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Find out the memory value of any word / your name

Ans RAJESH

	(ASCII)	(Binary)	
R	82	01010010	8 digits
A	65	01000001	8 digits
J	74	01001010	8 digits
E	69	01000101	8 digits
S	83	01010011	8 digits
H	72	01001000	8 digits

48 digits or 48 bits

As we know that 8 bits = 1 byte

$\frac{48}{8}$ bits = 6 bytes

Binary → Assembler → High level language

ASCII (American Standard code for Information Interchange)

A → 65 a = 97

B → 66 b = 98 space = 32

⋮ ⋮

Z → 90 z = 122

High level language → compiler or Interpreter → low level language or machine level language

Difference between compiler and Interpreter is that the compiler scans the whole code at a time, but Interpreter scans the code line by line.

5 → 101
7 → 111
1010

1010
$2^3 2^2 2^1 2^0$
Binary = 10

Java → It is a high level language.

C → It is a middle level language. It is developed by Dennis Ritchie at Bell Labs at Cambridge in 1972. It is dependent on operating system or it is a Platform dependent language before compiling the code. But after the code are compiled, it is Platform independent and can run on any operating system.

1957 → FORTRAN language was used
Formula Translation
It is first used for mathematical calculation and scientific application / operations.

1960 → COBOL (common Business oriented Language)
It is a high-level programming language designed for business applications, primarily for processing data and managing large-scale administrative systems.

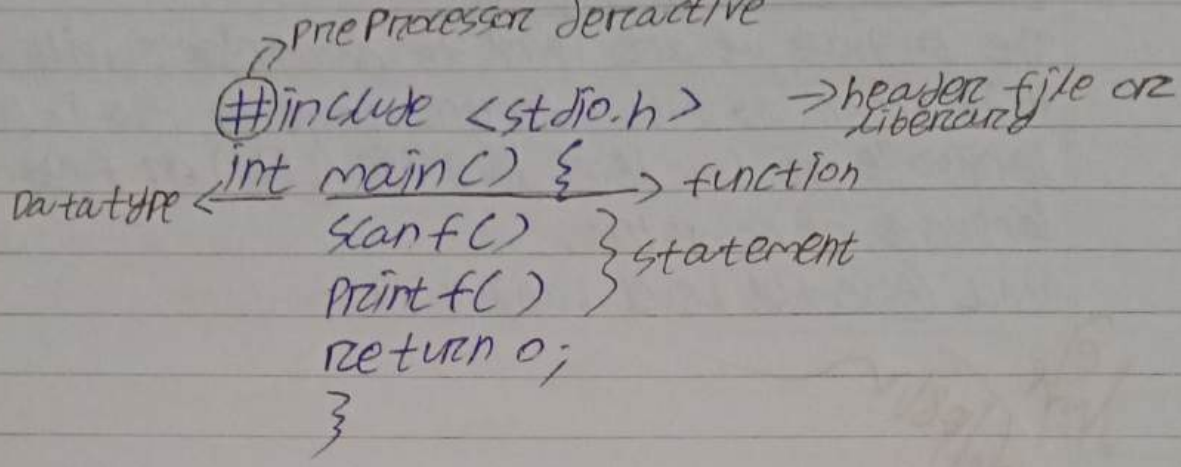
1967 → BCPL (Basic combined Programming Language)
It is used for general purpose.

1970 → B. It is developed by Ken Thompson.

1972 → C. It is developed by Dennis Ritchie.

IDE (Integrated Development Environment)

Syntax :- Step-by-step Process to write a Programs



<stdio.h> → Standard input and output operation.

To do mathematical operation #include <math.h> is used

Function is a block of code that is used to perform repetative tasks.

Some IDE → 1) Devc++
2) turboc
3) VS code
4) notepad

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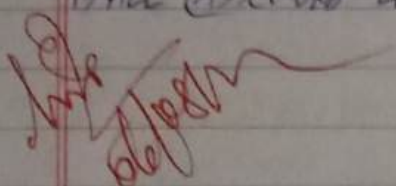
Language

Language is a medium of communication.
There are 3 type of language:-

i) MLL (Machine Level Language):-
The language we are using to communicate with computer, it is known as MLL. Another name of MLL is Binary language or low level language (LLL) or fundamental language of computer.

ii) ALL (Assembly Level Language):-



ii) ALL (Assembly Level Language):
Assembly level language is a low-level programming language that is closely related to the machine code instructions specific to a computer's architecture. It provides a way for programmers to write instructions in a format that is readable by humans but can be translated directly into machine code.

iii) HLL (High Level Language):-
High-Level Languages are programming languages that are more abstract and easier for humans to read and write compared to low-level languages. They are designed to be easy to understand and use, often resembling human language or mathematical notation. HLLs are typically platform-independent and need to be compiled or interpreted into machine code for execution.

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ASCII	Binary
R → 82	→ 01010010
A → 65	→ 01000001
J → 74	→ 01001010
E → 69	→ 01000101
S → 83	→ 01010011
H → 72	→ 01001000

RAJESH → 01010010 01000001 01001010 01000101 01010011 01001000

bit → smallest unit
8 bits = 1 byte
1024 bytes = 1 kilobyte
1024 kilobyte = 1 megabyte
1024 megabyte = 1 Gigabyte
1024 Gigabyte = 1 Terrabyte
1024 Terrabyte = 1 Petabyte
1024 Petabyte = 1 Hexabyte
1024 Hexabyte = 1 Yotabyte
1024 Yotabyte = 1 Zetabyte → Largest unit
1024 Zetabyte = 1 Brontobyte
1024 Brontobyte = 1 Geobyte

Mnemonic Form/Code:-

In assembly language, mnemonic codes are used to represent machine-level instructions. EX:- Instead of writing a binary or hexadecimal code, which would be difficult to remember and read, a mnemonic like 'MOV' (move), 'ADD', 'SUB' etc is used.

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Component of computer

- Software
- Hardware

Software are of two type:- (i) System software
(ii) Application software

Software is a set of instruction or a program which is needed to run a hardware.

System software:-
The software which is used to run a system or a computer.
For example:- windows, Ubentu, DOS, Android, ios, Linux, etc.
A system software is the heart of a computer system, without system software a computer is like a car without petrol.
System software is compulsory for every computer.

Application software:-
It it optinal.
If user wants he or she can install the application software into the system and uninstall at any time.
so it depends upon users choice.
Ex:- Chrome, Firefox, opera, microsoft office, VLC media player, etc.

Hardware are divided into 3 types:-
Input unit:- Ex: keyboard, mouse, joystick, scanner, camera, microphone, etc.
output unit:- monitor, speaker, projector, printer, etc.
Processing unit:-

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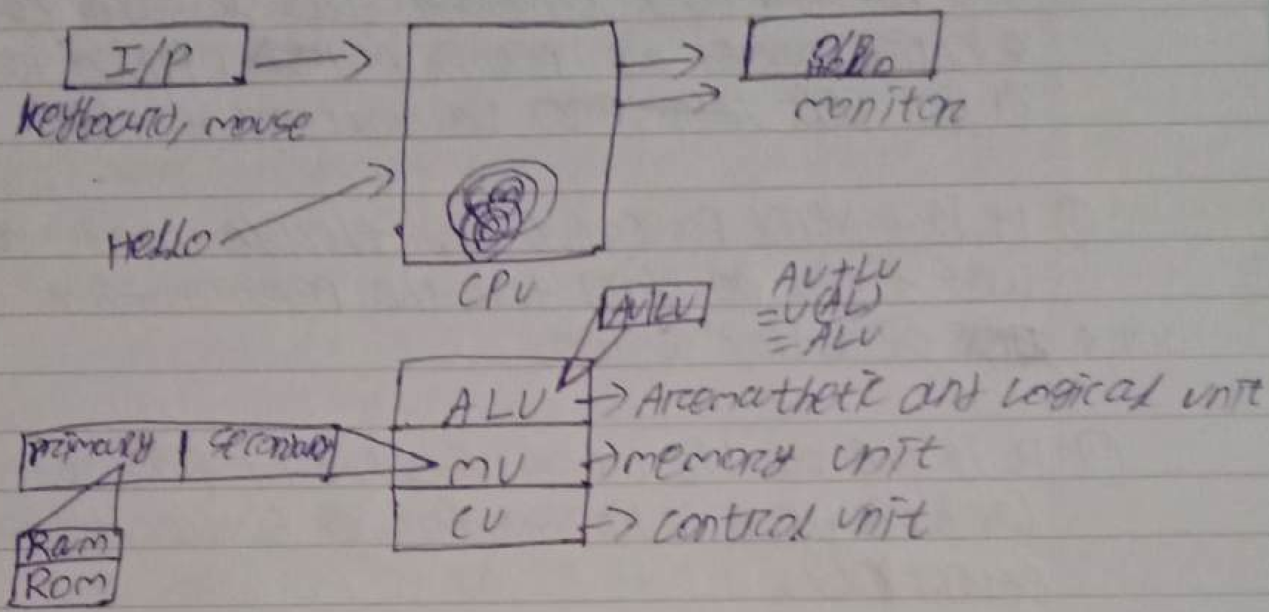
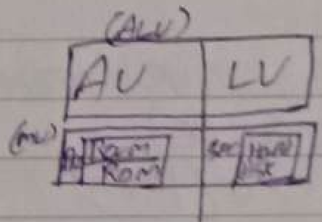
Processing unit :-

- CPU (Central Processing unit) is known as the processing unit of computer.
- It is the brain of computer.





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C Programming

① C is a general purpose, procedural, middle level programming language which is used in the development of computer software, games, system programming etc.

② This programming language was developed by the scientist named as Dennis M. Ritchie in 1972 at AT&T Bell Laboratory of USA.

③ It is a very powerful and flexible language which was first developed for the programming of UNIX operating system.

④ It is one of the most widely used programming language which is known for its simplicity and efficiency.

⑤ The name C is derived from BCPL (Basic combined Programming Language).
BCPL ⇒ BCL → C (1922)

⑥ The extension of C programming file ".c"

⑦ C is a case sensitive language.

Extension :-

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Structure of C Programming:-

Header file
main function
body
End of Program.

```
#include <stdio.h>
void main()
{
}
```

Preprocessor → standard input and output → Header file

```
#include <stdio.h>
void main()
{
    printf("Section-G");
}
```

Void → Zero / NULL

```
#include <conio.h>
        <math.h>
```

OnlineGDB.com

Q WAP to display your name.

Ans

```
#include<stdio.h>
Void main()
{
    Printf("Rajesh Rana");
}
```

output →

Rajesh Rana

Q WAP to display your introduction

Ans

```
#include <stdio.h>
void main()
{
Printf("My name is Rajesh Rana. \n I am from Bhadrak, odisha. \n I have completed my higher education from D.P.S. Vidyapeeth Bhadrak, odisha and my higher secondary Education from Jhadeswar International School Balasore, odisha. \n My aim is to become a software engineer");
}
```

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output →

My name is Rajesh Rana
I am from Bhadrak, odisha.
I have completed my higher education from D.P.S. vidyapeeth Bhadrak, odisha and my higher secondary education from Jhadeswar International School, Balasore, odisha.
My aim is to become a software engineer.

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Sequencial Statement Program

Q WAP for addition of 02 numbers, whose values are given?

format specifier

int → %d
float → %f

Ans
```
#include <stdio.h>
void main(){
I/P → int a=10, b=15, c;
Process → c=a+b;
o/p → printf("The addition is %d", c);
}
```

o/p:- The addition is 25

variable :- a, b, c
constant :- 10, 15
datatype :- int, float
Format Specifier

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Q WAP for multiplicating of 3 numbers whose values are given

Ans
```
#include<stdio.h>
Void main() {
    int a=2, b=3, c=4;
    int d=a*b*c;
    Printf("The multiplication is %d", d);
}
```

O/P :- The multiplication is 24

Q WAP for addition of any two (2) numbers (By user input).

Ans
```
# include <stdio.h>
Void main() {
    float a, b, c;
    Printf("Enter the 1st number=");
    scanf("%f", &a);   address of a
    Printf("Enter the 2nd number=");
    scanf("%f", &b);
    c=a+b;
    Printf("The addition is = %f", c);
}
```

O/P →
```
Enter the 1st number = 15
Enter the 2nd number = 35
The addition is = 50
```

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Q WAP for sum and average of any number?

Ans
```
#include <stdio.h>
void main(){
    float a, b, c, d, e, f;
    Printf("Enter the 1st number= ");
    Scanf("%f", &a);
    Printf("Enter the 2nd number=");
    Scanf("%f", &b);
    Printf("Enter the 3rd number=");
    Scanf("%f", &c);
    Printf("Enter the 4th number=");
    Scanf("%f", &d);
    Printf("Enter the 5th number=");
    Scanf("%f", &e);
    f = a+b+c+d+e;
    Printf("The sum is = %f", f);
    Printf("The average is = %f", f/5);
}
```

```
#include<stdio.h>
void main(){
    float a, b, c;
    Printf("Total number of number to be entered: ");
    Scanf("%f", &a);
    Printf("Enter the 1st number:");
    Scanf("%f", &b);
```

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```
for(int i=1; i<a; i++){
    Printf("Enter the next number: ");
    scanf("%f", &c);
    b+=c;
}
Printf("The sum is = %f", b);
Printf("\n The average is = %.f", b/5);
}
```

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Q1) WAP to find out area & perimeter of a rectangle
Q2 WAP to find out area & perimeter of a square.
Q3 WAP to find out area of a circle.
Q4 WAP to convert RS. into paise.
Q5 WAP to convert celcius to Fahrenheit.
Q6 WAP to find area of a right angle triangle.
Q7 WAP to find out area of triangle whose 3 sides are given.
8 WAP to swap the value of two variable.

Answer:-

Q1
```
#include<stdio.h>
Void main(){
    float a,b;
    printf("Enter the length of a rectangle:");
    scanf("%f", &a);
    printf("Enter the breadth of a rectangle: ");
    scanf("%f", &b);
    Printf("The area of the rectangle is = %f", a*b);
    Printf("\nThe perimeter of the rectangle is = %f", 2*(a+b));
}
```

Out→
```
Enter the length of a rectangle 4
Enter the breadth of a rectangle 5
The area of the rectangle is = 20.000000
The perimeter of the rectangle is = 18.000000
```

πr^2

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2
```
#include <stdio.h>
Void main() {
    float a;
    Printf("Enter the side of a square: ";
    Scanf("%f", &a);
    Printf("Area of the square is = %f", a*a);
    Printf("Perimeter of the square is = %f", 4*a);
}
```

output → Enter the side of a square: 4
Area of the square is = 16.000000
Perimeter of the square is = 16.000000

3
```
#Include <stdio.h>
void main() {
    float a,
    Printf("Enter the radius of the circle: ");
    Scanf("%f", &a);
    Printf("The area of the circle is = %f", 3.14*a*a);
}
```

output :- Enter the radius of the circle : 6
The area of the circle is = 113.040000

4
```
#include <stdio.h>
void main() {
    float a;
    Printf("Enter the value in Rupees:");
    Scanf("%f", &a);
    ~~Printf("%f", a, "in paise is =", a*100);~~
    Printf("%f Rupees in Paisa is = %f", a, a*100);
}
```

output :- Enter the value in Rupees : 5
5 Rupees in Paisa is = 500.000000

$\frac{a+b+c}{2} = (a+b+c)\frac{1}{2}$ $\frac{\sqrt{3}}{4} \times a^2$ $F = (\frac{9}{5})C + 32$

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5
```
#include <stdio.h>
void main(){
    float a;
    printf("Enter the temperature in celcius : ");
    scanf("%f", &a);
    printf("%f °C in °F is = %f", a, ((9/5)*a)+32);
}
```

output:
```
Enter the temperature in celcius : 45
45 °C in °F is = 77.000000
```

6
```
#include <stdio.h>
Void main (){
    float a, b;
    Printf("Enter the base of a right angle triangle :");
    scanf("%f", &a);
    Printf("Enter the height of a right angle triangle :");
    scanf("%f", &b);
    printf("Area is = %f", 0.5*a*b);
}
```

output:-
```
Enter the base of a right angle triangle : 4
Enter the height of a right angle triangle : 6
Area is = 8.000000
```

7
```
#include <math.h>
#include <stdio.h>
void main(){
    float a, b, c;
    printf("Enter the 1st side of the triangle : ");
    scanf("%f", &a);
    Printf("Enter the 2nd side of the triangle : ");
    scanf("%f", &b);
    Printf("Enter the 3rd side of the triangle : ");
    scanf("%f", &c);
    float s = (a+b+c)*0.5;
    Printf("the area of the triangle is = %f",
        sqrt(s*(s-a)*(s-b)*(s-c)));
}
```

output:-

```
Enter the 1st side of a rectangle : 8
Enter the 2nd side of a rectangle : 4
Enter the 3rd side of a rectangle : 6
The area of the triangle is = 11.618950.
```

8
```
#include <stdio.h>
void main() {
    float a, b;
    Printf("Enter the first value : %f");
    Scanf("%f", &a);
    Printf("Enter the second value : %f");
    Scanf("%f", &b);
    Printf("The value of a = %f", a);
    Printf("The value of b = %f", b);
    Printf("After swapping the value becomes");

    float c = a
     a = b;
     b = c;
    Printf("The value of a = %f", a);
    Printf("The value of b = %f", b);
}
```

output ->

```
Enter the 1st value: 4
Enter the 2nd value: 5
The value of a = 4
The value of b = 5
After swapping the value become
The value of a = 5
The value of b = 4
```

(OR) 3
```
#define PI = 3.14
#include <stdio.h>
void main() {
    float a;
    Printf("Enter the radius of the circle: ")
    Scanf("%f", &a);
    Printf("The area of the circle is = %f", PI*a*a);
}
```

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Comment:-

⇒ It provide the information about line of codes in a Program.
⇒ It is mainly used for documenting.
⇒ It is of two types
  (i) Single line comment
  (ii) multiple line comment

Single line comment:-

It is represented by (//)
The comments line are executed by the compiler but not includes in the program code.

Ex:-

```
#include <stdio.h>
void main() {
// printing information below
Printf("my name is : Rajesh");
}
```

Multiple line comment :-

It is represented by slash with asterisk.
It can occupy many lines of code.

Ex:-

```
#include <stdio.h>
void main() {
/* printing information about
   Karan
   Subha
   Jibah / Puthala
   Akashya */
Printf("karan age is 20x+78=tan-1(xy)
\n subha age is 1.4 month
\n puthala born yesterday \n Akashya age is
30 years");
}
```

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WAP to find simple interest ($S.I = \frac{PTR}{100}$)

P = Principle amount
T = Time period
R = Rate of interest

P = 20,000 T = 2 years/24 months R = 5%

$\frac{20,000 \times 24 \times 5}{100}$

$= 24,000$

```
#include <stdio.h>
Void main()
{ float P, T, R, SI;
Printf("Enter the Principle amount:");
scanf("%f", &P);
Printf("Enter the time duration in months:");
Scanf("%f", &T);
Printf("Enter the rate of interest:");
Scanf("%f", &R);
SI = (P*R*T)/100;
printf("Simple interest is = %f", SI);
}
```

Error :-

Errors are the problem or the fault that occur in the Program. It makes the behaviour of the program abnormal.

Errors are also known as bug and the process removing these errors is called debugging. These errors are detected either during the time of compilation or execution. The error must be removed from the program to get successful output.

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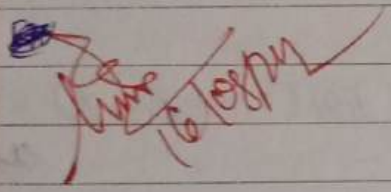
TYPES of Error :-

mainly it is 5 types :-

imp (i) Syntax Error
(ii) Runtime Error
(iii) Linker Error
imp (iv) Logical Error
(v) Semantic Error

Syntax Error :- It is also called compilation error because it occurs at the time of compilation of the code.
mainly the syntax Errors due to :-
(i) If we miss the paranthesis while writing the code.
(ii) when displaying the value of a variable without any declaration.
(iii) If we miss the semicolon at the end of the statement.



Q WAP to add all the digit of a 3 digit number.

Ex :- Ip 492
4+9+2.
o/p = 15

Ans
```
#include<stdio.h>
void main(){
    int a,b;
    printf("Enter a 3 digit number:");
    scanf("%d",&a);
```

Notes → Javatpoint.com
i++ → i=i+1

Let us C
Author: Y. Kanetkar
Date
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```
    for(int i=0, i<3, i++){
        b+= a[i];
    }
    Printf("The sum of the 3 digit number %d is=%d",
                                        a, b);
}
```

—x—

```
#Include <stdio.h>
Void main(){
    int a, b;
    Printf("Enter a 3 digit number: ");
    Scanf("%d", &a);
    for(int i=0, i<3, i++){
        b+= a%10;
        a = a/10;
    }
    Printf("The sum of the 3 digit number %d is=%d",
                                        a,b);
}
```

Imp

Q what is the difference between compiler and interpreter

Compiler:- Translates the entire source code into machine code or intermediate code before execution. This results in faster execution, as the code is pre-compiled into an executable file. Errors are detected during the compilation phase.

Interpreter:- Translates and executes code line by line at runtime. This allows for immediate execution but typically results in slower performance. Errors are detected during execution, which can facilitate easier debugging.

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Runtime Error :-

→ The error that exists during the execution time even after the successful compilation is called runtime error.

→ when the program is running but it is not able to perform the operation i.e, runtime error.

→ It is very difficult to find out runtime error in a program.

For Eg :- Any number divided with zero.

Linker Error / Linking Error :-

This error can be occured when the executable file of the program is not created.

Logical Error :-

The error can be occured due to any mistake in the logic by the software program. It's about the process or sequence in the code being written. Ex:- Infinite loop or a condition that never gets met.

Semantic Error :-

This error mainly occur when the statement of a program is not understable by the compiler.

Ex :-

```
#include <stdio.h>
void main() {
int i=2 ; j=4 , sum;
sum = i+j
i= i+1
printf("The sum is = %d", sum);
}
```

⇒ It's about the meaning or intent behind the code being incorrect. Ex:- Subtraction, Addition.

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Keywords:-
It is fixed
It is Preloaded / Pre defined
There are 32 Keywords in C-Programming.
Ex:- void, int, float, bool, scanf, printf, double

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Q WAP for addition of all the digit of a 3digit no.

```
#include <stdio.h>
Void main() {
    int a, b, c;
    Printf("Enter a 3 digit number:");
    Scanf("%d", &a);
    b = a%10;
    a = a/10;
    c = a%10
    a = a/0;
    Printf("The sum is = %d", a+b+c);
}
```

Q wap for addition of all the digit of a 6 digit no.

```
#include <stdio.h>
Void main() {
    Int a, b, c, d, e, f;
    Printf("Enter a 6 digit number:");
    Scanf("%d", &a);
```

a=789256 321

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```
    b=a%10;
    a=a/10;
    c=a%10;
    a=a/10;
    d=a%10;
    a=a/10;
    e=a%10;
    a=a/10;
    Printf("The Sum=%d",a+b+c+d+e
    f=a%10;
    a=a/10;
    Printf("The sum=%d",a+b+c+d+e+f);
}
```

(or)

```
#include<stdio.h>
void main(){
    int a, b=0;
    Printf("Enter a 6 digit number:");
    scanf("%d",&a);
    while(a!=0){
        b+=a%10;
        a=a/10;
    }
    Printf("The sum=%d",b);
}
```

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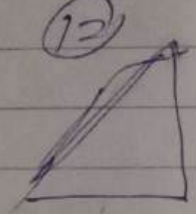
// wap a to display half of the pyramid

```
#include <stdio.h>
Void main() {
        printf("* \n");
        printf("** \n");
        printf("*** \n");
        printf("**** \n");
        Printf("*****
}
```



operator :-

(2) + (3) = (5) ← Result

operand operator

TYPES of operator :-

- Arithmetic operator (+, -, *, /, %, ^)
- unary operator
  - Increment // (++i, i++)
  - Decrement // (--i, i--)
- BITwise // (&, |, ^, <<, >>) left shift, right shift
- Logical // &&, ||, !
- Assignment // (=, +=, -=, *=, /=, %=)
- Relational // <, <=, >, >=, ==, !=
- Ternary / conditional operation

(condition) ? True : False

a	b	a ^ b (Xor)
0	0	0
1	1	0
1	0	1
0	1	1

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DOS

- Disk operating system
- developed by Paterson in 1981
- old name was qDos (quick & dirty DOS)
- It was ~~owned~~ owned by microsoft company in 1981 & the name changed into MS. Dos (microsoft Dos)
- It is a single user single tasking o.s.
- It is based on CUI (character user Interface)
- mouse will not work in this environment.
- It is command based o.s., so it is also called Command Prompt.

Some general command:-

How to open:-

⊞ + R.

type "cmd" ↵

To maximise the window, Alt + ↵

To close the window, Exit ↵

Commands are of 2 types
- Internal command
- External command (we will use this)

To clear the screen, cls ↵

To go to the main directory cd\ ↵

C:\>

To see Date; date ↵

To see Time; time ↵

HH.MM:SS:MS

Date
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To see windows version, ver↵

Folder creation / Directory creation :-

Sub Directory / Child Directory

make directory

md _ "Folder Name" ↵

cd _ "Folder Name" ↵

output → C:\"Folder Name" > md _ "Folder Name ↵

cd _ "Folder Name ↵

output → C:\"Folder Name" | "Folder Name 2" >

To rename a folder :-

Ren _ "Folder Name" _ "New Folder Name" ↵

To delete a folder :-

del _ "Folder Name" ↵

To create a file :-

copy con "File name" ↵

To save the file :- Ctrl + Z

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Unit :- 2 . chapter :- 01

conditional statement/control statement

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Date :-

Types :

1. If statement
2. If-Else
3. Nested If statement
4. Else If
5. Switch case

① If Statement

Syntax :-

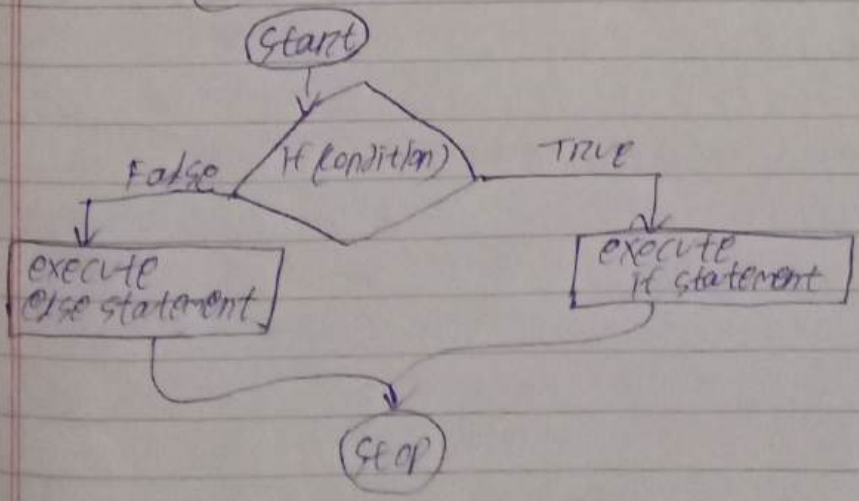
```
if (condition)
{
  o/p statement;
}
```

Q WAP to check whether a number is +ve or not.

Ans

```
#include <stdio.h>
void main() {
    float a;
    Printf("Enter a number : ");
    Scanf("%f", &a);
    if (a > 0) {
        Printf("%f is positive", a);
    }
}
```

(Flow chart)



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If-Else statement

Syntax:
```
if (condition) {
        True statement;
}
else
{
    false statement;
}
```

8 WAP to ~~find a statement~~ Check weather a number is +ve or -ve.

Ans
```
#include<stdio.h>
void main() {
    float a;
    Printf("Enter a number");
    scanf("%f", &a);
    if (a>0) {
        Printf("%f is positive", a);
    } else {
        Printf("%f is negative", a);
    }
}
```

4) 2004 (Feb)

Q WAP to check wheather a number is even or odd

```
#include <stdio.h>
Void main() {
    float a;
    Printf("Enter a number: ");
    Scanf("%f", &a);
    If (a%.2 == 0) {
        Printf("%.f is an even number", a);
    } else {
        Printf("%f is a odd number");
}
```

Q WAP to check wheather a ~~Number~~ year is leap year or not.

Ans
```
#include <stdio.h>
Void main() {
    int a;
    Printf("Enter a year: ");
    Scanf("%d", &a);
    If (a%4 == 0 || a%.400 == 0) {
        Printf("%d is a leap year");
    } else {
        Printf("%d is not a leap year");
}
```

Q WAP to check wheather an input number is a Prime number not

Ans
```
#include <stdio.h>
Void main() {
    int a;
    Printf("Enter a number: ");
    Scanf("%d", &a);
```

```
        for (int i=a ; i>a ; i--){
            if (i%a == 0){
                Printf("It is not a Prime number");
            }else {
                Printf("It is a Prime number");
            }
        }
    }
```

Q WAP to check wheather the age of a person is eligable or not eligable for giving vote.

Ans
```
#include <stdio.h>
void main(){
    int a;
    Printf("Enter the age: ");
    scanf("%d", &a);
    if (a>18){
        Printf("The person is eligable for voting");
    }else{
        Printf("The person is not eligable");
    }
}
```

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else if :-

Nested if :-

Syntax:-

```
If (condition 1) {
    statement 1 ;
} else if (condition 2) {
    statement 2;
} else if (condition 3) {
    statement 3;
} else if (condition 4) {
    statement 4;
} else if (condition n) {
    statement n;
} else {
    false statement ;
}
```

Q WAP to find division of a student if mark >= 360 = 1st div
mark >= 300 = 2nd div.
mark >= 210 = 3rd div.
otherwise Fail ;

Ans

```
#include<stdio.h>
void main() {
    float a;
    Printf("Enter the mark : ");
    Scanf("%f", &a);
    if (a >= 360) {
        Printf("1st division");
    } else if (a >= 300) {
        Printf("2nd division");
    } else if (a >= 210) {
        Printf("3rd division");
    } else {
        Printf("Fail");
    }
}
```

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Q WAP to find out grade of a student using Nested if the conditions are as forms.

mark ≥ 90% = 'O' grade
mark ≥ 80% = 'E' grade
mark ≥ 70% = 'A' grade
mark ≥ 60% = 'B' grade
mark ≥ 50% = 'C' grade
mark ≥ 40% = 'D' grade
mark < 40% = Fail

Take 5 subject as i/p. & Find its grade
Physics
Chemistry
English
maths
Biology
Comp. Sc.

Each subject mark is to
Find total, average, percentage & grade.

Ans
```
#include <stdio.h>
void main()
{
    float P, C, E, M, B, C;
    printf("Enter the mark secured in physics:");
    scanf("%f", &P);
    printf("Enter the mark secured in Chemistry:");
    scanf("%f", &C);
    printf("Enter the mark secured in English:");
    scanf("%
```

Ans

```
#include <stdio.h>
void main() {
    char Name, Reg;
    float P, C, E, m, B, C, Sum;
    Printf("\t\tResult Sheet");
    Printf("Enter students name:");
    Scanf("%s", &Name);
    Printf("Enter the Registration No.:-");
    Scanf("%s", &Reg);
    Printf("Enter the mark secured in Physics:");
    Scanf("%f", &P);
    Printf("Enter the mark secured in chemistry:");
    Scanf("%f", &C);
    Printf("Enter the mark secured in English:");
    Scanf("%f", &E);
    Printf("Enter the mark secured in maths:");
    Scanf("%f", &m);
    Printf("Enter the mark secured in Biology:");
    Scanf("%f", &B);
    Printf("Enter the mark secured in Comp. Sc.:");
    Scanf("%f", &C);
    Sum = P+C+E+m+B+C;
    Printf("Total mark = %f", Sum);
    Printf("Average mark = %f", Sum/5);
    printf("Percentage = %f%%", (Sum/500)*100);
    float per = (Sum/500)*100;
    if (per >= 90) {
        Printf("Grade = O");
    } else if (per >= 80) {
        Printf("Grade = E");
    } else if (per >= 70) {
        Printf("Grade = A");
```

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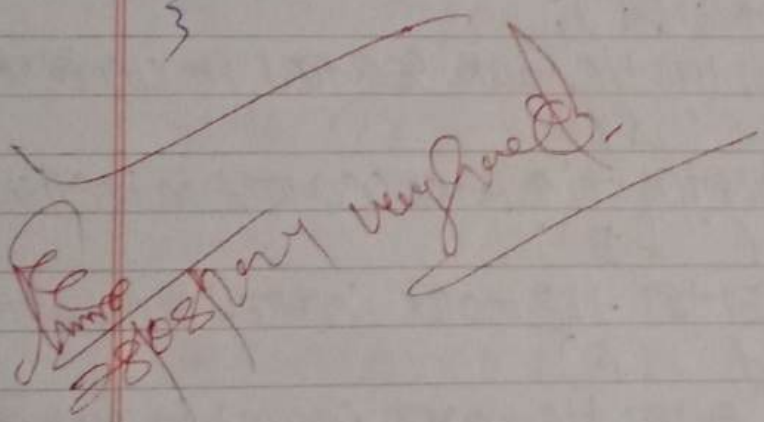
```
} else if (per >= 60) {
        Printf ("grade = B");
} else if (per >= 50) {
        Printf ("grade = C");
} else if (per >= 40) {
        Printf ("grade = D");
} else {
    Printf [redacted] ("Grade = Fail");
    }
Printf ("\t\tThank You");
}
```



31.8.24

Unit-02, Chapter-a2

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Switch case Statement :-

```
switch (dartshort)
case shout :
```

what is switch case statement ?

Ans (i) The switch statement ~~in C program~~ is an alternative or substitute of if-else ladder.
(ii) It allow to execute multiple operation for different possible values.
(iii) we can define various statement in the multiple cases for different value of a single variable.

Its syntax :-

```
switch (expression) {
    case 1 :
    statement ;
    break;
    case 2 :
    statement ;
    break;
    .
    .
    .
    case n :
    statement ;
    break ;
    default :
    statement;
}
```

Date
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Q WAP to check wheather an input number is equal to 100, 200, 300, 400 and 500.

Ans
```
#include<stdio.h>
void main() {
    int a;
    Printf("Enter a number : ");
    scanf("%d", &a);
    switch(a){
        case 100:
        Printf("n is equal to 100");
        break;
        case 200:
        Printf("n is equal to 200");
        break;
        case 300:
        Printf("n is equal to 300");
        break;
        case 400:
        Printf("n is equal to 400");
        break;
        case 500:
        Printf("n is equal to 500");
        break;
        default:
        Printf("n is not equal to 100, 200, 300, 400 or 500");
    }
}
```

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Q WAP to Print days of a week by its number

```
#include <stdio.h>
void main() {
    int a;
    Printf ("Enter the date of a week:");
    Scanf ("%d", &a);
    Switch (a) {
        Case 1:
            Printf ("It is Sunday");
            break;
        case 2:
            Printf ("It is monday");
            break;
        case 3:
            Printf ("It is TUESday");
            break;
        case 4:
            Printf ("It is WEDNESday");
            break;
        case 5:
            Printf ("It is Thursday");
            break;
        case 6:
            Printf ("It is Friday");
            break;
        case 7:
            Printf ("It is saturday");
            break;
        default:
            printf ("The day does not EXIST");
    }
```

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Page No.

1Q WAP to print name of the month.

2Q WAP to check weather an input letter is vowel or consonent.

Advantage :-

(I) Readability and clearity
(II) efficiency
(III) case based logic

Disadvantage :-

(1) The Program is lengthy
(2)

Q Difference between break and default :

Ans

Break	Default
(1) The break keyword is used within the code block	(1) The default keyword is used at the end of the program
(2) It is crucial/important for avoiding the fall through behaviour of switch statement.	(2) If no condition is satisfied the default statement will be executed.
(3) It is optional.	(3) It is compulsory.

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→Ans1

```
#include <stdio.h>
void main() {
    int a;
    Printf("Enter the number: ");
    Scanf("%d", &a);
    switch(a) {
        case 1:
            Printf("It is January");
            break;
        case 2:
            Printf("It is February");
            break;
        case 3:
            printf("It is march");
            break;
        case 4:
            Printf("It is April");
            break;
        case 5:
            Printf("It is may");
            break;
        case 6:
            Printf("It is June");
            break;
        case 7:
            Printf("It is July");
            break;
        case 8:
            Printf("It is August");
            break;
        case 9:
            Printf("It is September");
            break;
```

```
        case 10:
            printf("It is october");
            break;
        case 11:
            printf("It is November");
            break;
        case 12:
            printf("It is December");
            break;
        default:
            printf("This month does not exist");
        }
}
```

2.
```
#include <stdio.h>
void main() {
    char a;
    Printf("Enter a character: ");
    Scanf("%c", &a);
    switch (a) {
        case 'a':
        case 'e':
        case 'i':
        case 'o':
        case 'u':
        case 'A':
        case 'E':
        case 'I':
        case 'O':
        case 'U':
            printf("Yes, it is a vowel");
            break;
```

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```
default:
    Print ("It is a consonant");
}
}
```

3.9.24

unit-2 chapter-3

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Q what is loop?

Ans A loop is defined as the repetation of a process multiple times until a specific condition satisfied.

There are 3 types of loop :- ① Do-while loop
② while loop
③ For loop

Advantage of loop :-

→ It simplify the complex problem into easy problem.
→ It enable to alter the flow of Programme so that instead of writing the same code again and again, we can repeat the same code for a finite number of time.
→ For e.g. if we need to print the number from one to ten then instead of writing the printf statement 10 times, we can print it by using a loop.
→ It provides code reusability.
→ using loop we can traverse the element of data structure.
~~→ It is a post tested loop~~

Do-while loop :-

→ It is also called post tested loop.
→ It is used when it is necessary to execute the loop atleast once.
→ This loop continues until a given condition satisfied.
~~It is also known as exit controlled loop.~~

Syntax :-

```
do
{
  statement;
} while (condition);
```

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Q WAP to Print 1 to 10 using Printf

Sol"
```
#include <stdio.h>
void main()
{
Printf ("1\n");
Printf ("2\n");
Printf ("3\n");
Printf ("4\n");
Printf ("5 \n");
Printf ("6 \n");
Printf ("7 \n");
Printf ("8 \n");
Printf ("9 \n");
Printf ("10 \n");
```

Output:-
1
2
3
4
5
6
7
8
9
10

do-while loop:-

```
#include <stdio.h>
void main() {
    int i=1;
    do {
      Print("%d\n", i);
      i++;
    } while (i<=10);
}
```

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Q WAP to Print all even number within 50.

Ans
```
#include <stdio.h>
void main() {
    int i=2;
    do {
        Printf ("%d \n", i);
        i+=2;
    } while (i<=50);
}
```

Q WAP to Print all all number from 100 to 200.

Ans
```
#include <Stdio.h>
void main() {
    int a=101;
    do {
        Printf ("%d \n", a);
        a+=2;
    } while (i<=200);
}
```

Q WAP to print the table of any input number.

Ans
```
#include <Stdio.h>
void main() {
    int i=1, n;
    Printf ("Enter a number = ");
    Scanf ("%d", &n);
    do {
        Printf ("%d x %d = %d \n", n, i, n*i)
        i++;
    } while (i<=10);
}
```

Done 8/09/2019

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(2) while Loop :-

Q what is while Loop?

Ans It is also known as Pretested.
→ It is mostly used in the case of where a number of itteration is not known in advance.
→ The block of statement is excuated in the while until the condition is satisfied.

Syntax:-

```
while (condition)
{
   statement;
}
```

Q WAP to print the numbers from 1 to 10 using while loop.

Ans
```
#include <stdio.h>
void main() {
    int i=1;
    while (i<=10) {
        Print("%d\n", i);
        i++;
    }
}
```

Q WAP to print all even number from 50 to 100.

Ans
```
#include <stdio.h>
void main() {
        int i, j, k;
        int i = 50;
        while (i <= 100) {
            printf ("%d \n", i);
            i+=2; or (i+2);
        }
    }
```

Q WAP to print the table of any input number using while loop.

Ans
```
# include <stdio.h>
void main() {
        int i=1, n;
        while (i <= 10) {
            Printf ("%d x %d = %d \n", n, i, n*i);
            i++;
        }
    }
```

Ans
```
# include <stdio.h>
void main() {
        int i=1, n;
        Printf ("Enter a number");
        scanf ("%d", &n);
        while (i <= 10) {
            Printf ("%d x %d = %d \n", n, i, n*i);
            i++;
        }
```

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Q WAP to print all odd number from 100 to 200 using while loop.

Ans
```
#include <stdio.h>
void main(){
    int i=101;
    while (i<=200);
        printf("%d\n", i);
        i+=2;
    }
}
```

(3) For loop :-

Q what is for loop?

→ The for loop is used is such case that where we need to execute some part of the code until the given condition is satisfied

→ It is better to use in the program if the number of itteration is known in advance.

Syntax:-

```
for (initialization; condition; increment or decrement){
        statement;
    }
```

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Q wap to print the table of a given number using for loop.

Ans
```
#include<stdio.h>
void main(){
int n;
Printf("Enter a number=");
Scanf("%d",&n);
for(i=1;i<=10;i++){
        printf("%d x %d = %d\n",n,i,n*i);
}
}
```

Q WAP to print a number 1 to 50 using for loop

Ans
```
#include<stdio.h>
void main(){
for(i=1;i<=50;i++){
      Printf("%d\n",i);
}
}
```

Intro to python

.24

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WAP for your institute cod partner for preparation of a food ordering bill. The available food items are barra, aluchop, singda, idly. The cost of barra is 5 Rupees, aluchop is 3 Rupees, singda is 7 Rupees and idly is 2 Rupees. when a customer will come wants to order the food the output should be as follows.

Ans
```
#Include <stdio.h>
void main() {
    int barra = 5, aluchop = 3, singda = 7, idly = 2;
    int barrai = 0, aluchopi = 0, singdai = 0, idlyi = 0;
    int a = -1;
    int total_amount;
    char item;
while (a == -1) {
    Printf ("\n\t\t MENU \n");
    Printf ("Barra (B) = 5 Rupees \n");
    Printf ("Aluchop (A) = 3 Rupees \n");
    printf ("singda (S) = 7 Rupees \n");
    Printf ("Idly (I) = 2 Rupees \n");
    Printf ("Enter your choice (B/A/S/I) or type
            'e' to exit : ");
    scanf ("%c", &item);
    switch (item) {
        case 'B':
        case 'b':
            Printf ("Enter the total number of Barra to add:");
            int barra_count;
            scanf ("%d", &barra_count);
            barrai += barra_count;
            Printf ("%d Barra (B) are added \n", barra_count);
            break;
```

```
case 'A':
case 'a':
    Printf("Enter the total number of
            Aluchoop to add:");
    int aluchoop_count;
    Scanf("%d", &aluchoop_count);
    aluchoi+=aluchoop_count;
    Printf("%d Aluchoop(s) are added in",
            aluchoop_count);
    break;
case 's':
case 'S':
    Printf("Enter the total number of
            singda to add:");
    int singda_count;
    scanf("%d", &singda_count);
    singdai+=singda_count;
    printf("%d singda(s) are added in",
            singda_count);
    break;
case 'I':
case 'i':
    printf("Enter the total number
        of Idly to add:");
    int idly_count;
    scanf("%d", &idly_count);
    idlyi+= idly_count;
    Printf("%d Idly(s) are added in",
            idly_count);
    break;
```

```
        case 'e':
        case 'E':
            a=0;
            break;
        default:
            printf("INVALID CHOICE\n");
            break;
    }
}
total_amount = baraj * bara + aluchopi * aluchoop +
               singdai * singda + idlyi * idly;
printf("\n\t\t BILL\n");
printf("%d Bara(S) = %d RUPEES\n", baraj, baraj*bara);
printf("%d Aluchoop(S) = %d RUPEES\n", aluchopi, aluchopi*
                                        aluchoop);
printf("%d singda(S) = %d RUPEES\n", singdai, singdai*singda);
printf("%d Idly(S) = %d RUPEES\n", idlyi, idlyi*idly);
printf("Total amount to pay is = %d RUPEES\n", total_amount);
printf("\t\t Thank you!\n");
}
```

output:-

```
        MENU
Bara(B) = 5 RUPEES
Aluchoop(A) = 3 RUPEES
singda(S) = 7 RUPEES
Idly(I) = 2 RUPEES
Enter your choice (B/A/S/I) or type 'e' to exit : b
Enter the total number of Bara to add : 2
2 Bara(S) are added.
```

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MENU
Bajja (B) = 5 Rupees
Aluchoop (A) = 3 Rupees
Singada (S) = 7 Rupees
Idly (I) = 2 Rupees
Enter your choice (B/A/S/I) or type 'e' to exit: a
Enter the total number of Aluchoop to add: 5
5 Aluchoop(s) are added

MENU
Bajja (B) = 5 Rupees
Aluchoop (A) = 3 Rupees
Singada (S) = 7 Rupees
Idly (I) = 2 Rupees
Enter your choice (B/A/S/I) or type 'e' to exit: S
Enter the total number of singada to add: 3
3 singada(s) are added.

MENU
Bajja (B) = 5 Rupees
Aluchoop (A) = 3 Rupees
Singada (S) = 7 Rupees
Idly (I) = 2 Rupees
Enter your choice (B/A/S/I) or type 'e' to exit: I
Enter the total number of Idly to add: 5
5 Idly (s) are added.

MENU
Bajja (B) = 5 Rupees
Aluchoop (A) = 3 Rupees
Singada (S) = 7 Rupees
Idly (I) = 2 Rupees
Enter your choice (B/A/S/I) or type 'e' to exit: e

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BILL

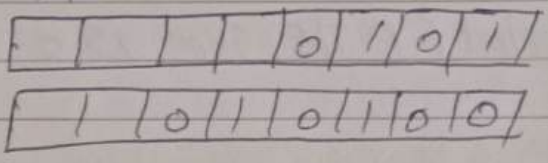
2 Barca(S) = 10 Rupees
5 Alucchoop(S) = 15 Rupees
3 Singada(S) = 21 Rupees
5 Idly(S) = 10 Rupees
Total amount to pay is = 56 Rupees
Thank you!

—x—

q.20

5 << 2

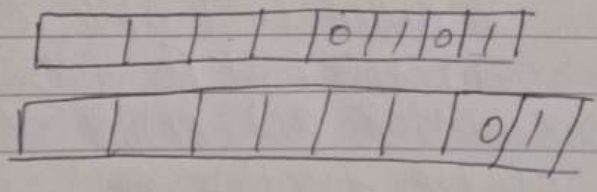
5 → 0101



1 0 1 0 0
16 8 4 2 1
16+4 → 20

5 >> 2

5 → 0101

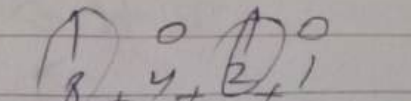


1

~ not

5 → 0101
~ → 1010

⇒ 10



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6

Date

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WAP to input two numbers from the user and find the sum.

Identify each token

(Token is a simplest of the program)

```
#include <stdio.h>        (header)
void main() {
    int a, b;
    Printf("Enter two numbers: ");
    Scanf("%d %d", &a, &b);
    Printf("The sum is = %d", a+b);
}
```

→ Pre Processor

include → is used to import a library

stdio.h → standard input and output

void → return type of the function

main() → This function is the first function which is called first while executing a code. And this must be present in a program.

{} → starting and ending of the statement of the function.

int → datatype

a, b → variable

; → ending of a statement / terminating a statement

Printf → It is used to give output

" " → This is used to declear a string

Scanf → It is used to take input from user

%d → format specifier

& →

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How to declare a constant
① #define
② const

Total number of sections in a Program:-
① Documentation section (comment line) // or /* */
② Link section (#include <stdio.h>)
③ Definition section (#define Pi 3.14)
④ Global declaration section (Global variable)
⑤ main function
⑥ Sub function

Q1 Write a Program to input three unequal integers and find the largest number using conditional operator.

2 Apply Pythagorean theorem for finding the distance between two points i.e. side 'a' when the two sides namely 'b' and 'c' are given as input [a = sqrt(b²+c²)]

3 John, Ram and Shah were fishing in a river bank. Input the no of fishes caught by each person and display who have caught more fishes (use conditional operator).

4 A boy is running in a circular playground having radius R given input. what will be the distance and displacement from one end to other end of given [distance = Pi*R
Displacement = 2*R]

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Ans 1
```
#include <stdio.h>
void main() {
  int a, b, c;
  Printf("Enter 3 unequal integers: ");
  scanf("%d %d %d", &a, &b, &c);
  (a>b)?((a>c)? Printf("%d is greatest", a):
  printf("%d is greatest", c)):
  ((b>c)? Printf("%d is greatest", b): Printf
  ("%d is greatest", c));

}
```

output :-
Enter 3 unequal integers: 5 6 12
12 is greatest

(2)
```
#include <stdio.h>
#include<math.h>
void main() {
    int a, b, c;
    Printf("Enter side 'b': ");
    scanf("%d", &b);
    Printf("Enter side 'c': ");
    scanf("%d", &c);
    a = sqrt((b*b) +(c*c));
    Printf("using pythagorean theorem 'a' is: %d", a);
}
```

output
Enter side 'b': 4
Enter side 'c': 5
using pythagorean theorem 'a' is: 6

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3
```
#include <stdio.h>
void main() {
    int john=0, ram=0, shah=0;
    int a=1;
    char option;
    Printf("Type 'j' for John \n");
    Printf("Type 'r' for Ram \n");
    Printf("Type 's' for shah \n");
    Printf("Type 'x' for exit \n");
    while(a) {
        printf("Choose your option: ");
        Scanf("%c", &option);
        int temp;
        Switch(option) {
            case 'j':
            case 'J':
                Printf("Enter total number of fish
                    caught by John: ");
                Scanf("%d", &temp);
                john += temp;
                printf("%d fishes are added to
                    John \n", john);
                break;

            case 'r':
            case 'R':
                Printf("Enter total number of fish
                    caught by Ram: ");
                Scanf("%d", &temp);
                ram += temp;
                Printf("%d fishes are added to
                    Ram \n", Ram);
                break;
```

```
        case 's':
        case 's':
            printf("Enter total number of
                fish caught by shah: ");
            scanf("%d", &temp);
            shah += temp;
            printf("%d fishes are added
              to shah\n", shah);
            break;

        case 'x':
        case 'x':
            Printf ("Exiting... \n");
            a=0;
            break;

        default:
            printf(" Invalid option \n");
            break;
    }
}
Printf ("Total number of fish caught by John is
    %d \n", John);
Printf ("Total number of fish caught by Ram is
    %d\n", Ram);
Printf ("Total number of fish caught by shah is
    %d \n", Shah);
```

~~John > Shah ? John >~~

(John > Ram) ? ((John > Shah) ? Printf("John has caught most amount of fish that is %d", john) : Printf("Shah has caught most amount of fish that is %d", Shah)) : ((Ram > Shah) ? Printf("Ram has caught most amount of fish that is %d", Ram) : Printf("Shah has caught most amount of fish that is %d", Shah));

}

output:-

```
TYPE 'j' for John
TYPE 'r' for Ram
TYPE 's' for Shah
TYPE 'x' for exit
Choose your option: j
Enter total number of fish caught by John: 25
25 fishes are added to John
Choose your option: r
Enter total number of fish caught by Ram: 6
6 fishes are added to Ram
Choose your option: s
Enter total number of fish caught by Shah: 12
12 fishes are added to Shah.
Choose your option: x
Exiting ...
Total number of fish caught by John: 25
Total number of fish caught by Ram: 6
Total number of fish caught by Shah: 12
John has caught most amount of fishes that is 25
```

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4
```
#include<stdio.h>
void main(){
    double r;
    printf("Enter the radius of the playground: ");
    scanf("%lf", &r);
    printf("Distance = %.2f\n", 2*3.14*r);
    printf("Displacement = %.2f\n", 2*r);

}
```

output :-

Enter the radius of the playground: 5
Distance = 31.40
Displacement = 10.00

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10
8
20

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Imp
Type casting

→ The procedure of changing a variables datatype is known as type casting.
→ It allow the user to convert one datatype into another datatype.
→ It can be helpful in variety of situation like when processing user input, doing mathematical calculation and interacting with library function.
→ The cast operator is used for type casting.
→ cast operator means — type.
→ type casting of two types
① Implicit type casting
② Explicit type casting

Implicit type casting:-
→ when the compiler automatically transfer the data from one type into another type that is called implicit type casting.
→ It is also called automated type conversion.
→ It does not required any special syntax because the compiler takes care of it.

Ex:-
without type casting
int a = 9/4
o/p = 2

with type casting
a = float (9/4)
o/p = 2.25000

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Explicit type casting:-
when the compiler donot automatically transfer one data type to another data type but the user explicitely make the change, then it is known as Explicit type casting. Ex:-

a = float (9/4)

o/p : 2.250000

~~Assignment - 01~~

10 X 2 = 20

① Compiler and Interpreter
② Short note on datatype & headerfile
③ Difference bet^n Preincrement & post increment operator
④ Any 5 command used in Dos
⑤ Types of operator & ex.
⑥ WAP to find area of triangle $A = \sqrt{s(s-a)(s-b)(s-c)}$
⑦ Greatest among 2 numbers using if else
⑧ Area & Perimeter of rectangle
⑨ Difference bet^n RAM & ROM.
⑩ Full form of (i) BCPL (ii) ASCII (iii) HLL (iv) DRAM.

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(unit :- 3rd unit)

Function

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1 what is Function?

Ans=> when we divide a large program into basic building blocks i.e. called function.

=> The function contains the set of programing statement enclosed by curly bracket.

=> A function can be called multiple times to prove reusability and ~~[illegible]~~ modularity to the C Program. In other words we can say that the collection of function creates a program.

=> The function is also known as procedure or sub-routine.

Advantage of function :-

=> The function decrease the itteration of same statement in a program. so ~~[illegible]~~ it decrease the program size.

=> The function improves code readability.

=> The function can be called multiple times from different parts of a program which promote re-usability.

=> It makes the program easy to understand and it manages by breaking a large program into smaller pieces.

Syntax :-

return type ~~$~~ function name (P1, P2, ... Pn) {

body of function

}

~~Advantages~~

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Aspect :-

There are 3 Aspect of a function
1. function declaration
2. function call
3. function defination

Function declaration :-

→ The function declaration informs the compiler about the name, datatype, number of parameter and return type of a function.
→ It is optional to write parameter names during declaration because you can do that when define a function.

Function call :-

The compiler execute the function call statement in whole program but makes you to pass the number of argument as specified when declaring the function.

Function defination :-

→ It means defining the statement that the compiler will execute during the function call.
→ It represent body of the function.
→ Function defination should return only one value after the completion of execution.

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Types of function :-

It is of two types :-

① Library function
② User defined function.

Library function :-

→ It is also known as build-in function.
→ It can be directly usable, no need to define.
→ EX :- Printf(), scanf(), gets(), puts() etc

User defined function :-

→ The function which is created by the Programmer is called user defined function
→ This function should be declared and defined before being used.
→ EX :- sum(), max(), functionName() etc ;

Example :-

```
#include <stdio.h>
int max (int x, int y) {
        if (x > y) {
            return x;
        } else {
            return y;
        }
}
void main() {
    int a=15, b=20;
    int p = max (a, b);
    Printf("The largest no= %d", p);
}
```

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WAP to find greatest among 3 number using function.

Ans
```
#include <stdio.h>
int greatest (int x, int y, int z){
    if ((x>y) && (x>z)){
        return x;
    }else if ((y>x) && (y>z)){
        return y;
    }else{
        return z;
    }
}

void main (){
    int x,y,z;
    Printf("Enter 3 number= ");
    Scanf("%d %d %d", &x, &y, &z);
    int g = greatest (x,y,z);
    Printf ("The greatest integer is = %d", g);
}
```

Output

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Unit-3 Chapter-2

Array

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→ Array is a kind of data structure that can store a fixed size sequencial collection of elements of same type.

→ An array is used to store a collection of data but it is more useful to think of an array as a collection of variables of same type.

→ ~~Instead~~ Instead of declaring individual variable such as int a, int b, int c, int d. we can write the same using array like int a[4];

→ An array consist of contigious memory location.

→ A specific element in an array can be accessed by its index value. The lowest address indicates the first element and the highest address indicates the last element.

→ An array is defined as the collection of similar type of data items store in contigious memory location.

* → Array is a derived datatype which can store primitive type of datatype. such as int, float, char, etc.

* → When we can access each and every element of an array only once that is called traverse.

Properties of array:- (long question)

→ Each element of an array is same type and same size.

→ The elements of array store at contigious memory location where the first element is stored at the very smallest location.

→ Elements of the array can be randomly accessed with its base address.

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Advantage of array:-
→ Code optimization
→ easy of traversing.
→ easy of sorting.
→ Randomly access.

Disadvantage of array:-
There is only one disadvantage of array i.e. fixed size i.e. the size that we define at the time of declaration of the array we cannot increase/excede the limit.

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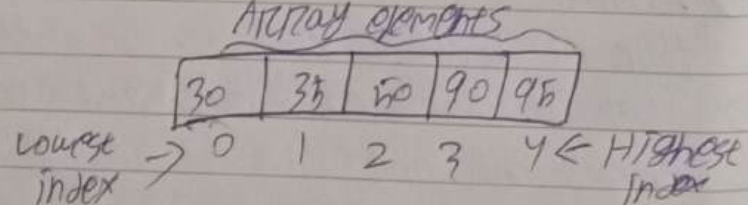
int marks[5];



Array Name = marks
0-4 = Index value / Base value
length = High index + 1
= 4 + 1
= 5

Is RAM or server is required for storing or running the program for Array.

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i++ => i = i+1

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There are 3 steps which involves in an array program.
They are;
① Declaration ~~syntax = datatype & name of array [size of array];~~
② Initialization
③ processing with/and output.

① Declaration :-
syntax :- datatype & name of array[size of Array] = {elements of array};

Ex:- int hari [5] = {10, 15, 23, 24, 32} ;
static declaration :- sum = hari[0] + hari[1] + hari[2] + ...
Dynamic declaration

```
for(int i=0; i<5 ; i++){
    sum += hari[i];
}
```

Q WAP to add the elements of array.
Ans

```
#include<stdio.h>
void main(){
    int arr[5];
    int sum, i=0, n;
    printf("Enter the size of array:");
    scanf("%d", &n);
    printf("Enter the elements of array: ");
    for(i=0; i<n ; i++){
        scanf("%d", &arr[i]);
    }
    printf("The sum of all ements is = ");
    for(i=0; i<n ; i++){
        sum += arr[i]
    }
    printf("%d", sum);
```

int

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Q WAP to find out the sum and average of a students marks in 5 subjects.

Ans
```
#include <stdio.h>
void main(){
    int arr[5];
    char Roll;
    int sum, average
    Printf("Enter the Roll number: ");
    scanf("%s", &Roll);
    for(int i=0; i<5; i++){
        Printf("Enter %d subject mark:", i);
        scanf("%d", &arr[i]);
    }
    for(int i=0; i<5; i++){
        sum+= arr[i];
    }
    average=(sum/5);
    Printf("sum=%d", sum);
    Printf("average=%d", average);
}
```

Q1 write a program to input a number and find the factorial value of it.

2 write a Program to input a number and test whether its prime number or not.

3 write a Program to input a positive number and test whether it is palindrome or not.

4 write a p to test a 4 digit positive number is armstrong or not (ex:- $1^4+6^4+3^4+4^4=1634$)

Hari sir gunupur
9040860940

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(5) write a P to find the greatest common.

(1) WAP to create an array of n element and enter any n element and display.

(2) WAP to add all the elements of an array.

(3) WAP to enter any n subject marks of a student and find out the total mark and percentage

(4) WAP to create an array of 10 elements and find out the largest element among them.

(5) WAP to create an array of 10 elements and sort the elements in ascending order.

```
#include<stdio.h>
void main() {
    int arr[5];
    int i, large;
    Print("Enter 5 elements : \n");
    for (i=0; i<5; i++){
        scanf("%d", &arr[i]);
    }
    large = arr[i]; / arr[0];
    for (i=0; i<5; i++) {
        if (arr[i] > large) {
            large = arr[i];
        }
    }
    printf("Largest number = %d", large);
}
```

① declaration
② Input
③ processing
④ output

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Multi-dimensional Array

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```
#include <stdio.h>
int n;
Printf("Enter the size: ");
scanf("%d", &n);
int arr[5]
```

```
#include <stdio.h>
int n;
int i=0, large;
Printf("Enter the size: ");
scanf("%d", &n);
int arr[n];
Printf("Enter %d elements"
```

```
#include <stdio.h>
Void main(){
    int n;
    Printf("Enter the size :");
    Scanf("%d", &n);
    int i=0, large;
    int arr[n];
    Printf("Enter %d elements:\n", n);
    for(i=0; i<n; i++){
        Scanf("%d", &arr[i]);
    }
    large = arr[0]; arr[i])
    for(i=0; i<n; i++){
        if(large < arr[i]){
            large = arr[i];
        }
    }
```

arr[] = { }

1 2 3 4 → 4 count++ sizeof[

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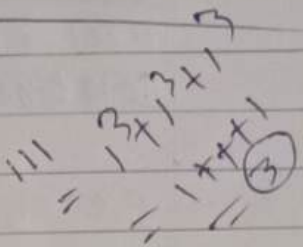
printf("The largest number = %d", large);
}

---

var to check whether a number is
(i) Armstrong number
(ii) Palindrome
(iii) Strong
(iv) Perfect



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Multi-dimensional Array

(1) 2-D Array
(2) 3-D Array

~~It is a multi-dimensional array~~

→ Array is declared with one value of size in square bracket which is called 1-D array.
→ In an 1-D array each element is identified by its index.
→ A multi-dimensional array can be termed as a nested.
→ In such cases each element in the outer array is an array itself. If each element in the outer array is another 1-D array then it forms a 2-D array.

2-D array:-

→ The 2-D array can be defined as an array of array.
→ The 2-D array is organised as matrices which can be represented as the collection rows and columns
→ It is like a table or a matrix
→ The elements can be considered to be logically arranged in rows and columns. Hence the location of any element is characterised by its row number and column number

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Both the row and column index starts from zero.

Syntax to 2-D array :-

Datatype arrayname [row size] [column size];

EX :-

int Std [3] [2];

From the above declaration, it has been observed the array name is "Std" and it has 3 rows and 2 columns. Hence the total number of elements = rows x columns

$= 3 \times 2$

$= 6$ elements

→ A 2-D array is a row major array.

Q write a program to input and display a 3x2 matrix

Ans

```
#include<stdio.h>
void main(){
    int i,j;
    int arr[3][2];
    for(i=0;i<3;i++){
        printf("\n");
        for(j=0;j<2;j++){
            printf("Enter the element");
            scanf("%d",&arr[i][j]);
        }
    }
    printf("\n");
    for(i=0;i<3;i++){
        for(j=0;j<2;j++){
            printf("%d\t",arr[i][j]);
        }
        printf("\n");
    }
}
```

int ∅ std[ ][2];

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Ans
```
#include <stdio.h>
void main(){
    int i, j;
    int arr[3][2];
    Printf("Enter the elements:- \n");
    for(i=0; i<3; i++){
        Printf("Enter %d row elements:- \n", i);
        for(j=0; j<2; j++){
        Scanf("%d", &arr[i][j]);
        }
    }

    for(i=0; i<3; i++){
        Printf("[");
        for(j=0; j<2; j++){
            Printf("%d", arr[i][j]);
            if(j!=1){
                Printf(", ");
            }
        }
        Printf("]\n");
    }
}
```

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WAP to input the roll number and marks of n students and display them

```
#include <stdio.h>
void main() {
    int i ;
    int arr[5][2];

    for (i=0 ; i<n ; i++){
        Printf("Enter the mark of %d student", i);
        Printf("Enter the Roll no :- ");
        Scanf("%d", &arr[i][0]);
        Printf("Enter the mark :- ");
        Scanf("%d", &arr[i][1]);
    }

    Printf("Roll No \t mark\n");
    for (i=0; i<n ; i++){
        Printf("%d \t %d\n", arr[i][0], arr[i][1]);
    }

}
```

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aadhar number

WAP to input the roll number, marks ~~[illegible]~~

```
#define MAX 10
#include <stdio.h>
void main() {
    ~~int i;~~
    ~~int roll[MAX];~~
    ~~long long int aadhar[MAX];~~
    ~~int roll[max]; int~~
    int i;
    int roll[MAX], marks[MAX];
    long long int aadhar[MAX];
    for (i=0; i<MAX; i++){
        Printf ("Enter the roll number of %d student:-",i+1);
        Scanf ("%d", &roll[i]);
        Printf ("Enter the mark:- ");
        Scanf ("%d", &marks[i]);
        Printf ("Enter the aadhar number:- ");
        Scanf ("%llu", &aadhar[i]);
    }
    Printf ("Roll Number \t marks \t Aadhar Number \n");
    for (i=0; i<MAX; i++) {
        Printf ("%d \t \t %d \t %llu \n", roll[i], marks[i]
                                          aadhar[i]);
    }
}
```