

# SHRI SATHYA SAI COLLEGE FOR WOMEN



**SESSION 2022-23**

## **Department of Computer Science & Application**

**Major Field Project  
on  
Computer Networking  
Class : BSC II<sup>nd</sup> Year**

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# ACKNOWLEDGEMENT

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*I am also thankful to my project guide Lecturer who supported me throughout this project with utmost cooperation and patience and for helping me in doing this Project.*

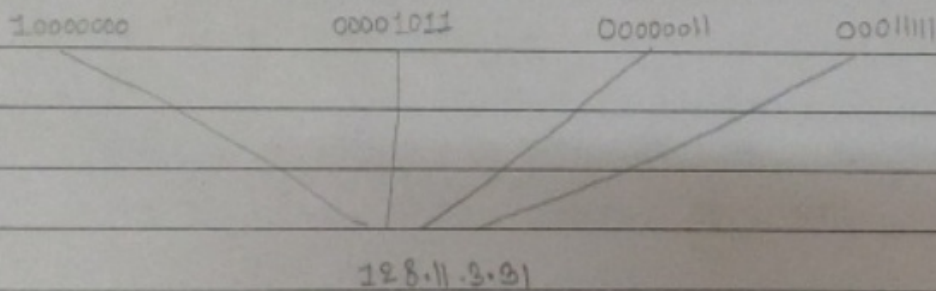
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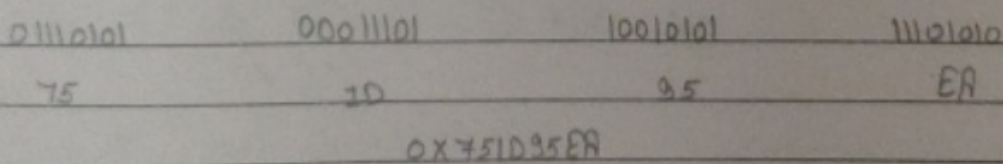
# INTRODUCTION TO CLASSFUL IP ADDRESSING

IP address of an address having information about how to reach a specific host, especially outside the LAN. An IP address is a 32 bit unique address having an address space. Generally, there are two notations in which IP address is written, dotted decimal notation and hexadecimal notation and hexadecimal.

## Dotted Decimal Notation

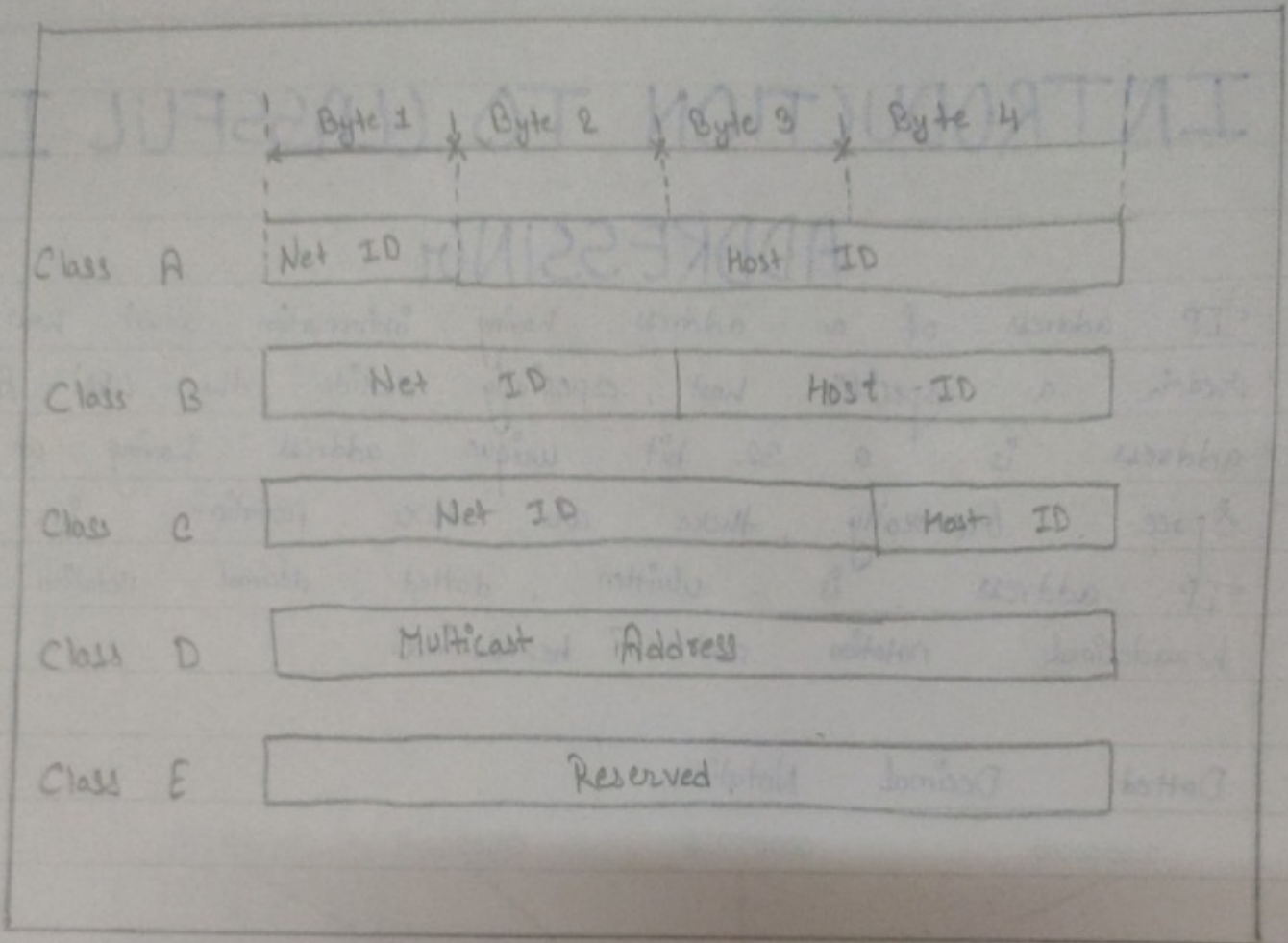


## Hexadecimal Notation



Some points to be noted about dotted decimal notation

- # The value of any segment (byte) is between 0 and 255
- # There are no zeroes preceding the value in any segment (054) is wrong, (54) is correct



## Classful Addressing

The 32 bit IP address is divided into five sub classes, there are

- # Class A
- # Class B
- # Class C
- # Class D
- # Class E

### Class A

IP address belonging to class A are assigned to network that contain a large number of hosts.

The network ID is 8 bits long.

The host ID is 24 bits long.

$$2^7 - 2 = 126 \text{ network ID}$$

$$2^{24} - 2 = 16,777,214 \text{ host ID}$$

7 Bits	24 Bit
○ Network	Host

### Class B

IP addressing belonging to class B are assigned to network that ranges from medium - sized to large - sized network.

# The network ID is 16 bits long

# The host ID is 16 bits long

#  $2^{14} = 16384$  network address.

#  $2^{16} - 2 = 65534$  host address.

IP addresses belonging to class B ranges from 128.0.x.x - 191.255.x.x.

		14 Bit	16
1	0	Network	Host

### Class C

IP address belonging to class C are assigned to small sized networks

# The network ID is 24 bits long

# The host ID is 8 bits long

#  $2^{21} = 2097152$  networking address.

#  $2^8 - 2 = 254$  host address

IP addresses belonging to class C ranges from 192.0.0.x - 223.255.x

		21 Bit	8 Bit	
1	1	0	Network	Host

### Class D

IP address belonging to class D are reserved for multicasting. Class D does not possess any sub-net mask. IP

addresses belonging to class D ranges from 224.0.0.0 - 255.255.255

1 1 1 0      28 Bit  
Host

### Class E

IP addresses belonging to class E are reserved for experimental and research purpose. IP addresses of class E range from 24.0.0.0 - 255.255.255.254.

1 1 1 1      28 Bit  
Host

## CLASSFUL ADDRESSING

We have introduced IP addressing and classful addressing in the previous post

Network Address and Mask

Network address -

It identifies a network on internet. Using this, we can find range of addresses in the network and total possible number of hosts in the network.

Mask -

It is a 32-bit binary number that gives the network address. In the address



in the address block when AND operation is bitwise applied on the mask and any IP address of the block

→ The default mask in different classes are

# Class A -  
255.0.0.0

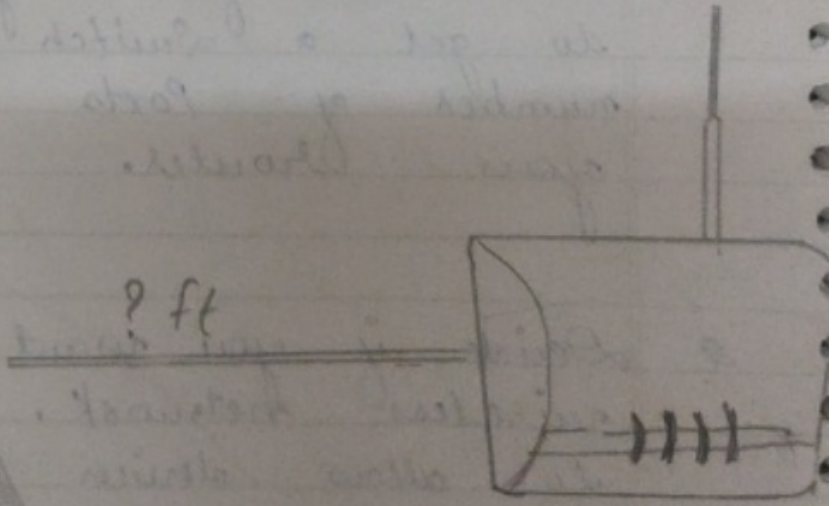
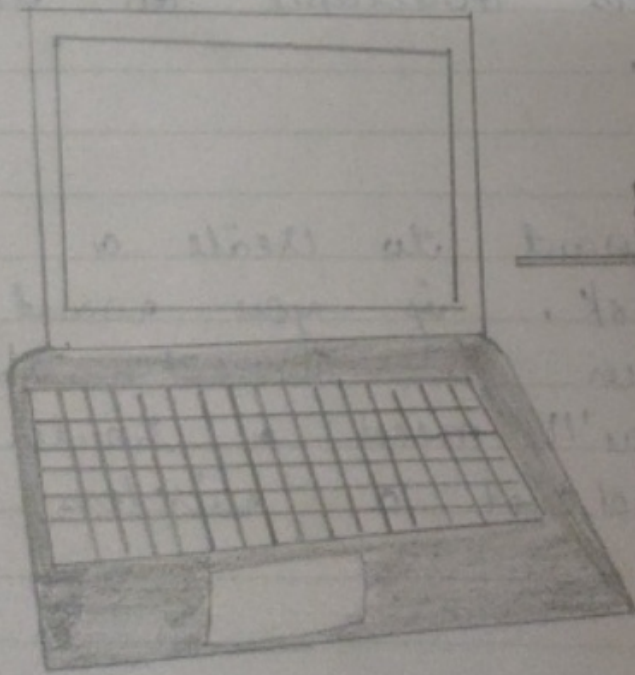
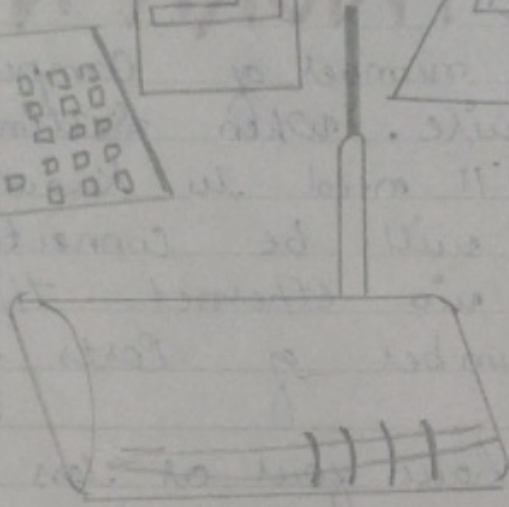
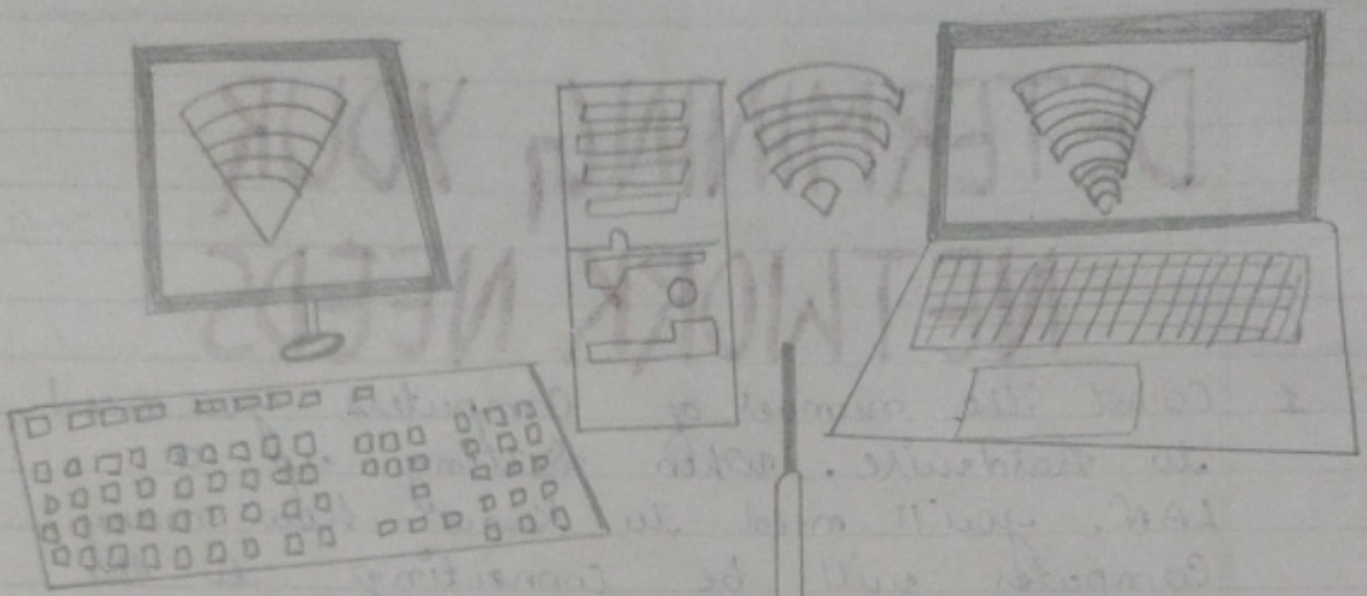
# Class B -  
255.255.0.0

# Class C -  
255.255.255.0



# DETERMINING YOUR NETWORK NEEDS

1. Count the number of computers you need to hardwire. When setting up a LAN, you'll need to know how many computers will be connecting to the network via ethernet. This determines the number of ports you'll need.
  - If you have four or less computers that you need to hardwire, you'll just need a router. If you have more than four, you'll likely need to get a switch to extend the number of ports available on the your router.
2. Decide if you want to create a wireless network. If you want to allow devices to connect the wirelessly, you'll need a router that can broadcast a wireless network.



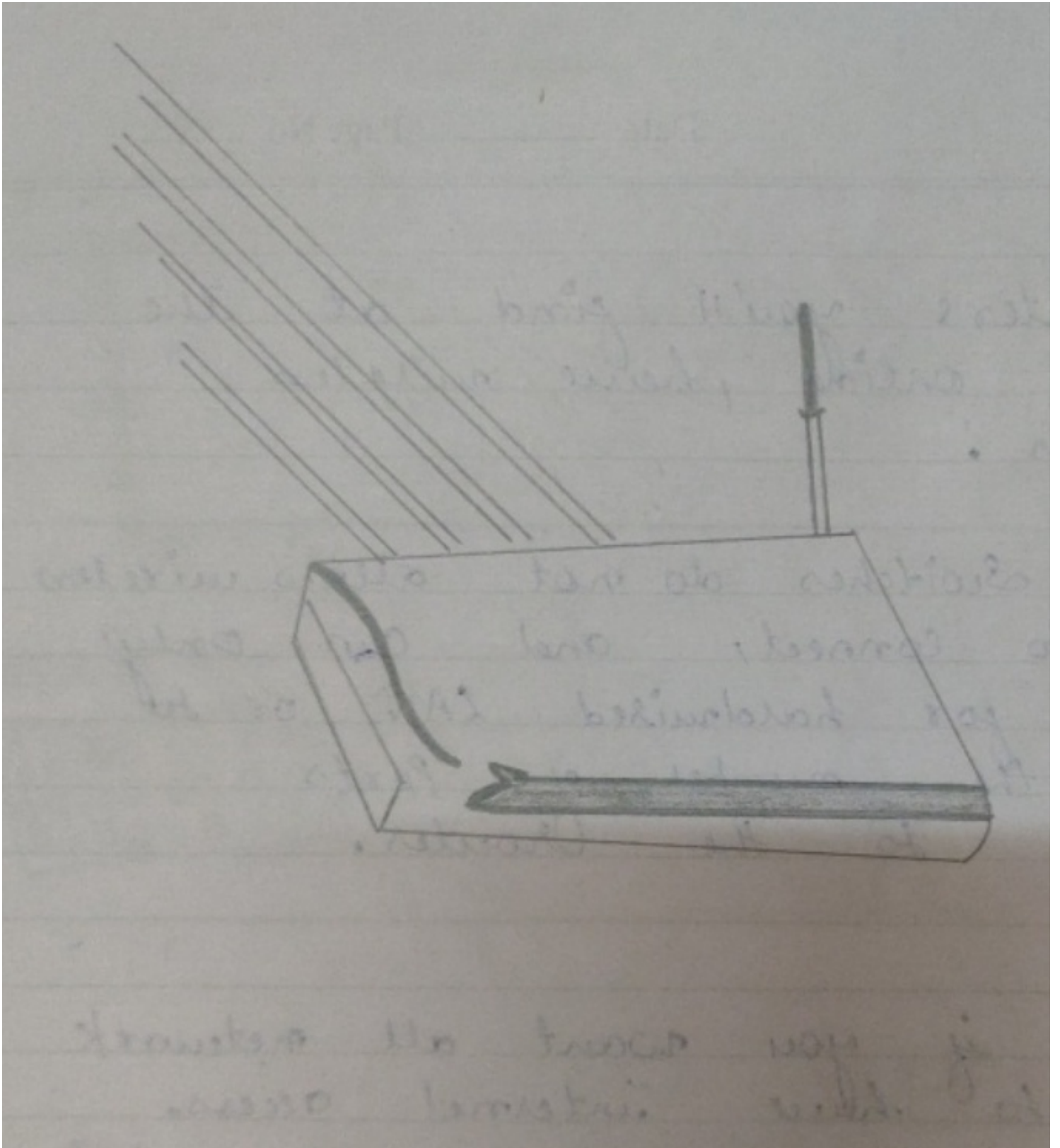
Most routers you'll find at The Store or online have wireless capabilities.

\* Network Switches do not allow wireless devices to connect, and can only be used for hardwired LAN or to extend the number of ports available to the router.

3 Determine if you want all network devices to have internet access. If you want all to be connected devices to have access to their internet, you'll need a router to handle the connections.

If you don't need the device to have a network connection you can just use a network switch

4 Measure the distances for all hardwired devices. This isn't much of an issue in most homes, but network cable cannot run longer



than 100m (328 ft) if you have to run cable farther than this you'll need switches in between.

5. Consider your future needs. If you're filling all of the ports on your hardware consider future-proofing to allow for more devices in the future.

## 2. Setting up a Basic LAN

### GATHER YOUR NETWORK HARDWARE

1. To create a LAN, you'll need a router or switch, which will act as the hub of your network. These devices route information to the correct computers.

### 2. SET UP YOUR ROUTER

you don't need to do much to set up  
the router for a basic LAN.

### 3. CONNECT YOUR MODEM TO YOUR ROUTER

If you're sharing the internet connection  
from your modem, connect the modem  
to the WAN/INTERNET port on the router.

### 4. CONNECT YOUR SWITCH TO YOUR ROUTER

If you're using a switch to expand the  
number of ports available on the router,  
plug an ethernet cable into any LAN  
port on the router and any LAN port switch.

### 5. CONNECT YOUR COMPUTER TO OPEN LAN PORT

Use ethernet cables to connect each  
computer to an open LAN port on  
your router or switch.

(1) It doesn't matter what order the ports  
are connected in.

- Ethernet cables cannot reliably transfer  
data at lengths larger than 100m  
(328 ft).



# SUBNETTING

A Subnet, or Subnetwork is a segmental piece of a large network. More specifically, Subnets are a logical partition of an IP network into multiple, smaller network segments. The Internet protocol (IP) is the method for sending data from one computer to another over the internet. Each computer, or host, on the internet has at least one IP address as a unique identifier.

IP Subnet :- An IP Subnet, often called a Subnetwork, is a subdivision of an IP network. They can be best understood as the logical organization of connected network devices. Subnetting allows a company to break its large network into smaller, more organized divisions. The advantages of Subnetting include

- Improved efficiency :- By breaking large networks into smaller ones, your customers can simplify basic tasks like troubleshooting.
- Better Security: Subnetting can help customers more easily deploy security measures such as firewalls.

- Reduce network traffic: Smaller networks equate to smaller broadcast domains. This can free up network congestion.

What are the classes of networks?

There are five classes of subnetworks: class A, class B, class C, class D and class E. Each class relates to a specific range of IP network addresses. Classes A, B and C are used the most often by different networks.

- class A : first octet value 0 - 126
- class B : first octet value 128 - 191
- class C : first octet value 192 - 223
- class D : first octet value 224 - 239
- class E : first octet value 240 - 255

Note that 127 is not accounted for because it denotes a loopback address.

What is a class A IP address?

A class A IP address reserves 8 bits for a network with 24 bits dedicated to hosts. Its IP address spans from 0 to 126.

The class A subnet mask is 255.0.0.0

Accordingly, class A IP addresses are best used to serve incredibly large networks.

In comparison to class A, class B IP

addresses are better suited to serving smaller network since they reserve 14 bits for a network which leaves only 18 bits for hosts. Network addresses for these range from 128 to 191.

What is the use of class D and class E IP addresses?

The uses of class D and class E IP addresses are mostly reserved for experimental purposes. For instance, a class D IP address is almost exclusively reserved for multicasting applications.

Unlike classes A, B and C, class D is not available for use in normal networking operations.

Class E is often cited as having been created getting started with networking for future use, research, and development.

## Supernetting in Network Layer

Supernetting is the opposite of subnetting. In subnetting, a single big network is divided into multiple smaller subnetworks. In Supernetting, multiple networks are combined into a bigger network termed as a Supernetwork or Supernet.

Supernetting is the process of aggregation of multiple networks into a single network and it is an inverse process of subnetting. CIDR value, Network ID, Subnet mask are the information required for performing the Supernetting.

In the process of Supernetting, bits of the network are converted into bits of the host. Other names for Supernetting are aggregation and route summarization.

How to Supernet a network?

All the networks are not considered suitable networks for aggregation. Some rules are defined for Supernetting the network.

Rule 1: contiguous - As we can identify from IP addresses that these are class C networks. The first network range is from 201.1.0.0 to 201.1.0.255. The second network range starts from 201.1.2.0

Rule 2: Same Size - As all the given IP addresses belong to class C and every network has  $2^8 = 256$  hosts

Rule 3: Divisibility - IP address of the first network must be divisible by the network's total size. the total size of the network in our example is  $4 \times 2^8 = 2^{10}$

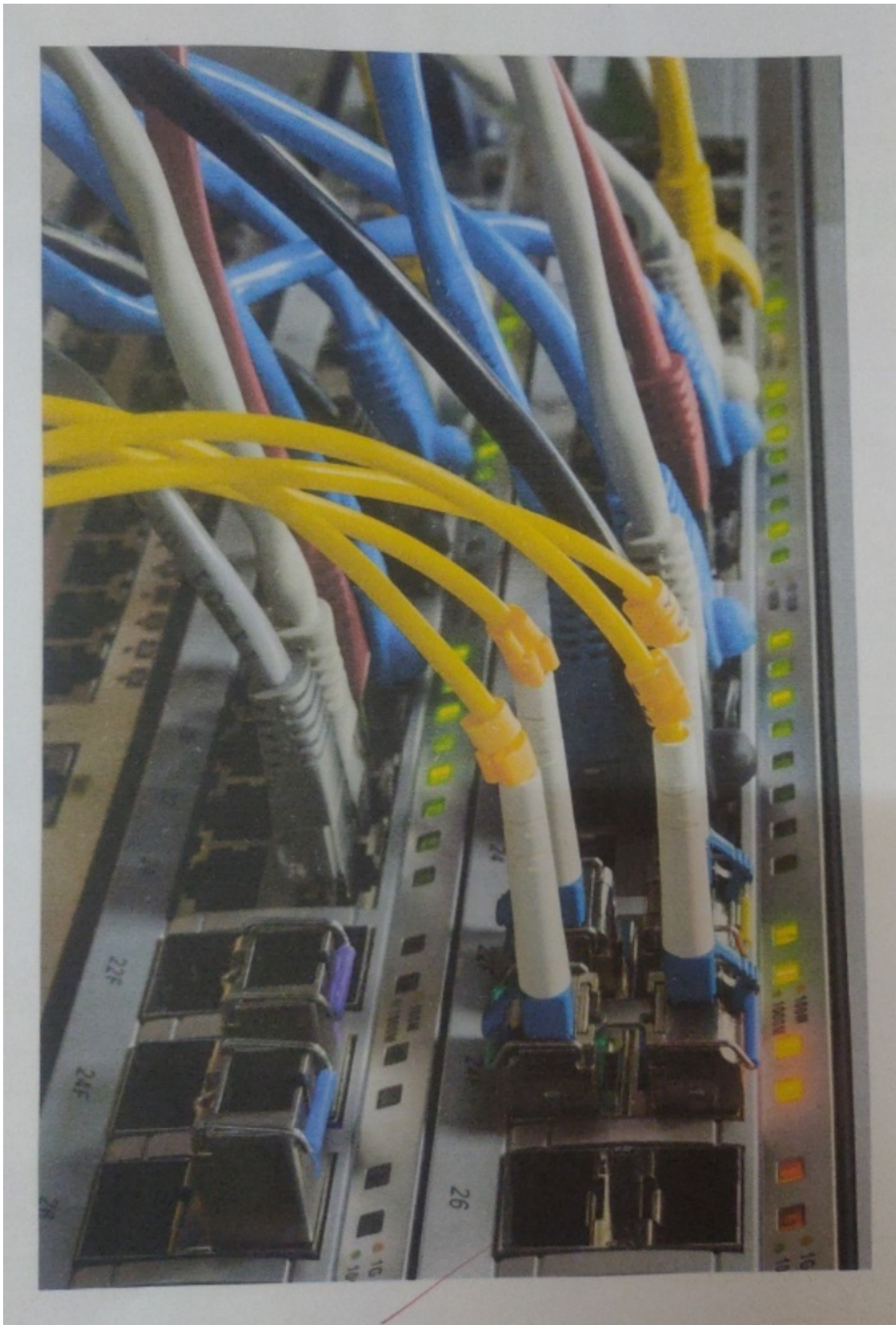
### Supernetting Rules

List 1	List 2	List 3	List 4
192.168.0.0/24	192.168.1.0/24	192.168.0.0/24	192.168.0.0/24
192.168.1.0/24	192.168.2.0/24	192.168.1.0/24	192.168.1.0/24
		192.168.2.0/24	192.168.2.0/24
			192.168.4.0/24

Rule 1: Contiguous networks

Rule 2: Numbers of network order

Rule 3: The value of the non-common octet in the first IP block is zero or a multiple of the number of network to be aggregated.



# LAN DEVICES INSTALLATION

LAN (Local Area Network) is a data communication network that locally connect network device such as work station, server, router, etc to share the resource within a small area such as building or campus. physical or wireless connection are set up between workstation to share the resource. Ethernet and wi-fi are the most important technologies of LAN. Personal network at home, school, office, etc are example of LAN. These are generally privately-owned network.

## \* Requirement to set up LAN Network :-

- Workstation/Personal device :- laptop, computer, mobile phone, etc.
- Network device :- router, switch, modem (if not already present in the router)
- Sharing resource :- printer, disk, driver, etc
- Cables :- Ethernet cables, wires for connecting other device.
- Internet connection :- wi-fi (in case of wireless LAN)

## \* Instruction to set up LAN Network :-

following step should be followed to set up a LAN network.

- Identify service :- Identify the network service such as printer, disk driver, data, etc. that will be shared among workstation.
- Identify device :- Identify device such as computer, mobile phones, laptops, etc with a unique address that will be connected to the network.
- Plan connection :- Design the network by laying out cable wires between network device or by making wireless connection.
- Select networking device :- Select switch or router with enough port to connect all workstation within the network.
- Configure port :- Configure WAN port according to the information provided by ISP (Internet Service Provider). Also configure LAN port of cable router such workstation within the network.
- Make connection :- Connect all the device using wires to configure a LAN network. for wireless LAN connect all the device to wi-fi with SSID (Service Set Identifier).



- Test the network :- Test each of the workstation connected to the network and ensure every workstation have access to network service.

### \* Tips for LAN Set-Up :-

1. make a comprehensive plan about connection before making actual connection to avoid confusion.
2. Carefully identify the requirement and size of the network and plan accordingly.
3. Smartly choose the networking device which provides more flexibility to the network.
4. Ensure the cable length is not more than 100 meter.
5. Avoid laying cable length is not more air ducts unless fire rated.
6. Perform detailed testing after network set up to analyze the actual performance of the network set up to analyze.

## \* Application of LAN :-

- Resource sharing :- LAN network allow workstation connected to the network to share resource such as printer, scanner, CD driver etc.
- Software sharing :- LAN network allow to share a single copy of licensed software among workstation connected to the network instead of purchasing separate software for each computer.
- Internet sharing :- LAN network facilitates sharing of internet connection among all the device connected to the network.
- Data sharing :- LAN network allow different workstation to share the data and files with each other. It also allow access to data stored on the central server.
- Communication :- Device connected to a LAN network can communicate with each other.

## \* Advantage of LAN :-

1. It is an easy and cheap way of communication within a small geographical location.
2. It has high data transmission rates.

3. It is easy to manage the resource and data from the central server.

4. It is easy to expand the network by connecting workstation to a central server.

### \* Disadvantage of LAN:-

1. It has a high initial setup cost.

2. It violates the privacy of network users as administrators have access to all their data and files.

3. It can face security issues if the central server is not properly secured.

4. It restricts the size of the network.

## HOW TO SHARE YOUR PRINTER WITH THE HOME GROUP

Sharing your local Printer with the Home Group is incredibly easy. In Windows 8.x, go to PC Settings and then to "Network > HomeGroup". There you will find several switches for sharing with the HomeGroup.

Any Printer that is connected to your Windows 8.x PC or device is now shared with others on the HomeGroup.

In Windows 7, go to the Control Panel and then to "Network and Internet > Network and Sharing Center". In the Column on the left click "HomeGroup".

In the HomeGroup window check the box for "Printers" and Press "Save Changes".

Any Printer that is connected to your Windows 7 PC is now shared with others on the HomeGroup.

## HOW TO SHARE YOUR PRINTER WITH THE NETWORK.

If you have a network with operating system other than windows 7 and windows 8.x, you may want to share your local printer using a different method, so that the printer can be discovered by all the computers in the network.

First, open the Control Panel and then go to "Hardware and Sound > device and Printers". Here you will find all the external device that are connected to your windows PC or device. Things like webcams, keyboards, external hard drives, Printers, etc.

The "Printer Properties" window is shown here you can configure all the important aspects of your printer and you can also share it with the network.

Since we are interested in sharing it with others on the network go to the "Sharing"

tab, you are informed that the Printer will not be available when your Computer sleeps or it is shut down. also, if you are using Password Protected Sharing you are informed that only users on your network with a username and Password for this Computer can print to it.

we recommend enabling this setting so that system performance is not impacted on the computer to which the printer is attached every time something gets printed.

If this setting is enabled all the documents that will be printed are rendered on the computer that order the printing process when this setting is disabled the documents are rendered on the computer to which the printer is attached.

other computer can install the printer you are sharing as a network printer and use it when they need to print something.

## THE TROUBLE WITH SHARING LOCAL PRINTER OR WHY YOU SHOULD USE WIRELESS PRINTER

Back in the windows xp era, local Printer were the norm in the consumer space. only business with lots of employees had network Printer to which entire office could Print to.

In recent years, wireless Printer have become very affordable and commonplace. you can find lots of models at many price point in any decent Computer Store. we recommend you to purchase and install a wireless Printer in your home network. This will help avoid lots of annoyances that are common when using a local Printer that is shared with the network.

More expensive Printer also have an Ethernet Port and you can connect them directly to your Router with a network cable and without setting up the Router to act as a Print server. setting them up on each PC in your network is just as easy as setting up wireless Printers.

## HOW TO STOP SHARING THE PRINTER WITH THE HOME GROUP

The steps involved when you want to stop sharing your Printer with the homegroup are the same as when you start sharing it.

In window 8.x go to Pc Setting and then to "network > Homegroup" set the switch for "Printer" to "off".

All the local Printers attached to your Pc or device are no longer shared with the Homegroup.

In windows 7, go to the Control Panel and then to "network and Internet > network and sharing center". In the "network and sharing center" go to the column on the left and click "homegroup".

In the "homegroup" window clear the box for "Printer" and Press "save changes".

All the local Printer attached to your Pc are no longer shared with the Homegroup.





# WHAT IS A LAN CABLE

## BRIEFLY EXPLAINED

A LAN Cable is a Conductor that connects devices in a local area network (LAN) with a network connector.

The network cable provides communication between several devices (computers, servers, switches, etc.) The term "LAN" is an overtake for Ethernet cable.

It was created in the 1970s by the XEROX Company. Universities and laboratories were dependent on the interconnection of their computers to be able and terminals already at that time. Employee Robert Metcalfe wanted all computers to be able to print from XEROX's new laser printer.

The local area network was born. A lot has happened since the early days of LAN technology we have already explained in more detail which standards exist today which categories of cables and which plug-in technologies are used and what an ethernet cable is.

# WHAT IS A LAN CABLE

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The local area network was born A lot has happened since the early days of LAN tech technology we have already explained in more detail which standards exist today which categories of cables and which plug-in technologies are used and what an ethernet cable is

# WHAT IS A LAN CABLE USED FOR AND HOW

First and foremost such a LAN cable is used to connect devices within a network it's a physical plug connection. Basically any data cable that is used for communication between and devices can be called a network cable.

Some of them are particularly suitable for short distances. Their design can be particularly space-saving so that they can also be used in confined areas. Others are designed for longer distances or outdoor use.

However all of these serve only one purpose to connect devices to each other with a network connector in addition to computers, routers or servers peripheral devices such as printers or IP cameras also form part of the network. For this purpose a LAN cable is connected to a terminal device the data reaches the other this must also be integrated into the network.

# LAN LABELING

Labelling or using a label is describing something in a word or short phrase for example the label "Criminal" may be used to describe someone who has broken a law. Labelling theory is a theory in sociology which ascribes labelling of people to control and identification of deviant behaviour. It has been argued that labelling is necessary for communication of deviant behaviour. However the use of the term is often intended to highlight the fact that the label is a description applied from the outside rather than something intrinsic to the labelled thing. This can be done for several reasons:-

To provoke a discussion about what the best description is

To reject a particular label

To reject the whole idea that the labelled thing can be described in a short phrase.

This last usage can be seen as an accusation that such a short description is overly reductive.

# LABELLING SYSTEM ON THE WORLDWIDE WEB

Labelling on the web represent the chunks information in our information environments and labelling is perhaps the most-obvious way ~~to~~ show a site's organization schemes across multiple system and contexts

Labelling systems are one of the major components in information architecture and one of the first steps of an information architecture project is ~~to~~ identify organize and label relevant chunks of information.

When creating labels the goal is ~~to~~ communicate efficiently and without taking up ~~too~~ much space label labels should be written in a language that's familiar ~~to~~ the users and in a way that they will detect new and recognize similar concepts.

In an information environment labels occur  
in 2 formats

Textual labels

Iconic labels

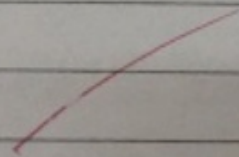
Textual labels

Contextual links

Headings

Navigation system choices

Index terms.



# NETWORK CONNECTION TROUBLE SHOOTING USING LABELING OF CABLES

This section will explain a basic step to resolve any connection issue. Let's get started.

- The first and foremost step is to check with your internet connection setting.

Go to setting → Network & Internet → Select the "Wi-Fi" setting then enable the Wi-Fi option button.

- Check your Access point:-

Check your WAN (Wide Area Network) and LAN (Local Area Network) connect. If possible, check one of layman's ethernet cables because that is always connected to router.

- Go around obstacles:-

Sometimes wall, furniture and other things may occur cause you to not connect to the internet. By then, have a closer look into the router connection.



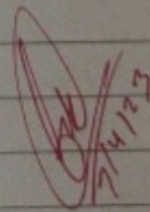
- Check with wifi name password :-

first, check with your network name (commonly known as SSID) and the network connection password. Suppose, sometimes, if you are trying to establish a connection automatically.

- Check the DHCP setting :-

They usually set router up as DHCP service and enable user to connect automatically if you turn on the "DHCP" service so there is no need to mess up with IP address and manual DNS setting.

Go to window setting → ~~select the option network, and internet → turn on "wifi". Under the wifi, setting click on the manage known network.~~

A handwritten signature in red ink, possibly reading 'Ravi', with the date '27/4/23' written below it.

**Project report**

On

# STATISTICAL CALCULATION

Submitted to

SRI SATYA SAI COLLEGE FOR WOMEN, BHOPAL



IN PARTIAL FULFILMENT

OF THE DEGREE OF

BACHELOR OF COMPUTER APPLICATIONS

Session: 2021-22

FROM

Submitted by>--Vaishali Kurmi

Under the

Guidance of

Mrs. Abhilasha Kumar and Ms. Girjesh Chauhan

*Good work :-)*

## TOPIC :-

1. Acknowledgement

2. Introduction

- What is statistical calculation.
- The formula in statistical calculation;
  - Mean for serial, discrete, continuous
  - Median for serial, discrete, continuous
  - Mode for serial, discrete, continuous

3. Features

4. Main Menu Flowchart

5. Source code

6. Output

7. Source Code explanation

8. Conclusion

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I love and I wish to express our sincere thanks to a number of people who have helped me in completing my internship work.

First of all, I wish to thank our principal Dr. Asha Agarwal mam, Mrs. Abhilasha Kumar mam (head of computer department) and Ms. Vijesh Chouhan mam for providing all the help, support, guidance and advice in my internship work, without which would not be possible to even start my internship work.

I would like to thank my family member and friends for their unconditional support to do this work.

Vaishali Kauri

BCA 1<sup>st</sup> year

①

# Introduction

## Statistic :-

Statistics is the study of the collection, analysis, interpretation, presentation and organization of the large data. Statistics is associated with collecting, classifying, arranging and presenting the numerical data related in some context. It allows us to interpret many results from it and forecast many possibilities for further application of different values. Using statistics, we can find various measures of central tendencies and the deviation of different values from the center.

## The Formula in statistics:

For almost all statistical computations, the basic concepts of mean, median and mode in series data like - serial, discrete, continuous.

1. Mean For Serial data :- In mean for serial data, all the elements sum divided by the number of elements.

Ex :- MARKS 5 3 2 5 6

$$\begin{aligned}\text{Mean for serial} &= \frac{5+3+2+5+6}{5} \\ &= \frac{21}{5} \\ &= 4.2\end{aligned}$$

Mean For discrete data :- In mean for discrete data, sum of all the items divided by sum of frequency.

Ex :-

Items	5	10	20	30	40	50	60
Frequency	2	5	1	3	12	0	5

$$\text{Formula :- } \frac{\sum fx}{\sum f}$$

$$\text{Mean for discrete} = \frac{215}{28}$$

$$= 7.67$$

Mean for Continuous data :-

Ex. Items	0-5	5-10	10-20	20-30	30-40
Frequency	2	5	1	3	12

$$\text{Formula :- } \frac{\sum fm}{N (\text{sum of frequency})}$$

Items	mid-pt m	Frequency f	fm
0-5	2.5	2	5.0
5-10	7.5	5	37.5
10-20	15	1	15
20-30	25	3	75
30-40	35	12	420
		$N = 23$	$\sum fm = 552.5$

$$\text{Mean for Continuous} = \frac{552.5}{23} \Rightarrow 24.02$$

Median :- Median has three type of series data :-

1. Median for serial data :-

ex' - items 14 36 45 70 105 145

$$M = \text{Value of } \left(\frac{N+1}{2}\right)^{\text{th}} \text{ item}$$

$$= \text{value of } \left(\frac{6+1}{2}\right)^{\text{th}} \text{ item}$$

$$= \text{value of } 3.5^{\text{th}} \text{ item}$$

$$= \text{value of } \left(\frac{3^{\text{rd}} \text{ item} + 4^{\text{th}} \text{ item}}{2}\right)$$

$$= \left(\frac{45+70}{2}\right) = 57.5$$

2. Median for discrete data :- If it number of elements  $n$  is divided by 2 and give remainder 0 the execute following formula :-



ex:- 10, 14, 11, 9, 8, 12 ...

$$\text{Median} = \frac{1}{2} \left[ \text{value of } (n/2)^{\text{th}} \text{ item} + (\lceil n/2 \rceil + 1)^{\text{th}} \text{ item} \right]$$

$$= \frac{1}{2} \left[ \text{value of } (6/2)^{\text{th}} \text{ item} + (6/2 + 1)^{\text{th}} \text{ item} \right]$$

$$= \frac{1}{2} \left[ 3^{\text{th}} \text{ item} + 4^{\text{th}} \text{ item} \right]$$

$$= \frac{1}{2} \left[ 11 + 9 \right]$$

$$= \frac{1}{2} [20] \Rightarrow 10$$

If  $N$  is divided by 2 and remainder is not equal to 0 then,

ex:- 10, 14, 11, 9, 8, 12, 6

In ascending:- 6, 8, 9, 10, 11, 12, 14

$$\text{Median} = \text{value of } \left( \lceil n/2 \rceil \right)^{\text{th}} \text{ item}$$

$$= \text{value of } (7+1/2)^{\text{th}} \text{ item}$$

$$= \text{value of } (4)^{\text{th}} \text{ item}$$

$$= 10$$

## Median for continuous :-

ex:- Marks

Marks	0-20	20-40	40-60	60-80	80-100
Number of students	6	20	37	10	7

We need to calculate the cumulative frequencies to find the median.

Marks	Number of student	Cumulative Frequency	
0-20	6	0+6	6
20-40	20	6+20	26
40-60	37	26+37	63
60-80	10	63+10	73
80-100	7	73+7	80

$$\text{Formula} = l + \left[ \frac{\frac{n}{2} - c}{f} \right] * h$$

Where,

$l$  = lower limit of median class

$n$  = total number of observation

$c$  = cumulative frequency of the preceding class

$f$  = frequency of each class  
 $h$  = class size

$$= 40 + \left[ \frac{37 - 26}{40} \right] \times 20$$

$$= 40 + \left[ \frac{11}{40} \right] \times 20$$

$$= 40 + 5.5$$

$$= 45.5$$

Mode :- Mode can be calculated in three serial data :-

1. Mode for serial data :-

ex:- 9, 4, 4, 9, 15, 15, 27, 37, 43

In the data set 4 is appearing more than the other elements so that the mode of serial data will be 4.

since, The mode is 4.

### Mode for discrete data:-

Ex:- Items	14	36	45	70	105	145
Frequency	2	5	1	3	12	0

The Arithmetic Mode of the given number is 105 as the highest frequency, 12 is associated with 105.

So that the mode for discrete data will be 105.

### 3. Mode for Continuous data:-

ex:- Marks obtained	Number of student
10-20	5
20-30	12
30-40	8
40-50	5

$$\text{Formula :- Mode} = l + \left( \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \right) \times h$$

Where :-

$l$  is lower limit of modal class = 20

$h$  is size of class interval = 10

$f_1$  is frequency of the modal class = 12

$f_0$  is frequency of the class preceding the modal class = 5

$f_2$  is frequency of the class succeeding the modal class = 8

$$= 20 + \left( \frac{12 - 5}{2 \times 12 - 5 - 8} \right) \times 10$$

$$= 26.364$$

## Features of Statistical Calculation

There is various features of statistical calculation :-

1) Collection of data :- To begin with, proper attention should be paid to collect the data as they constitute the foundation of statistical analysis.

2) Organization of data :- After the collection of data, the first step in organization the data is editing. This is done in order to rectify omissions, inconsistencies etc. After the edit of data, classification is done to arrange the data according to some common characteristics.

3) Presentation of data :- The data collected should be presented through graphs, tables etc., so that the classification of data may easily

be understandable.

4) Analysis of Data:- It is necessary to analyze the data further in order to arrive at some definite results. The characteristic properties of the problem are revealed only when quantities like measures of central tendency, measures of dispersion, correlation etc. are calculated. These single figures tell us about the situation.

5) Interpretation of Data:- This is the last stage in the process and therefore, is perhaps the most difficult part, requiring a high degree of skill and experience. The result of the third stage are in the form of numbers and need to be transformed into statements. These interpretations are, to some extent, probable but could never be taken as absolutely certain.

0> It should be numerically expressed:- A data to be called statistics should be numerically expressed so that counting or measurement of data can be made possible.

7> It should be collected in a systematic manner:-

The feature of statistics is that the data should be collected in a systematic manner. The data collected in a haphazard manner will lead to difficulties in the process of analysis, and wrong conclusion.

8> It should be collected for a predetermined purpose:-

Before we start the collection of data we must be clear with the purpose for which we are collecting the data. If we have no information about its purpose, we may not be collecting data



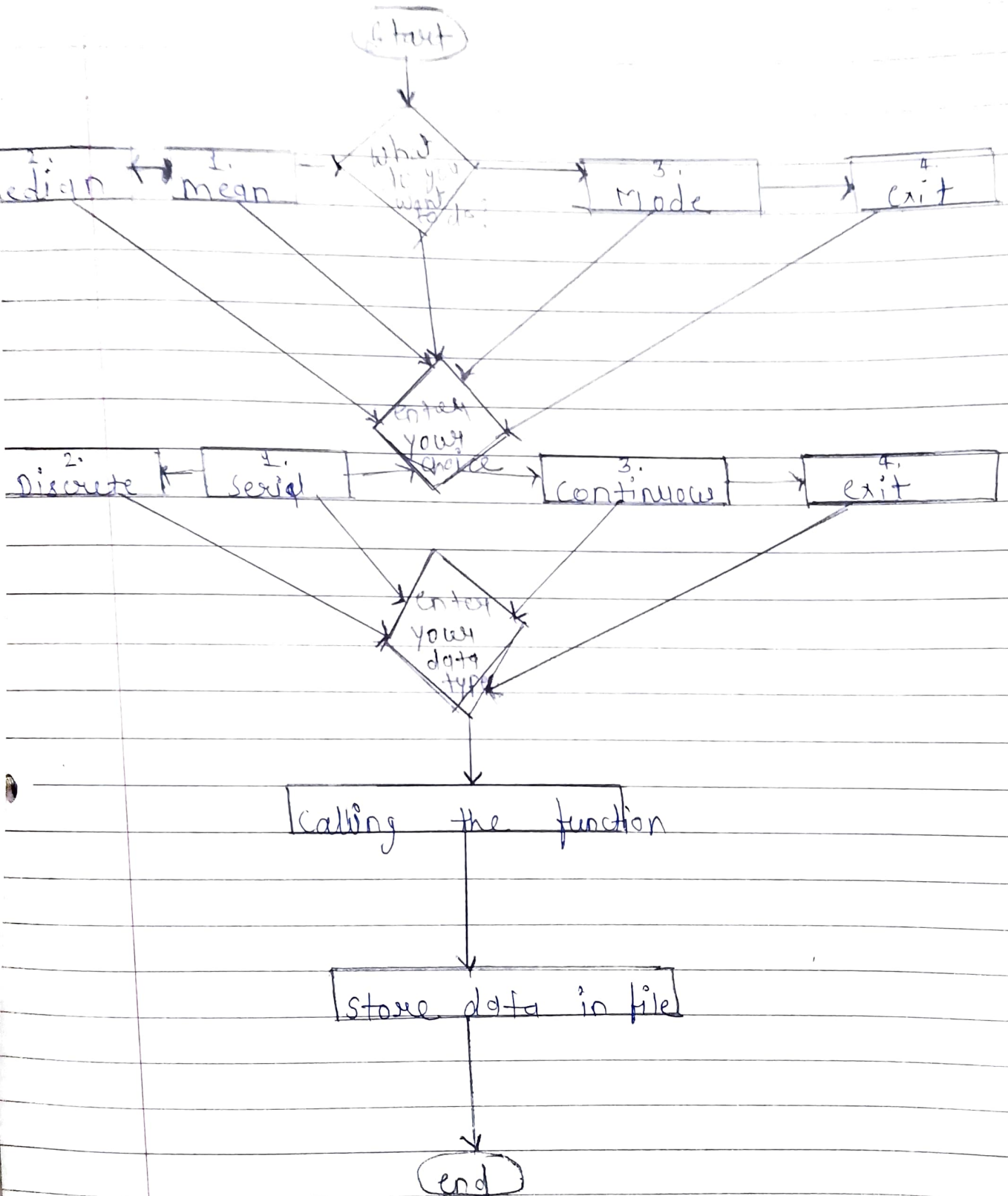
according to the need. We may need some more relevant data to achieve the required purpose, which we would miss in the event of its ignorance.

9) It should be capable of being placed in relation to each other:-

It is not less important feature of statistic. The collection of data is generally done with the motive to compare. If the figures collected are not comparable, in that case, they lose a large part of their significance.

# MAIN MENU FLOWCHART

DATE  
PAGE



# SOURCE CODE

```
#include <iostream.h>
#include <conio.h>
#include <process.h>
#include <fstream.h>
```

```
void meanserial (void);
void meandiscrete (void);
void meancontinuous (void);
```

```
void medianserial (void);
void mediandiscrete (void);
void mediancontinuous (void);
```

```
void modeserial (void);
void modediscrete (void);
void modecontinuous (void);
```

```
void main()
{
```

```
clrscr();
int n;
```

```
cout << "WELCOME TO STATISTICAL CALCULATION"
.....\n\n";
```

```
cout << "\n What do you want to do? \n"  
cout << "1. mean \n 2. Median \n 3. mode \n  
4. exit \n";
```

```
cout << "\n enter your choice \n";  
cin >> n;
```

```
switch (n)  
{
```

```
case 1:
```

```
int datatype;  
cout << "\n 1. serial data  
for mean : \n";  
cout << "\n 1. serial \n 2. Discrete  
\n 3. Continuous \n 4. exit  
\n";
```

```
cin >> datatype;  
switch (datatype)  
{
```

```
case 1:
```

```
meanSerial();  
break;
```

```
case 2:
```

```
meanDiscrete();  
break;
```

```
case 3:
```

```
meanContinuous();
```

```
break;  
case 4:  
    cout << "exit\n";  
    break;  
default:  
    cout << "Invalid  
choice... \n";  
}
```

Case 2:

```
int datatype2;  
cout << "\n Series data for  
median = \n";  
cout << "\n 1. serial \n 2. discrete  
   \n 3. Continuous \n 4.  
   exit \n";  
cin >> datatype2;  
switch (datatype2)  
{
```

case 1:

```
    medianserial();  
    break;
```

case 2:

```
    mediandiscrete();
```

case 3:

```
    mediancontinuous();
```

case 4:

```
cout << "\n Exit \n";  
break;
```

default:

```
cout << "\n Invalid  
choice...!\n";
```

```
}
```

case 3:

```
int datatype3;
```

```
cout << "\n series data for  
mode = \n";
```

```
cout << "\n 1. Serial \n";
```

```
cout << "\n 2. discrete \n";
```

```
cout << "\n 3. Continuous \n";
```

```
cout << "\n 4. Exit \n";
```

```
cout << "\n Enter your choice = \n";
```

```
cin >> datatype3;
```

```
switch (datatype3)
```

```
{
```

case 1:

```
modeSerial();
```

```
break;
```

case 2:

```
modeDiscrete();
```

```
break;
```

case 3:

```
modecontinuous();  
break;
```

```
case 4 :  
cout << "In exit";  
break;
```

```
default :  
cout << "In Invalid  
choice....!";
```

```
}
```

```
case 4 :  
cout << "exit\n";  
break;
```

```
default :  
cout << "In Invalid choice....!\n";  
break;
```

```
}
```

```
getch ();
```

```
}
```

Void meanserial ()

{

```
ofstream fout ;
```

```
fout.open("meanserial.txt");
int n, a[100];
float sum = 0;
cout << "enter the value of elements = \n";
fout << "enter the value of elements = \n";
cin >> n;
fout << n << "\n";
fout << "Frequency = \n";
for (int i = 0; i < n; i++)
{
    cin >> a[i];
    fout << a[i] << "\n";
    sum += a[i];
}
cout << "\n mean for serial data = " << sum/n << "\n";
fout << "mean for serial data = " << sum/n << "\n";
fout.close();
getch();
}
```

void mean discrete ()

```
ofstream fout;
fout.open("meandiscrete.txt");
int a[100], b[100], n, count = 0;
float sum = 0;
```



```
cout << "enter the value of n = \n";  
fout << "enter the value of n = \n";  
cin >> n;  
fout << n << "\n";  
cout << "\n f(x) = \n";  
fout << "\n f(x) = \n";  
for (int i = 0; i < n; i++)  
{
```

```
    cin >> a[i];  
    fout << a[i] << "\n";
```

```
}
```

```
cout << "\n f = \n";  
fout << "\n f = \n";  
for (int j = 0; j < n; j++)  
{
```

```
    cin >> b[j];  
    fout << b[j] << "\n";  
    count += b[j];
```

```
}
```

```
for (int k = 0; k < n; k++)  
{
```

```
    sum += a[k] * b[k];
```

```
}
```

```
float m = sum / count;  
cout << "\n mean for discrete data is = "  
      << m << "\n";
```

```
fout << "In mean for discrete data is="
      << m << "\n";
```

```
fout.close();
getch();
```

}

```
void meancontinuous ()
```

```
ofstream fout;
fout.open("meancontinuous.txt");
int a[100], b[100], c[100], mid[100], n;
float sum=0, freq=0, s;
cout << "enter the value of n=";
fout << "enter the value of n=\n";
cin >> n;
fout << " n<< "\n";
cout << "\n lower value =\n";
fout << "\n lower value =\n";
for (int i=0; i<n; i++)
```

{

```
    cin >> a[i];
```

```
    fout << a[i] << "\n";
```

}

```
cout << "\n upper value =\n";
```

```
fout << "\n upper value =\n";
```

```

m = n + 1;
if (m % 2 == 0)
{
    med = a[(n + 1) / 2];
    cout << "median for discrete data
    is << med << '\n';
    fout << "Median for discrete data
    is << med << '\n';
}
else
{
    median = (a[n / 2] + a[(n / 2) + 1]) / 2;
    cout << "\n Median for discrete data
    is << median << '\n';
    fout << "\n median for discrete
    data is << median << '\n';
}
fout << close(); getch(); }

```

```

Void mediancontinuous()
of stream fout;
clear();
fout.open("mediancontinuous.txt");
int a[100], b[100], c[100], d[100], n;
float med, sum = 0, i, g, f;
cout << "enter the value of n = ";
fout << "enter the value of n = \n";

```

```
cin >> n;  
fout << n << "\n";  
cout << "In lower value = \n";  
fout << "In lower value = \n";  
for (int i=0; i<n; i++)  
{
```

```
    cin >> a[i];  
    fout << a[i] << "\n";
```

```
}
```

```
cout << "In upper value = \n";  
fout << "In upper value = \n";  
for (int j=0; j<n; j++)  
{
```

```
    cin >> b[j];  
    fout << b[j] << "\n";
```

```
}
```

```
cout << "frequency = \n";  
fout << "frequency = \n";  
for (int k=0; k<n; k++)  
{
```

```
    cin >> c[k];  
    fout << c[k] << "\n";
```

```
}
```

```
f = c[0];
```

```
for (int o=0; o<n; o++)  
{
```

```

        if (f < c[0])
        {
            f = c[0];
        }
    }
    for (int p=0; p<n; p++)
    {
        if (f == c[p])
        {
            l = a[p];
        }
    }
    for (int q=0; q<n; q++)
    {
        sum += c[q];
        d[q] = sum;
    }
    g = d[j];
    float h = b[0] - a[0];
    med = l + (((n/2) - j) * h) / f;
    cout << "\n median for continuous data = "
          << med << "\n";
    fout << "\n median for continuous data
           = " << med << "\n";
    fout.close();
    getch();
}

```

Void modeserial ()

{

  clrscr();

  ofstream fout;

  fout.open ("modeserial.txt");

  int a[100], n, counter = 1, counterTwo = 0;

  cout << "enter the value of n = ";

  fout << "enter the value of n = ";

  cin >> n;

  fout << n << "\n";

  cout << "enter the numbers = ";

  fout << "enter the numbers = ";

  for (int i = 0; i < n; i++)

  {

    cin >> a[i];

    fout << a[i] << "\n";

  }

  for (int j = 0; j < n - 1; j++)

  {

    if (a[j] == a[j + 1])

    {

      counter++;

      if (counter > counterTwo)

      {

        counterTwo = counter;

        counter = 1;

      } else counter = 1; }  
  }

}

```
cout << " mode for serial data = " << counter  
    << "\n";  
fout << " mode for serial data = " << counter  
    << "\n";  
fout.close();  
getch();
```

}

void modediscrete ()

{

```
ofstream fout;  
fout.open("modediscrete.txt");  
int a[100], b[100], n;  
cout << " \n enter the value of n = ";  
fout << " \n enter the value of n = ";  
cin >> n;  
fout << n << "\n";  
cout << " \n terms = \n";  
fout << " \n terms = \n";  
for (int i=0; i<n; i++)  
{  
    cin >> a[i];  
    fout << a[i] << "\n";  
}  
cout << " \n frequency = \n";
```

```

fout << "\n frequency = \n";
for (int j = 0; j < n; j++)
{

```

```

    cin >> b[j];

```

```

    fout << b[j] << "\n";
}

```

```

}

```

```

int max = b[0];

```

```

for (int k = 0; k < n; k++)
{

```

```

{

```

```

    if (max < b[k])
    {

```

```

        {

```

```

            max = b[k];
        }
    }
}

```

```

}

```

```

}

```

```

int mode = b[0];

```

```

for (int l = 0; l < n; l++)
{

```

```

{

```

```

    if (mode == b[l])
    {

```

```

        {

```

```

            mode = a[l];
        }
    }
}

```

```

}

```

```

}

```

```

cout << "mode for discrete data is = " << mode
<< "\n";

```

```

fout << "mode for discrete data is = " << mode
<< "\n";

```



```
fout, close ();  
getch ();
```

```
}
```

```
void modecontinuous ()
```

```
{
```

```
ofstream fout;
```

```
fout.open ("modecontinuous.txt");
```

```
int a[100], b[100], c[100], n;
```

```
float mode, f1, f2, f0, 1;
```

```
cout << "enter the value of n = \n";
```

```
fout << "enter the value of n = \n";
```

```
cin >> n;
```

```
fout << n << "\n";
```

```
cout << "lower value \n";
```

```
fout << "lower value \n";
```

```
for (int i = 0; i < n; i++)
```

```
{
```

```
    cin >> a[i];
```

```
    fout << a[i] << "\n";
```

```
}
```

```
cout << "\n upper value = \n";
```

```
fout << "\n upper value = \n";
```

```
for (int j = 0; j < n; j++)
```

```
{
```

```
        bin >> b[j];
        fout << b[j] << "\n";
    }
    cout << "\n frequency = \n";
    fout << "\n frequency = \n";
    for (int k=0; k<n; k++)
    {
        cin >> c[k];
        fout << c[k] << "\n";
    }
    f1 = c[0];
    for (int m=0; m<n; m++)
    {
        if (f1 < c[m])
        {
            f1 = c[m];
        }
    }
    f0 = c[0];
    for (int o=0; o<n; o++)
    {
        if (f0 == f1)
        {
            f0 = c[o-1];
        }
    }
}
```

```
f2 = c[0];  
for(int p=0; p<n; p++)  
{  
    if (f1 == c[p])  
    {  
        f2 = c[p+1];  
    }  
}
```

```
l = c[0];  
for(int q=0; q<n; q++)  
{  
    if (l < c[q])  
    {  
        l = c[q];  
    }  
}
```

```
int w = b[0] - a[0];  
mode = 1 + (((f1 - f0) * w) / ((2 * f1) - (f0 + f2)));  
cout << "mode for continuous data = " << mode << "\n";  
cout << "mode for continuous data = " << mode << "\n";  
fout.close();  
getch();  
}
```

Output

Mean

1. Mean For serial Data

```
WELCOME TO STATISTICAL CALCULATION.....
```

```
what do you want to do?
```

- 1. mean
- 2. median
- 3. mode
- 4. exit

```
enter your choice
```

```
1
```

```
series data for mean ?
```

- 1. serial
- 2. discrete
- 3. continuous
- 4. exit

```
enter your choice=1
```

```
enter the value of elements=
```

```
4
```

frequency=1

2

3

4

mean for serial data=2.5

Area = 4.5  
width = 1.5

2. Mean For Discrete data

```
WELCOME TO STATISTICAL CALCULATION.....
```

```
what do you want to do?
```

- 1. mean
- 2. median
- 3. mode
- 4. exit

```
enter your choice
```

```
1
```

```
series data for mean ?
```

- 1. serial
- 2. discrete
- 3. continuous
- 4. exit

```
enter your choice=2
```

```
enter the value of n=
```

```
3
```

```
f(x)=
```

```
1
```

```
2
```

```
3
```

f=  
3  
4  
5

mean for discrete data is=2.003333

enter the value of n=

3

$f(x) =$

1

3

2

f=

3

4

5

mean for discrete data is=2.083333



3. Mean For continuous

```
WELCOME TO STATISTICAL CALCULATION....
```

```
what do you want to do?
```

- 1. mean
- 2. median
- 3. mode
- 4. exit

```
enter your choice
```

```
1
```

```
series data for mean ?
```

- 1. serial
- 2. discrete
- 3. continous
- 4. exit

```
enter your choice=3
```

```
enter the value of n=3
```

```
lower value=
```

```
0
```

```
10
```

```
20_
```

upper value=

10

20

30

frequency=

2

4

6

mean for continous data=18.333334

MEANCON7 - Notepad  
File Edit Format View Help

enter the value of n=

3

lower value=

0

10

20

upper value=

10

20

30

frequency=

2

4

6

mean for continous data=18.333334

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23 04 2022

Type here to search

# Median

## 1. Median For serial data

WELCOME TO STATISTICAL CALCULATION.....

what do you want to do?

1. mean
2. median
3. mode
4. exit

enter your choice

2

series data for median?

1. serial
2. discrete
3. continuous
4. exit

enter your choice=1

enter the value of n=3

enter the numbers =

- 1
- 2
- 3

median for serial data=

2

enter the value of n=

3

enter the numbers =

1

2

3

median for serial data=

2

3. Median For continuous data

Frequency -  
Median for continuous data - 20

enter the value of  $n=3$

lower value=

10

20

30

upper value=

20

30

40

frequency=

2

3

4

median for continous data=20

# Mode

## I. Mode for serial data

```
WELCOME TO STATISTICAL CALCULATION.....
```

```
what do you want to do?
```

1. mean
2. median
3. mode
4. exit

```
enter your choice
```

```
3
```

```
series data for mode?
```

1. serial
2. discrete
3. continuous
4. exit

```
enter your choice=1
```

```
enter the value of n=
```

```
3
```

```
enter the numbers=
```

```
1
```

```
2
```

```
1
```

```
mode for serial data=1
```



MODESERI - Notepad  
File Edit Format View Help

enter the value of  $n=3$

enter the numbers=

1

2

1

mode for serial data=1

Activate Windows  
Go to Settings to activate Windows

Type here to search



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28°C 21/04/2022

2. Mode For discrete data

what do you want to do?

- 1. mean
- 2. median
- 3. mode
- 4. exit

enter your choice

3

series data for mode?

- 1. serial
- 2. discrete
- 3. continuous

4. exit

enter your choice=2

enter the value of n=3

terms=

- 1
- 2
- 3

frequency=

1  
2  
1

mode for discrete data is=3

Enter the value of  $n=3$

terms=

- 1
- 2
- 3

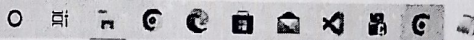
frequency=

- 1
- 2
- 1

mode for discrete data is=3

Activate Windows  
Go to Settings to activate Windows.

Type here to search



Ln 1, Col 1

100%

Windows (CFLP)

UTF-8



28°C



ENG



15:38

21 04 2022



### 5. Mode For Continuous Data

WELCOME TO STATISTICAL CALCULATION.....

what do you want to do?

- 1. mean
- 2. median
- 3. mode
- 4. exit

enter your choice

3

series data for mode?

- 1. serial
- 2. discrete
- 3. continuous
- 4. exit

enter your choice=3

enter the value of n=3

lower value

0

10

20

upper value=

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10  
20  
30

frequency=

2  
3  
4

mode for continous data=13.333333

exit

MODECONT - Notepad  
File Edit Format View Help

enter the value of n=3

lower value

- 0
- 10
- 20

upper value=

- 10
- 20
- 30

frequency=

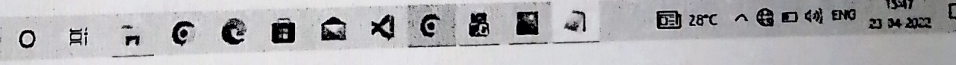
- 2
- 3
- 4

de for continous data=13.333333

Activate Windows  
Go to Settings to activate Windows

Ln 1, Col 1 80% Windows (CTRL) UTF-8 13:47

Type here to search



28°C ^ ENG 23/04/2022

## Source Code Explanation

`#include <iostream.h>` header file is used to in-built functions like `cout`, `cin`. `cout` is used to print the message and `cin` is used to read the message.

`#include <conio.h>` header file is used to library function like `getch`, `clrscr`.

`#include <fstream.h>` header file is used to file handling like `ofstream`, `ifstream`.

### Void main ()

In main program, we have took a variable (n) to store a value from (1-9) and give menu to user. The message will be print "What do you want to do?".

1. mean
2. median
3. mode
4. exit



User will give the value of  $n$ .  
After that a message will be  
appear "what serial data you want  
for mean?" enter your choice. the  
below menu will be appear.

1. Serial
2. discrete
3. Continuous
4. exit

User will enter the choice. After the  
choice the function will be called  
and user have to give the information  
according to ask. After get the answer  
second message will be appear "What  
serial data you want for median?"

1. Serial
2. discrete
3. Continuous
4. exit

User will enter the choice and  
complete the process. Next, again a  
message will appear "What serial data  
you want for mode?". User will  
enter the choice and complete the  
process and get exit from the terminal.  
The data will be store in file by

file name, end of the main program.

### Void meanserial()

Void meanserial is a function. In this function we have used ofstream for write in a file. We have made a object (fout) and open a file with the name "meanserial.txt". Here we have took an array a[100] which can store 100 elements in it and a variable n of integer type. here fout is to write in a file. We will take input from user for how many elements user want for mean for serial data and enter elements of array and store the sum of elements of array in sum variable. To find the mean for serial data put the value in formula

$$\frac{\text{sum of array's elements}}{n}$$

We will get the value of mean for serial data. then we will

close the file by "objectname.close()".  
here fout is object. file will be  
closed and created. The data of  
mean for serial will be store  
in file as "meanserial.txt".

### Void meandiscrete ()

Void meandiscrete () is a function. In  
this function we have used  
ofstream for write in a file.  
We have made a object (fout) and  
open the file with file name "meandiscrete.txt".  
We have took two array a[100], b[100]  
which can store 100 elements in  
each, and a variable n of integer type.  
here fout will be work like cout.  
It will write in file. We will  
take the value of n from user.  
the first loop for elements of  
f(x) and second loop for f (frequency)  
elements and count variable will  
be store the sum of frequency.  
The third array will be store  
the sum of  $f(x) * f$  in sum

(b[i]) elements , third loop for frequency  
(c[i]) elements and fourth loop  
for store mid (mid) value b/w  
lower or upper value's and sum  
variable will be store sum  
of mid[i]\*c[i] and fre variable will  
store sum of frequency (c[i]) elements.  
Now for find mean for continuous  
data put the value in formula -  
$$S = \text{sum} / \text{fre};$$

here s will store the value of  
mean for continuous data and file  
will be closed. The data will be  
store in file as name "meancontinuous.  
txt".

### Void Medianserial()

Void medianserial() is a function. In  
this function clrscr() for clear the  
screen. We have used ofstream  
for write in a file. We have  
made a object (fout) and open a  
file with the "medianserial.txt".  
Here fout will work like cout, it

will write in a file. We have  
took a array  $a[100]$  which can  
store 100 elements in it and a  
variable  $n$  of integer type and  
odd, even of float type. We will  
take the value of  $n$  from the user.  
first loop for elements of array  
 $a[i]$  from user. Here we used  
if-else condition if value of  $n$   
is even then execute the formula.

$$\text{even} = (a[n/2] + a[(n+1)/2]) / 2;$$

if value of  $n$  is not even then

$$\text{odd} = a[(n+1)/2];$$

Here it will take that term  
from array  $a[i]$  and close the  
file. We will get the value  
of median for serial data. The  
data will be store in file  
as "medianserial.txt".

### Void Mediandiscrete()

Void mediandiscrete() is a function.

In this function `close()` for clear the screen. We have used `ofstream` for write in a file. We have made a object (`fout`) and open a file with the name "mediandiscrete.txt". Here `fout` will work like `cout`, it will write in a file. User will give the value of `n` variable that how many elements user want for median for discrete data. first loop with for elements of array. `m` variable will store  $(n+1)$  if `m` variable is divided by 2 and give remainder 0 the `med` variable store  $(n+1)/2$  term from array and median for discrete data will be `med`, but if it is not true then `med` variable will store  $(n/2)^{th}$  term +  $(n/2+1)/2$  term from array and median for discrete data will be `med` and file will be closed. The data will be stored in file as "mediandiscrete.txt".

## Void MedianContinuous ()

Void mediancontinuous () is a function. In this function clrscr () is use for clear the screen. We have used ofstream for write in a file. We have made a object (fout) and open a file with the name "mediancontinuous.txt". Here fout will work like cout, it is used to write in a file. We took four array a[100], b[100], c[100], d[100] which can store 100 elements in each and took n, m, count of integer type and med, sum, l, g, f of float type. We will take the value of n from user. Here first loop is for lower value a[], second loop is for upper value b[]. Third loop for frequency c[].

In forth loop, we will take a element and compare the rest of elements of frequency. When we get largest element from frequency we will store it in f.

for find the lower limit, where we find the maximum value at the position we will set lower limit at that position in lower limit array  $a[i]$  and store it in variable  $l$ . In next loop, we have added frequency in sum variable and set  $d[i] = \text{sum} / \text{mean}$  in every position sum will store in  $d[i]$  array, and set  $d[i] = g$ ; where  $g$  is cumulative frequency of the class preceding the median class. here float  $h$  is class interval of median class. For find median for continuous data put the value in formula -

$$\text{med} = l + \frac{n/2 - g}{f} * h;$$

We will get the value of median for continuous data in  $\text{med}$  variable. File will be closed. The data will be stored in file as "mediancontinuous.txt".



## Void modeserial ()

Void modeserial () is function. In this function clrscr () is for clear the screen. We have used ofstream for write in a file. We have made a object (fout) and open a file with the name "modeserial.txt". Here fout will work like cout, it will write in a file. We have took a array a[100], which can store 100 elements in it and variable n, counter of integer type. We will take the value of n from user, first loop is for elements in array a[i] from the user and second loop will compare if the elements are equal or not if it is equal then count it and store it in counter. The element which came most of time in array a[i]. It will be the value of mode for serial data and file will be closed. The data will be store in file as "modeserial.txt".

## Void Meddiscrete()

Void meddiscrete() is a function. In this function class() is for clear the screen. We have used ofstream for write in a file. We have made a object (fout) and open a file with the name "meddiscrete.txt". Here fout will be work as cout, it will write in file. We took array b[100], a [100], which can store 100 elements in it and we will take input from user in n variable and first loop for terms elements in array a[] from user and second loop for frequency elements from user in b[]. We will initialize max = b[0] and compare with every element of frequency, if any we find the largest element from frequency we will store it in max variable. At position we got max in frequency at that position we will be got mode for discrete data in terms. The value will be store in med. The

## Conclusion

The purpose of statistical calculation is to make calculation of statistics easy. So that we have made the program using C++ language. In all the program we will see how to calculate mean, median and mode by standard deviation. There is three type of series data 1) Serial 2) Discrete 3) Continuous. We will give the choice to users and user is free to choose their choice. According to the choice of user the program of statistical calculation will be react, also say that statistical calculation <sup>process</sup> will be executed. Firstly it saves time of user and easy to execute.

But if there is advantage, where is also some disadvantage. If every person will use these kind of programs to find calculations then human mind will not be developed that much. These kind of program only can work for big companies, in government etc.