are composed of multiple high performance computers working in parallel as a single system. Super computers are the fastest, most powerful, most expensive computers made today. The best--known supercomputers are built by Cray Super computers. Many of today's great movies use supercomputers for their CGI. They can perform over a trillion calculations per second.

Wearable Computers:

The latest trend in computing is wearable computers. Essentially, common computer applications (e--mail, database, multimedia, calendar/scheduler) are integrated into watches, cell phones, visors and even clothing. Users can use these devices for health and fitness, navigation, social networking, and gaming. Google can now augment a person's vision through special computer glasses. The glasses can stream information to the lenses and allow the wearer to send and receive messages through voice commands.

1.7 Input and Output Devices:

Hardware

Hardware refers to the physical elements of a computer. This is also sometime called the machinery or the equipment of the computer. Examples of hardware in a computer are the keyboard, the monitor, the mouse and the central processing unit. However, most of a computer's hardware cannot be seen; in other words, it is not an external element of the computer, but rather an internal one, surrounded by the computer's casing (tower). A computer's hardware is comprised of many different parts, but perhaps the most important of these is the motherboard. The motherboard is made up of even more parts that power and control the computer.

Software:

Software, commonly known as programs or apps, consists of all the instructions that tell the hardware how to perform a task. These instructions come from a software developer in the form that will be accepted by the *platform* (operating system + CPU) that they are based on. For example, a program that is designed for the Windows operating system will only work for that specific operating system. Compatibility of software will vary as the design of the software and the operating system differ. Software that is designed for Windows XP may experience a compatibility issue when running under Windows 2000 or NT.

Computer case



The **computer case** is the metal and plastic box that **contains the main components** of the computer, including the motherboard, central processing unit (CPU), and power supply. The front of the case usually has an **On/Off button** and one or more **optical drives**. Computer cases come in different shapes and sizes. A **desktop case** lies flat on a desk, and the monitor usually sits on top of it. A **tower case** is tall and sits next to the monitor or on the floor. **All-in-one** computers come with the internal components built into the monitor, which eliminates the need for a separate case.

Monitor

The **monitor** works with a **video card**, located inside the computer case, to display images and text on the screen. Most monitors have **control buttons** that allow you to change your monitor's display settings, and some monitors also have built-in speakers.

Newer monitors usually have **LCD** (liquid crystal display) or **LED** (light-emitting diode) displays. These can be made very thin, and they are often called **flat-panel displays**. Older monitors use **CRT** (cathode ray tube) displays. CRT monitors are much larger and heavier, and they take up more desk space.

Keyboard

The **keyboard** is one of the main ways to communicate with a computer. There are many different types of keyboards, but most are **very similar** and allow you to accomplish the same basic tasks. Click the buttons in the interactive below to learn about the different parts of the keyboard.



Mouse

The **mouse** is another important tool for communicating with computers. Commonly known as a **pointing device**, it lets you **point** to objects on the screen, **click** on them, and **move** them.

There are two main mouse types: optical and mechanical. The **optical** mouse uses an electronic eye to detect movement and is easier to clean. The **mechanical mouse** uses a rolling ball to detect movement and requires regular cleaning to work properly.

To learn the basics of using a mouse, check out our interactive **Mouse Tutorial**.

Mouse alternatives:

There are other devices that can do the same thing as a mouse. Many people find them easier to use, and they also require less desk space than a traditional mouse. The most common mouse alternatives are below.

- **Trackball:** A trackball has a ball that can rotate freely. Instead of moving the device like a mouse, you can roll the ball with your thumb to move the pointer.



- **Touchpad:** A touchpad—also called a **trackpad**—is a touch-sensitive pad that lets you control the pointer by making a drawing motion with your finger. Touch pads are common on laptop computers.



Front of a computer case:

Click the buttons in the interactive below to become familiar with the front of a computer.



Back of a computer case

The back of a computer case has **connection ports** that are made to fit **specific devices**. The placement will vary from computer to computer, and many companies have their own special connectors for specific devices. Some of the ports may be **color coded** to help you determine which port is used with a particular device.

Click the buttons in the interactive below to become familiar with the back of a computer.



Peripherals used with computer:

The most basic computer setup usually includes the **computer case**, **monitor**, **keyboard**, and **mouse**, but you can plug many different types of devices into the extra ports on your computer. These devices are called **peripherals**. Let's take a look at some of the most common ones.

Printers: A **printer** is used to **print** documents, photos, and anything else that appears on your screen. There are many types of printers, including **inkjet**, **laser**, and **photo** printers. There are even **all-in-one printers**, which can also scan and copy documents.



Scanners: A **scanner** allows you to **copy a physical image or document** and save it to your computer as a **digital (computer-readable)** image. Many scanners are included as part of an all-in-one printer, although you can also buy a separate **flatbed** or **handheld** scanner.

Speakers/headphones: **Speakers** and **headphones** are output devices, which means they send information from the computer to the user—in this case, they allow you to **hear sound and music**. Depending on the model, they may connect to the **audio** port or the **USB** port. Some monitors also have built-in speakers.



Microphones: A **microphone** is a type of input device, or a device that receives information from a user. You can connect a microphone to **record sound** or **talk with someone else** over the Internet. Many laptop computers come with built-in microphones.

Web cameras: A **web camera**—or **webcam**—is a type of input device that can record **videos** and take **pictures**. It can also transmit video over the Internet in **real time**, which allows for **video chat** or **video conferencing** with someone else. Many webcams also include a microphone for this reason.



Game controllers and joysticks: A game controller is used to control computer games. There are many other types of controllers you can use, including **joysticks**, although you can also use your **mouse** and **keyboard** to control most games.

Digital cameras: A **digital camera** lets you capture pictures and videos in a digital format. By connecting the camera to your computer's USB port, you can transfer the images from the camera to the computer.

Mobile phones, MP3 players, tablet computers, and other devices: Whenever you buy an electronic device, such as a mobile phone or MP3 player, check to see if it comes with a **USB cable**. If it does, this means you can most likely connect it to your computer.

Inside a computer

Motherboard

The **motherboard** is the computer's **main circuit board**. It's a thin plate that holds the CPU, memory, connectors for the hard drive and optical drives, expansion cards to control the video and audio, and connections to your computer's ports (such as USB ports). The motherboard connects directly or indirectly to every part of the computer.

CPU/processor

The central processing unit (CPU), also called a **processor**, is located inside the **computer case** on the motherboard. It is sometimes called the brain of the computer, and its job is to carry out commands. Whenever you press a key, click the mouse, or start an application, you're sending instructions to the CPU.

The CPU is usually a **two-inch ceramic square** with a **silicon chip** located inside. The chip is usually about the size of a thumbnail. The CPU fits into the motherboard's **CPU socket**, which is covered by the **heat sink**, an object that absorbs heat from the CPU.

A processor's **speed** is measured in **megahertz (MHz)**, or millions of instructions per second; and **gigahertz (GHz)**, or billions of instructions per second. A faster processor can execute instructions more quickly. However, the actual speed of the computer depends on the speed of many different components—not just the processor.

1.8 Memories

RAM (random access memory)



RAM is your system's **short-term memory**. Whenever your computer performs calculations, it temporarily stores the data in the RAM until it is needed.

This **short-term memory disappears** when the computer is turned off. If you're working on a document, spreadsheet, or other type of file, you'll need to **save** it to avoid losing it. When you save a file, the data is written to the **hard drive**, which acts as **long-term storage**.

RAM is measured in **megabytes (MB)** or **gigabytes (GB)**. The **more RAM** you have, the more things your computer can do at the same time. If you don't have enough RAM, you may notice that your computer is sluggish when you have several programs open. Because of this, many people add **extra RAM** to their computers to improve performance.

Hard disk



The **hard drive** is where your software, documents, and other files are stored. The hard drive is **long-term storage**, which means the data is still saved even if you turn the computer off or unplug it.

When you run a program or open a file, the computer copies some of the data from the **hard drive** onto the **RAM**. When you **save** a file, the data is copied back to the **hard drive**. The faster the hard drive, the faster your computer can **start up** and **load programs**.

Expansion cards

Most computers have **expansion slots** on the motherboard that allow you to add various types of **expansion cards**. These are sometimes called **PCI (peripheral component interconnect) cards**. You may never need to add any PCI cards because most motherboards have built-in video, sound, network, and other capabilities.

However, if you want to boost the performance of your computer or update the capabilities of an older computer, you can always add one or more cards. Below are some of the most common types of expansion cards.

Video card



The **video card** is responsible for **what you see** on the monitor. Most computers have a **GPU (graphics processing unit)** built into the motherboard instead of having a separate video card. If you like playing graphics-intensive games, you can add a faster video card to one of the **expansion slots** to get better performance.

1.9 Types of Software:

System Software

System software is computer software designed to operate the computer hardware to provide basic functionality and to provide a platform for running application software. It refers to the operating system and all utility programs that manage computer resources at a low-level.

Programming Software

Programming software include tools in the form of programs or applications that software developers use to create, debug, maintain, or otherwise support other programs and applications. The term usually refers to relatively simple programs such as compilers, debuggers, interpreters, linkers, and text editors.

Application Software

A program or group of programs designed for end users. Allows end users to accomplish one or more specific (non - computer related) tasks.

1.10 Operating System and Types of Operating System:

Operating Systems can be categorized according to different criteria like whether an operating system is for mobile devices (examples Android and iOS) or desktop (examples Windows and Linux). In this article, we are going to classify based on functionalities an operating system provides.

Types of Operating Systems

- **Batch Operating System:** A [Batch Operating System](#) is a type of operating system that does not interact with the computer directly. There is an operator who takes similar jobs having the same requirements and groups them into batches.
- **Time-sharing Operating System:** [Time-sharing Operating System](#) is a type of operating system that allows many users to share computer resources (maximum utilization of the resources).
- **Distributed Operating System:** [Distributed Operating System](#) is a type of operating system that manages a group of different computers and makes appear to be a single computer. These operating systems are designed to operate on a network of computers. They allow multiple users to access shared resources and communicate with each other over the network. Examples include Microsoft Windows Server and various distributions of Linux designed for servers.

- **Network Operating System:** [Network Operating System](#) is a type of operating system that runs on a server and provides the capability to manage data, users, groups, security, applications, and other networking functions.
- **Real-time Operating System:** [Real-time Operating System](#) is a type of operating system that serves a real-time system and the time interval required to process and respond to inputs is very small. These operating systems are designed to respond to events in real time. They are used in applications that require quick and deterministic responses, such as embedded systems, industrial control systems, and robotics.
- **Multiprocessing Operating System:** [Multiprocessor Operating Systems](#) are used in operating systems to boost the performance of multiple CPUs within a single computer system. Multiple CPUs are linked together so that a job can be divided and executed more quickly.
- **Single-User Operating Systems:** [Single-User Operating Systems](#) are designed to support a single user at a time. Examples include Microsoft Windows for personal computers and Apple macOS.
- **Multi-User Operating Systems:** [Multi-User Operating Systems](#) are designed to support multiple users simultaneously. Examples include Linux and Unix.
- **Embedded Operating Systems:** [Embedded Operating Systems](#) are designed to run on devices with limited resources, such as smartphones, wearable devices, and household appliances. Examples include Google's Android and Apple's iOS.
- **Cluster Operating Systems:** Cluster Operating Systems are designed to run on a group of computers, or a cluster, to work together as a single system. They are used for high-performance computing and for applications that require high availability and reliability. Examples include Rocks Cluster Distribution and OpenMPI.

2. MICROSOFT EXCEL

2.1 Introduction to Excel

Microsoft Excel is one of the most popular spreadsheet applications that helps you manage data, create visually persuasive charts, and thought-provoking graphs. Excel is supported by both Mac and PC platforms. Microsoft Excel can also be used to balance a checkbook, create an expense report, build formulas, and edit them. Opening Microsoft Excel To begin Microsoft Excel, Go to Applications > Microsoft Excel. When opened a Dialogue box on the screen, showing you a few templates and blank excel sheets , if this does not happen click File > New Workbook

Saving Your Document: Computers crash, and documents are lost all the time, so it is best to save often. Saving Initially Before you begin you should save your document. To do this, go to File > Save As. Microsoft Excel will open a dialog box where you can specify the new file's name , location of where you want it saved, and format of the document. Once you have specified a name, place, and format for your new file, press the Save button.

Saving Later: After you have initially saved your blank document under a new name, you can begin your project. However, you will still want to periodically save your work as insurance against a computer freeze or a power outage. To save, click File > Save

2.2 Features of MS-Excel & Parts of MS-Excel window

1. Painless file sharing option
2. Integrated data model support
3. Complete cloud file support
4. Office Add-ins
5. Recommended charts
6. Recommended Pivot Tables
7. Quick Analysis tools
8. Pivot table filtering with slicers and timelines
9. Six new functions

10. Two new data types

1. Graphical Features of Excel

Excel offers a lot of graphical features for presenting data in graphs and pictures:

- **Charts:** Charts can be used to represent the data in richly detailed graphical format.
- **SmartArts:** We can utilize SmartArts to express information by aligning data in creative ways graphically.
- **Clip Arts:** We can include ready-to-use clip arts to convey our message in a visual format.
- **Shapes:** We can use a variety of shapes to depict data in infographics and shapes. With the help of the free form features we can draw any shape.
- **Pictures:** Any image can be inserted to enhance the objects. For example, backgrounds of Worksheets, shapes, and charts.

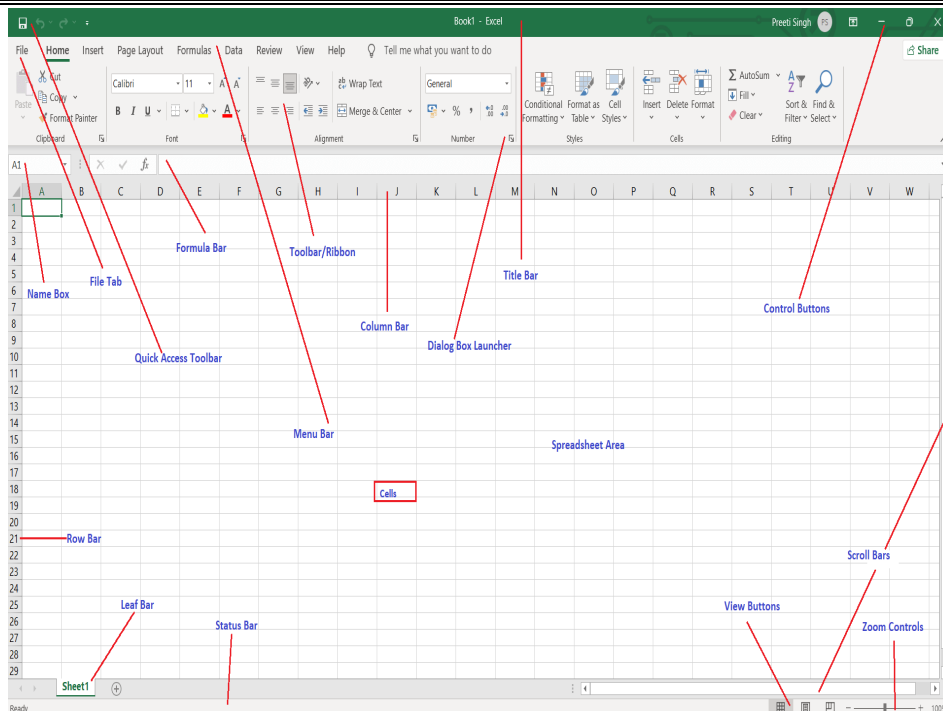
2. Functional Features of Excel

Excel Tools and Features assist us in performing complex calculations and enhancing the Excel application's features.

- **Functions:** - In Excel Cells, more than 300 built-in formulas are available (Text, Date, Maths, String, etc.), which may be used to execute multiple computations.
- **Hyperlinks:** - We use hyperlinks in Excel to navigate the different parts of the workbook fast.
- **Spellcheck:** - We can avoid grammatical and spelling errors in the data by using the built-in spell check feature.
- **Add-ins:** - We may develop Excel Add-ins using VBA or .NET to progress the functionality of the spreadsheet.
 - **VBA Macros:** - VBA programming is included in Excel. The Macros Functionality can be used to automate repetitive operations.
 - **Protection:** - Workbook, Worksheet, and VBA Protection options are available in Excel.
 - **Conditional Format:** - We can format the data based on the specific criteria. This aids in highlighting the crucial data range.
 - Excel offers a wide range of add-ins for data analysis and ETL.
 - **Database Feature of Excel**
 - Excel may be used to create databases and carry out a variety of data processing operations.
 - **PivotTables:** Summarize data can be used to create an effective cross table.
 - **Tables:** We can group the rows and columns using parent and child records. This will make it easier to conduct additional research rapidly.
 - **Grouping:** With parent and child records, we can group the rows and columns.
 - **Sorting:** In Excel, we can sort the data. We can sort the data in Ascending or Descending order with one or more than one column.
 - **Filtering:** The data can be filtered in Excel. In order to filter with essential options, we can set a variety of the option. In Excel, there is an option of Advanced Filtering, which allows us to perform more complex filters.
 - **Sparklines:** Excel 2010 introduced the ability to insert light-weight charts into cells.
 - **Database:** To install 1 million records, we can utilize Excel as a database. We have the ability to connect to a variety of databases and import data into Excel.
 - **Data Validations:** We can use the Data validation functionality to restrict the types of data that can be entered into a cell. We can also provide a drop-down menu where we can choose from a pre-defined list of options.
 - **Slicers:** - In Excel 2010, Slicers were added, which allow us to connect several pivot tables and filter data using buttons.

Parts of a Excel Worksheet:

Some parts of the Excel window (such as Ribbon and scroll bars) are standard in most other Microsoft programs. However, other features are more specific to spreadsheets, like the formula bar, worksheet tabs, and name box.



The following are the basic parts of the Microsoft Excel Window:

The following are the basic parts of the Microsoft Excel Window:

- Quick Access Toolbar
- File Tab
- Title Bar
- Control Buttons
- Menu Bar
- Ribbon/Toolbar
- Dialog Box Launcher
- Name Box
- Formula Bar
- Scroll Bars
- Spreadsheet Area
- Leaf Bar
- Column Bar
- Row Bar
- Cells
- Status Bar
- View Buttons
- Zoom control

Copy and move the sheets in Excel workbook.

- Step 1: First, right-click on the sheet tab. Next, click on the Move or Copy option from the drop-down list.
- Step 2: The Move or Copy dialog box opens.
- Step 3: Under Before Sheet section, select (move to end) option to copy or move the sheet (Data 1) at the end.

Next, select Create a copy and click OK.

Filtering in Excel:

A filter in Excel is a function that allows you to sort data within a file. A filter takes the data from a range of cells and outputs an array of data that matches the applied filter. Filters are an automated process that can refine a list, table or spreadsheet based on single or multiple criteria.

The Filter button is located in the ribbon. You can find the Filter command –

Data ⇒ Sort and Filter ⇒ Filter

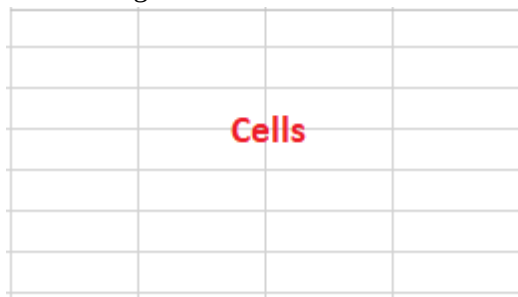
2.3 Entering and editing data in worksheet

On the active worksheet, select the cell or range in which you want to edit existing or enter new data. In the active cell, type new data or edit the existing data, and then press Enter or Tab to move the selection to the next cell. The changes are applied to all the worksheets that you selected.

2.4 Workbook – Cell - Parts of a window-Saving

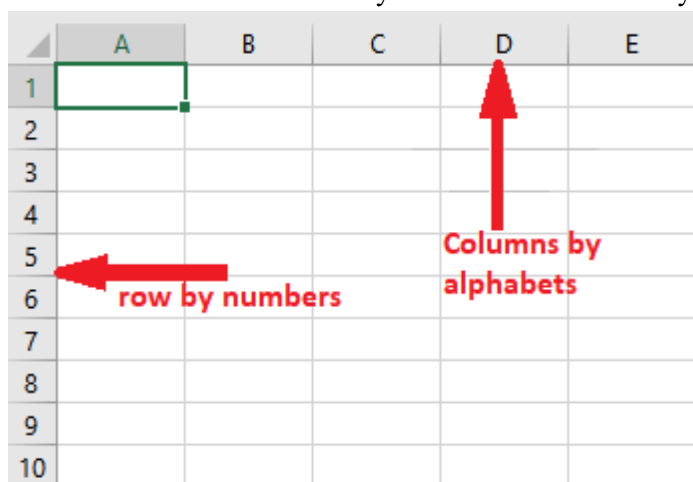
Workbook: A workbook is an Excel file that contains one or more worksheets where you can enter and store data. Each worksheet in a workbook is composed of a large number of cells that can hold data you can organize accordingly. Microsoft Excel allows you to create a new workbook from a blank workbook or a template.

Cell: A cell is an essential part of MS-Excel. It is an object of Excel worksheets. Whenever you open Excel, the Excel worksheet contains cells to store the information in them. You enter content and your data into these cells. Cells are the building blocks of the Excel worksheet. So, you should know every single point about it.



In the Excel worksheet, a cell is a rectangular-shaped box. It is a small unit of the Excel spreadsheet. There are around 17 billion cells in an Excel worksheet, which are united together in horizontal and vertical lines.

An Excel worksheet contains cells in rows and columns. Rows are labeled as numbers and columns as alphabets. It means the rows are identified by numbers and columns by alphabets.



Save a Workbook :

Once you've created a new workbook, you'll need to save it if you want to use it again.

Click the **Save** button.

Press **Ctrl + S** to quickly save a workbook.

If this is the first time you've saved the workbook, the Save As screen will appear.

Choose where you want to save your file:

OneDrive: Save to Microsoft's cloud-based storage so you can open the worksheet on another computer.

SharePoint: Save the workbook to a connected SharePoint server.

This PC: Save to the local storage on your computer.

Browse: Opens a dialog box, where you can browse through your computer's folders, drives, and network shares. Enter a file name. Click **Save**.

2.5 Closing:

If you click the Close button on the title bar when you have only one Excel file open, the workbook will close and you will exit the Excel program.

Click the **Close** button.

2.6 Opening of a Work Book – Editing – Advantages – Create Worksheets and workbooks

Open: You can locate a workbook on your computer and simply double-click it to open it, but you can also open a workbook from within the Excel program.

Click the **File** tab.

Click **Open**.

Press **Ctrl + O** to quickly display the Open tab of the Backstage view.

Select the location where the file is saved.

You can choose from:

Recent: Recent files you've worked on.

Shared with Me: Files others have shared with you on OneDrive or SharePoint Online.

OneDrive: Microsoft's cloud-based storage.

This PC: Browse files on your local computer.

Browse: Opens a dialog box where you can browse through your computer's folders, drives, and network shares.

1. Select the file you want to open.
2. Click **Open**.

Editing:

Data that has been entered in a cell can be changed by double clicking the cell location or using the Formula Bar. You may have noticed that as you were typing data into a cell location, the data you typed appeared in the Formula Bar. The Formula Bar can be used for entering data into cells as well as for editing data that already exists in a cell. The following steps provide an example of entering and then editing data that has been entered into a cell location:

1. Click cell A15 in the Sheet1 worksheet.
2. Type the abbreviation **Tot** and press the ENTER key.
3. Click cell A15.
4. Move the mouse pointer up to the Formula Bar. You will see the pointer turn into a cursor. Move the cursor to the end of the abbreviation **Tot** and left click.
5. Type the letters **al** to complete the word Total.
6. Click the checkmark to the left of the Formula Bar (see **Figure 1.17**). This will enter the change into the cell.
7. Double click cell A15.
8. Add a space after the word Total and type the word **Sales**.
9. Press the ENTER key.

Advantages of MS Excel

Because it is simple to preserve data and add and remove information both easily and quickly, MS Excel is used for a variety of functions.

Using MS Excel has several significant benefits, including:

1. Easy data input: MS Excel is frequently used for data entry or analysis since there is no limit to the quantity of information that can be saved in a spreadsheet, making it simple to enter as much data as you wish. In Excel, filtering data is simple and highly useful.

2. Data retrieval is easier: Finding information printed on paper may take longer; however, this is not the case with an Excel spreadsheet. Data can be located and retrieved with ease.

3. Mathematical formulae that are Simple to Use: MS Excel's formula feature has made calculations simpler and faster.

4. More reliable: These spreadsheets, which may be password-protected on a laptop or desktop computer, are significantly less likely to be lost than records or pieces of paper with data that have been written down.

5. One location for all data: When the paperwork was completed in the past, data was housed in separate files and registers. Now that several worksheets may be added to a single MS Excel file, it has become more practical.

Create a Worksheet in Excel

MS Excel or Microsoft Excel is one of Microsoft's most powerful spreadsheet software. It comes with a distinct range of built-in features and functions to help us record large amounts of data in a worksheet. By default, whenever we create a new workbook in Excel, we get three worksheets, namely Sheet 1, Sheet 2, and Sheet 3. However, there may be cases when we may need one or more additional worksheets to record our data. Excel also provides such a useful option or feature to the users.

This article discusses various step-by-step tutorials on creating a worksheet in Excel. Before discussing the process of creating a worksheet in Excel, let us briefly discuss the Introduction to Excel worksheet.

Creating a new Workbook

Follow these steps to create a new Blank workbook, giving a name to it & saving it:

Step 1: Click on the Microsoft Office button on the top-left corner.

Step 2: Then click on New.

Step 3: A dialog box for New Workbook will pop up. Click on blank Document & then on Create tab.

A new blank workbook is created & it appears on your screen.

Note: MS Excel automatically opens a new Workbook for you when you open Excel in your system.

2.6 Import data from a delimited text file:

1. Choose "Open" from Microsoft Excel's File menu, and navigate to the folder that contains your delimited file. Make sure that you have chosen the option to view all file types. If you don't do this, you will not be able to see your file in the folder. Double-click on the file name to open it. Excel will automatically enter "Text Import Wizard" mode.
2. Choose "Delimited" as the file type that best describes your data on the first screen of the Text Import Wizard. Then click "Next" to go to the next screen.
3. Select the delimiter that is used in your delimited file. If you didn't know what the delimiter was before beginning the file import, you can usually scan the data and determine which character is being used. In our example, the file is comma-delimited. After selecting the delimiter, click "Next" to proceed.

2.7 Add a worksheet to an existing workbook:

select that worksheet and then, on the Home tab, in the Cells group, click Insert, and then click Insert Sheet. Tip: You can also right-click the tab of an existing worksheet, and then click Insert. On the General tab, click Worksheet, and then click OK.

2.8 Copy and move a worksheet

Move a worksheet within a workbook

Select the worksheet tab, and drag it to where you want it. **Caution:** When you move a sheet to another workbook, check any formulas or charts that refer to data on the sheet because moving the sheet might cause errors or produce unintended results in your data. Similarly, if you move a sheet that is referred to by 3-D references, the calculation might include or leave out data on the sheet.

Copy a worksheet in the same workbook

1. Press CTRL and drag the worksheet tab to the tab location you want. (or)
2. Right click on the worksheet tab and select **Move or Copy**.
3. Select the **Create a copy** checkbox.
4. Under **Before sheet**, select where you want to place the copy.
5. Select **OK**.

2.9 Types of Functions - Formulas and Functions

Formulas and Functions

The Formula Bar is used for you can enter or edit data, a formula or a function that will appear in a specific cell. In the image below, cell C1 is selected and 1984 is entered into the formula bar. Note how the data appears in both the formula bar and in cell C1. Cells can contain formulas and functions that calculate cell values. In our example, SUM(B4:B7) adds the value of each cell in cell range B4:B7 and displays the total in cell B8.

Formatting Attributes Cells can contain formatting attributes that change the way letters, numbers, and dates are displayed. For example, percentages can appear as 0.15 or 15%. You can even change a cell's background color. Formulas and Functions Cells can contain formulas and functions that calculate cell values. In our example, SUM(B4:B7) adds the value of each cell in cell range B4:B7 and displays the total in cell B8. To insert content 1. Click a cell to select it. 2. Type content into the selected cell, then press Enter on your keyboard. The content will appear in the cell and the formula bar. You can also input and edit cell content in the formula bar. Content appears in cell and formula bar.

To delete cell content 1. Select the cell with content you wish to delete. 2. Press the Delete or Backspace key on your keyboard. The cell's contents will be deleted. To delete cells: There is an important difference between deleting the content of a cell and deleting the cell itself. If you delete the entire cell, the cells below it will shift-up and replace the deleted cells.

1. Select the cell(s) you wish to delete.
2. Select the Delete command from the Home-tab on the Ribbon.
3. The cells below will shift up.

2.10 Formatting options

All cell content uses the same formatting by default, which can make it difficult to read a workbook with a lot of information. Basic formatting can customize the look and feel of your workbook, allowing you to draw attention to specific sections and making your content easier to view and understand. You can also apply number formatting to tell Excel exactly what type of data you're using in the workbook, such as percentages (%), currency (\$), and so on.

Font Formatting

To change the font By default, the font of each new workbook is set to Calibri. However, Excel provides a variety of other fonts you can use to customize your cell text. In the example below, we'll format our title cell to help distinguish it from the rest of the worksheet.

1. Select the cell(s) you wish to modify.
2. Click the drop-down arrow next to the Font command on the Home tab. The Font drop-down menu will appear.
3. Select the desired font. A live preview of the new font will appear as you hover the mouse over different options.
4. The text will change to the selected font.!

To change the font color

1. Select the cell(s) you wish to modify.
2. Click the drop-down arrow next to the Font Color command on the Home tab. The Color menu will appear.
3. Select the desired font color. A live preview of the new font color will appear as you hover the mouse over different options.

Formatting the Spreadsheet:

The default page view for Microsoft Excel spreadsheets display all gridlines and open up in portrait orientation. To change the gridlines look at the fifth tab on the Formatting Palette, under Sheet uncheck the view box. This will eliminate any gridlines from the spreadsheet. To change the page orientation look at the fifth tab on the Formatting Palette, under Orientation and check Landscape.

Excel. Cells hold all of the data that is being used to create the spreadsheet or workbook. To enter data into a cell you simply click once inside of the desired cell, a green border will appear around the cell. Cut, Copy, and Paste. You can use the Cut, Copy and Paste features of Excel to change the data within your spreadsheet, to move data from other spreadsheets into new spreadsheets, and to save yourself the time of re-entering information in a spreadsheet. Cut will actually remove the selection from the original location and allow it to be placed somewhere else. Copy allows you to leave the original selection where it is and insert a copy elsewhere. Paste is used to insert data that has been cut or copied. To Cut or Copy: Highlight the data or text by selecting the cells that they are held within. Go to Edit > Copy (Command-X) or Edit > Cut (Command-C). Click the location where the information should be placed. Go to Edit > Paste (Command-V).

Formatting Cells

There are various different options that can be changed to format the spreadsheets cells differently. When changing the format within cells you must select the cells that you wish to format. To get to the Format Cells dialog box select the cells you wish to change then go to Format > Cells. A box will appear on the screen with six different tab options (Number: Allows you to change the measurement in which your data is used. (If your data is concerned with money the number that you would use is currency) Alignment: This allows you to change the horizontal and vertical alignment of your text within each cell. You can also change the orientation of the text within the cells and the control of the text within the cells as well. Font: Gives the option to change the size, style, color, and effects. Border: Gives the option to change the design of the border around or through the cells. Formatting Rows and Columns When formatting rows and columns you can change the height, choose for your information to autofit to the cells, hide information within a row or column, un-hide the information. To format a row or column go to Format > Row (or Column), or Home tab then format button for PC, then choose which option you are going to use. The cell or cells that are going to be formatted need to be selected before doing this. Adding Rows and Columns When adding a row or column you are inserting a blank row or column next to your already entered data. Before you can add a Row you are going to have to select the row that your wish for your new row to be placed in its place. (Rows are on the left hand side of the spreadsheet) once the row is selected it is going to highlight the entire row that you chose. To insert the row you have to go to Insert > Row. The row will automatically be placed on the spreadsheet and any data that was selected in the original row will be moved down below the new row. Another way is using the Insert in the Formatting Pallette.

2.11 Data Filtering : A filter in Excel is a function that allows you to sort data within a file. A filter takes the data from a range of cells and outputs an array of data that matches the applied filter. Filters are an automated process that can refine a list, table or spreadsheet based on single or multiple criteria.

2.12 Perform Conditional Operations by using Functions:

Conditional functions perform calculations on a cell or range of cells only if those cells meet a certain condition. These functions test a given range and determine if the condition is true or false before continuing. A condition can be any relational comparison:

Examples:

- $A3 > 14$ Whether the value of cell A3 is larger than the number 14
- $D5 \leq 2$ Whether the value of cell D5 is less than or equal to the number 2

- T47="cheese" Whether the value of cell T47 is "cheese"

There are six types of conditional functions covered by this course. Each has a specific use and syntax.

IF = if(condition,value_if_true,value_if_false)

If the given condition is true, the cell will be set to the "value_if_true." If the condition is false, the cell will be set to the "value_if_false." The "value_if_true" and "value_if_false" are optional inputs which default to TRUE and FALSE, respectively.

Example:

=if(A2>3,32,"Number too small")

Reads: If A2>3 is true, then set the cell to 32. Otherwise, set the cell to "Number too small"

Nested IF Functions

You can nest one "if" function inside of another to test for multiple conditions at once. A single "if" function, without the use of any other functions, can only test for a single condition.

Example:

Test the condition of whether the contents of cell A2 are between 10 and 20.

=if (A2>20,"Number too large", if (A2<10,"Number too small", "Just right!"))

The completed function will test whether the value of A2 is larger than 20. If it is, the active cell will be set to "Number too large." If A2 is less than 20, it will be tested to see if the value of A2 is less than 10. If it is, the active cell is set to "Number too small." Otherwise, we know that the value of A2 must be between 10 and 20, so the active cell is set to "Just right!"

COUNTIF

=countif(range,criteria)

The "countif" function will increment the active cell by one each time the criteria is true for a cell in the given range.

Example:

You want to know how many universities have "red" as one of their school colors, and have compiled a database of schools and their colors in Excel.

=countif (F1:F230, "=red")

If a cell in F1:F230 satisfies "=red", then increment the active cell by one.

SUMIF

=sumif(range,criteria,sum_range)

The "sumif" function utilizes a range and a corresponding sum_range of the same size.

Example:

You wish to know how many hours you have spent watching television, from a database of your time spent on various activities.

=sumif (D1:D230,"=television", H1:H230)

If a cell in D1:D230 satisfies "=television", then increment the active cell by the corresponding cell from H1:H230. If cell D7 contains the word "television," the active cell will be incremented from the corresponding cell from H1:H230, or cell H7.

AND and OR

=AND(condition1, [condition2], ...)

=OR(condition1, [condition2], ...)

For example,

=AND(G2="BLAH",A2="OCHO")

will evaluate to TRUE if the cell G2 is "BLAH" *and* the cell A2 is "OCHO".

OR will evaluate to TRUE if *any* of the conditions are true.

For example,

=OR(E2>12,F2<54)

evaluates to TRUE if E2>12, or F2<54, or if both of the conditions are true!

2.13 Format & Modify Text with Functions:

1. Making use of LEFT, RIGHT and MID Excel functions.
2. Removing spaces with the TRIM function.
3. Using LOWER and UPPER functions.
4. Joining text items to make one with the CONCATENATE function.

2.14 Summarize Data by using Functions :

1. SUM – Use this function to find the sum of the values in a column. ...
2. AVERAGE – Use this function to find the average of the values in a column. ...
3. COUNT – Use this function to count how many items are present in any range that contains data.

3. Apply Custom Data Formats and Validation :

Microsoft Excel has several built-in data validation rules for numbers, dates and text, but they cover only the most basic scenarios. If you want to validate cells with your own criteria, create a custom validation rule based on a formula. Here's how:

1. Select one or more cells to validate.
2. Open the Data Validation dialog box. For this, click the **Data Validation** button on the *Data* tab, in the *Data Tools* group or press the key sequence **Alt > D > L** (each key is to be pressed separately).
3. On the *Settings* tab of the *Data Validation* dialog window, select **Custom** in the *Allow* box, and enter your data validation formula in the *Formula* box.
4. Click *OK*.

Create and modify simple macros:

An Excel macro is an action or a set of actions that you can record, give a name, save and run as many times as you want and whenever you want. When you create a macro, you are recording your mouse clicks and keystrokes. When you run a saved macro, the recorded mouse clicks and keystrokes will be executed in the same sequence as they are recorded. Macros help you to save time on repetitive tasks involved in data manipulation and data reports that are required to be done frequently.

Creation of Macros:

Excel Macros You can create a macro with Excel commands by recording the key strokes and mouse clicks, giving the macro a name and specifying how to store the macro. A macro thus recorded can be run with an Excel command.

1. To record a macro do the following
2. Click the VIEW tab on the Ribbon.
3. Click Macros in the Macros group.
4. Select Record Macro from the dropdown list

The Record Macro dialog box appears.

1. Type MyFirstMacro in the Macro name box.
2. Type A Simple Macro in the Description box and click OK.
3. Click in the cell B2.
4. Create the table.
5. Click in a different cell in the worksheet.
6. Click the VIEW tab on the Ribbon.
7. Click Macros.
8. Select Stop Recording from the dropdown list.

Modify simple macros:

1. Click the **Developer** tab.
2. Click the **Macros** button.

The Macro dialog box appears. Here you can see the macros that you have recorded.

3. Select a macro to edit.
4. Click the **Edit** button.

The Microsoft Visual Basic for Applications program appears. What may look like jumbled text is actually Visual Basic code—the language that was used by Excel to record the macro you created.

You don't have to learn Visual Basic to be proficient at Excel however, knowing the basics can be helpful if you ever want to modify an existing macro. If you take a close look at the code for your macro, some of the procedures should make a little sense to you. For example, if your macro selects some cells in a workbook, you may see the text "Select" or "Selection".

You can delete sections of code to delete certain actions from the macro or edit the code to change the macro's actions.

5. Edit the macro's code as desired.
6. Click the **Save** button.
7. Close the Visual Basic for Applications program window

3.6 Insert and configure form controls

Insert a Form Control

1. Click the Developer tab.
2. Click the Insert button. There are two categories of controls in the menu. ...
3. Select a form control.
4. Click, or click and drag, to place the form control.
5. Right-click the form control.
6. Select Format Control. ...
7. Modify the form control settings. ...
8. Click OK.

Create Charts:

Create a new chart:

1. Select the data for which you want to create a chart.
2. Click INSERT > Recommended Charts.
3. On the Recommended Charts tab, scroll through the list of charts that Excel recommends for your data, and click any chart to see how your data will look. ...
4. When you find the chart you like, click it > OK.

Add additional data series:

1. On the worksheet that contains your chart data, in the cells directly next to or below your existing source data for the chart, enter the new data series you want to add. ...
2. Click anywhere in the chart. ...
3. On the worksheet, drag the sizing handles to include the new data.

Switch between rows and columns in source data:

1. Copy the cell range.
2. Select the empty cells where you want to paste the transposed data.
3. On the Home tab, click the Paste icon, and select Paste Transpose.

Analyze data by using Quick Analysis:

1. Select a range of cells.
2. Select the Quick Analysis button that appears at the bottom right corner of the selected data. ...
3. Select Charts.
4. Hover over the chart types to preview a chart, and then select the chart you want.
5. Select More > All Charts to all available see all charts available.

Format Charts:

On the Format tab, in the Current Selection group, click the arrow next to the Chart Elements box, and then select the chart element that you want to format.

One of the major uses of Excel is to create different types of charts for a given data set. Excel provides us with a lot of modification options to perform on these charts to make them more insightful.

In this article, we are going to see the most common “Formatting” performed on charts using a suitable example shown below.

Example: Consider the performance of a batsman in a T20 match. The data set contains the runs scored by the batsman in various matches.

Now we will insert a bar chart using the above table. To insert a bar chart :

Select dataset -> Click on Insert -> Chart Sets Pop Down -> 2-D column

The key steps to format anything on the chart is :

- Select the part of the chart which needs to be formatted.
- Right-click on it and select “**Format**” The format window will open.

Resize charts :

Usually, we move or change the size of the chart within excel to ensure that the chart will not cover its underlying data. We can move the chart to a new location in the worksheet or to a new or existing worksheet. Also, we resize or change the size of the chart for a better fit in the worksheet.

Add and modify chart elements:

Add chart elements

To insert a chart, select the data you wish to appear in the chart, and then go to the Insert ribbon (if the data is noncontiguous, you can select one set, and hold down the Control key on the keyboard to select the second set). In the Charts group, choose the desired type of chart. Click on the arrow below the type icon to see the sub-types. Excel 2013 also includes an option to browse Recommended Charts, which shows you the chart types that best fit your data.

By default, the chart will appear directly on the spreadsheet where your data is; when the chart is selected, you will see additional ribbons. In Excel 2010, you have the Design, Layout, and Format Ribbons. In Excel 2013, you have Design and Format. The 'Layout' options have been consolidated into the Design ribbon.

Modify chart elements

Once your chart appears in Excel, there are many ways to modify the way it looks and its location. A few ways are described below, but explore to find more! In all cases, you have to select the chart first to access Chart Tools.

- To add any labels (for example, the title or axes), under the Design ribbon, click Add Chart Element in the Chart Layouts group and select the desired label.
- To change the chart type, data, or location, use the Chart Tools Design ribbon.

Apply chart layouts and styles:

Built-in chart layouts can quickly adjust the overall layout of a chart with different combinations of titles, labels, and chart orientations. Select the chart you want to format. Click the Design tab. Click the Quick Layout button. Select the layout you want to use.

Move charts to a chart sheet:

Under Chart Tools, on the Design tab, in the Location group, click Move Chart. Do one of the following: To move the chart to a new worksheet, click New sheet, and then in the New sheet box, type a name for the worksheet.

How to Create a chart

Steps used to create a chart

1. Select the data for which you want to create a chart.
2. Click INSERT > Recommended Charts.
3. On the Recommended Charts tab, scroll through the list of charts that Excel recommends for your data, and click any chart to see how your data will look. If you don't see a chart you like, click All Charts to see all the available chart types.
4. When you find the chart you like, click it > OK.

5. Use the Chart Elements, Chart Styles, and Chart Filters buttons, next to the upper-right corner of the chart to add chart elements like axis titles or data labels, customize the look of your chart, or change the data that is shown in the chart.

6. To access additional design and formatting features, click anywhere in the chart to add the CHART TOOLS to the ribbon, and then click the options you want on the DESIGN and FORMAT tabs.

Give the procedure to perform operations on worksheet in MS-Excel

Some Common Operations in *Microsoft Excel*

Deleting a Column or a Row

Click on the column or row header to highlight the entire column or row to be deleted. Right-click on any cell in the highlighted column or row. Click on **Delete** from the menu.

Inserting a Column

Click on the column header *directly to the right* of where you want to insert a new column. Right-click on any cell in the highlighted column. Click on **Insert** from the menu.

Inserting a Row

Click on the row header *directly below* where you want to insert a new row. Right-click on any cell in the highlighted row. Click on **Insert** from the menu.

Sorting

Click on the grey rectangle between the "A" column header and the "1" row header in the upper left corner of the worksheet to select the entire worksheet. Click on **Data** on the menu bar, and then **Sort...** Under **Sort by**, select the column to sort by and select either **Ascending** or **Descending** order.

Displaying Formulas in the Worksheet

Hold down the CTRL key, and press the left single quote key (this key also has the "tilde" (~) symbol). Repeat this operation to return to numerical display. *Note: spreadsheet data can be printed in either the formula display or the numerical display.*

Entering Formulas

Click on the cell in which you want to enter a formula, and type the formula. *Note: all formulas must begin with an equal sign (=).* Additional information about functions can be obtained by clicking on the equal sign (=) next to the formula bar.

Adjusting Column Width

Click on the column header to highlight the entire column. Right-click on any cell in the highlighted column.

Adjusting Row Height

Click on the row header to highlight the entire row. Right-click on any cell in the highlighted row.

Adjusting the Format of Numerical Data

Click and drag over the cells containing the numerical data. Right-click on any cell in the highlighted area. Click on **Format Cells...** Click on the **Number** tab, and select the **Category:** for the type of data in the cells.

Justification of Cell Contents

Click on the cell. Click on the justification button (i.e., either left justify, center, or right justify) on the Formatting Toolbar. *Note: these three buttons are found to the right of the bold, italics and underline buttons.*

Justification of an Entire Column or Row

Click on the column or row header to highlight the entire column or row. Click on the justification button (i.e., either left justify, center, or right justify) on the Formatting Toolbar. *Note: these three buttons are found to the right of the bold, italics and underline buttons.*

Copying Cells, Columns or Rows

Select the cell(s), column(s) or row(s) by highlighting them. Right-click on any cell in the highlighted area. Click on **Copy**. The selected cells will be copied (transparently) to the Windows clipboard. *Note: the Windows clipboard holds only the last copied data.*

Pasting Cells, Columns or Rows

Select the cell(s), column(s) or row(s) into which you want to paste previously copied data (i.e., from the Windows clipboard). *Note: the selected area must be the same size as the data you will be pasting.* Right-click on any cell in the highlighted area. Click on **Paste**.

Types of Functions in MS Excel

Excel has many premade formulas, called functions.

Functions are typed by = and the functions name.

For example =SUM

Once you have typed the function name you need to apply it to a range.

For example =SUM(A1:A5)

The range is always inside of parentheses.

Function	Description
<u>=AND</u>	Returns TRUE or FALSE based on two or more conditions
<u>=AVERAGE</u>	Calculates the average (arithmetic mean)
<u>=CONCAT</u>	Links together the content of multiple cells
<u>=COUNT</u>	Counts cells with numbers in a range
<u>=COUNTIF</u>	Counts cells as specified
<u>=IF</u>	Returns values based on a TRUE or FALSE condition
<u>=LEFT</u>	Returns values from the left side of a cell
<u>=LOWER</u>	Reformats content to lowercase
<u>=MAX</u>	Returns the highest value in a range
<u>=MIN</u>	Returns the lowest value in a range
<u>=MODE</u>	Finds the number seen most times. The function always returns a single number
<u>=NPV</u>	The NPV function is used to calculate the Net Present Value (NPV)
<u>=OR</u>	Returns TRUE or FALSE based on two or more conditions
<u>=RAND</u>	Generates a random number
<u>=RIGHT</u>	Returns values from the right side of a cell
<u>=STDEV.P</u>	Calculates the Standard Deviation (Std) for the entire population
<u>=STDEV.S</u>	Calculates the Standard Deviation (Std) for a sample
<u>=SUM</u>	Adds together numbers in a range
<u>=SUMIF</u>	Calculates the sum of values in a range based on a TRUE or FALSE condition
<u>=TRIM</u>	Removes irregular spacing, leaving one space between each value
<u>=VLOOKUP</u>	Allows vertical searches for values in a table
<u>=XOR</u>	Returns TRUE or FALSE based on two or more conditions

Charts in MS Excel

There is a list of basic and advanced level of charts used for different purposes to interpret the data.

1. Column Chart
2. Line Chart
3. Bar Chart
4. Area chart
5. Pie chart or Doughnut chart
6. Surface chart

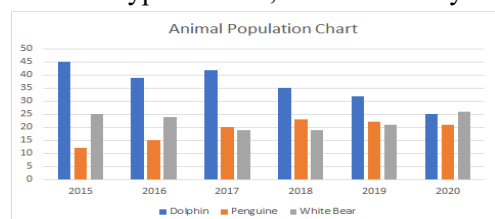
These are the most used charts of Excel that an Excel user usually requires.

Microsoft Excel introduce one more new chart called Treemap chart for 2016 and newer version. It has come with some advanced features and representation styles.

We will illustrate each chart and its functionality with an example in this chapter. Learn carefully and use them accordingly.

Column Charts

A column chart is basically a vertical chart that is used to represent the data in vertical bars. It works efficiently with different types of data, but it is usually used for comparing the information.

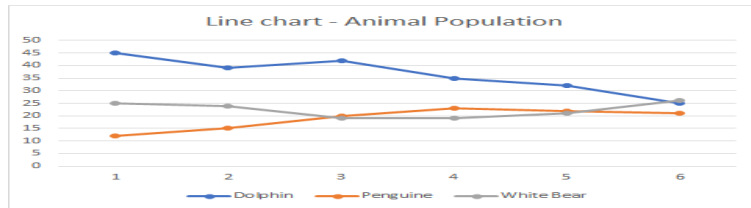


Excel offers 2D and 3D column charts.

Line Chart

Line charts are most useful for showing trends. Using this chart, you can easily analyze the ups and downs in your data over time. In this chart, data points are connected with lines.

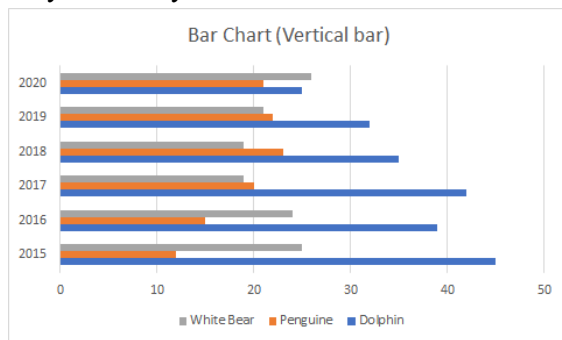
For example, a company wants to analyze the sell of products for the last five years graphically. Additionally, it also wants to analyze the ups and downs of each year product sell.



Excel offers 2D and 3D line charts.

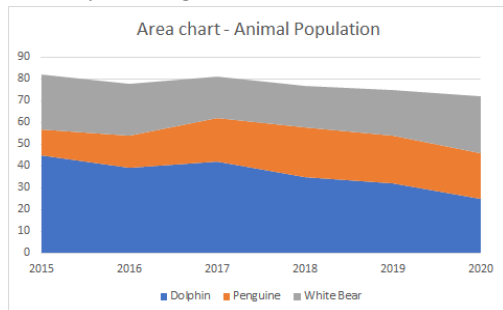
Bar chart

Bar charts are horizontal bars that work like column charts. Unlike column charts, Bar charts are horizontally plotted. Or you can say that bar charts and column charts are just opposite to each other.



Area chart

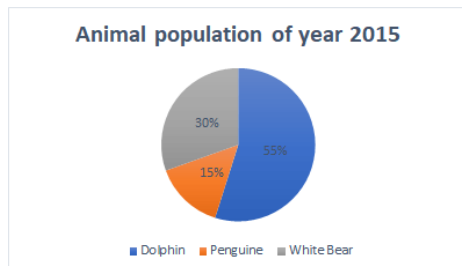
Area charts are just like line charts. Unlike the line charts, gaps are filled with color in area charts. Area charts are easy to analyze the growth in business as its shows ups and downs through line.



Similar to the line charts, data points in area charts are connected with lines.

Pie chart

A pie chart is a rounded shape graph that is divided into slices of pie. Using this chart, you can easily analyze data that is divided into slices. It makes the data easy to compare the proportion.



Surface chart

Surface chart is actually a 3D chart that helps to represent the data into a 3D landscape. These charts are best to use with a large dataset. This chart allows to displaying a variety of data at the same time.

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17	2474036	PALLA AMRUTHA	34
18	2474037	POTNURI HARIKA SATYA DEVI	35
19	2474039	TURANGI DURGA BHAVANI	32
20	2474041	VAKAPALLI SANJANA	38

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V. NR. D.

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Sample Answer Script