

- To print a new line use "\n" inside printf() function
- To print a new tab use "\t" inside printf() function

```
#include <stdio.h>
int main () {
    printf ("Hi\nHello");
    return 0;
}
```

root@Hi:~#

→ Hello

← d.o.t.k.e.s.abubr.i ~#

↑ → tting

↑ → trace

← d.o.t.k.e.s.abubr.i ~#

↑ → ( ) stop

- ### # Features of c-language
- ① High level language
  - ② case sensitive (a ≠ A)
  - ③ 32 keywords have.
  - ④ built in function
  - ⑤ structure language
  - ⑥ pointers
  - ⑦ compilator
  - ⑧ Dynamic memory allocation

① Documentation section.

// Author:- Rakib

// Date- 18 Dec 2020

\* program for addition of two numbers \*

② Link section

#include <stdio.h>

printf

scanf

#include <conio.h>

getch()

③ Definition section

④ Global declaration section

{ int a;

3

main()

sub

{

int a;

3

void sum(

int a)

;

void sub( );

return 0;

⑤ Main section

- main()

{

Declaration

Executable → sub() function called

}

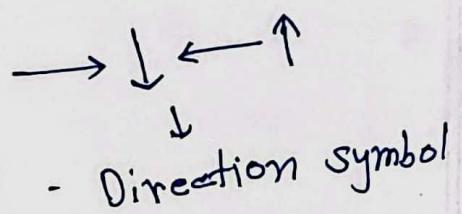
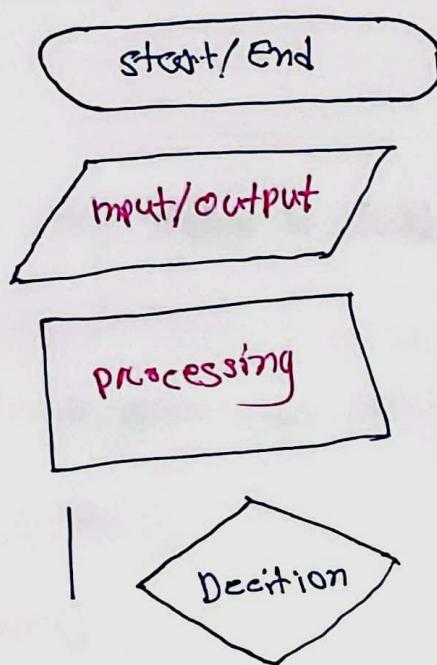
# Translator ① Compiler      #

② Interpreter

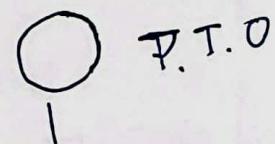
③ Assembler

# A programming flow chart

①



- Direction symbol



P.T.O  
connectors

# include <stdio.h>

#include <iostream>

standard input output header.

## Input - Output

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#include <stdio.h>

int main()

{

printf(" my name is Rakib Hossain");

return 0;

}

Shows : my name is Rakib Hossain

Print

Output statement

Output statement

Output

/\* comment (one-line comment) thing

// write a program that prints my name → (single line comment) thing

#include <stdio.h>

int main()

{

printf(" Rakib Hossain");

Comments

return 0;

}

/\*

\*/



Multiple Line comment

comment কি কীভাবে তা রাখা হবে না

## Escape Sequence

/\* Write a program that prints your name,

University name

Phone number

\*/

```
#include<stdio.h>
```

```
int main ()
```

```
{
```

```
printf ("my name is Rakib Hussain\n");
```

```
printf ("United International University\n");
```

```
printf ("01811754999\n");
```

```
return 0;
```

```
}
```

my name is Rakib Hussain

United International University

01811754999

→ output

(In) নাম লাই ফর্ম রে

tomorrow and always

- Q** Token refers to small built components in which the program is written.
- ① keywords → int, float, while
  - ② constant → 300, 100,
  - ③ identifiers → sum, main
  - ④ string → "ABC", "Hello"
  - ⑤ operators → +, -, \*, /,
  - ⑥ special symbol → {}, ()

# 11 write a program that prints anything integer number

# include <stdio.h>

```
int main ()
```

{

int num=10;

printf ("Number is %d", num);

return 0;

}

# include <stdio.h>

```
int main ()
```

{

float num1=10.5;

double num2=10.525254;

char ch='a';

printf ("num1 = %f", num1);

printf ("num2 = %lf", num2);

printf ("a ch = %c", ch);

return 0;

```
#/* write a program that takes an integer and NOT print that number */
*/
```

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
int num;
```

```
printf ("please enter an integer = ");
```

```
scanf ("%d", &num);
```

```
printf ("you have pressed = %d\n", num);
```

```
return 0;
```

```
#include <stdio.h>
```

```
int main()
```

```
{
```

```
int num1, num2;
```

```
printf ("Enter two integers : ");
```

```
scanf ("%d", &num1);
```

```
scanf ("%d", &num2);
```

```
printf ("numbers are %d %d\n", num1, num2);
```

```
return 0;
```

```
}
```

```
#include<stdio.h>
```

```
int main()
```

```
{
```

```
int i;
```

```
float f;
```

```
double d;
```

```
char c;
```

```
printf("size of int = %d\n", sizeof(i));
```

```
printf("size of float = %d\n", sizeof(f));
```

```
printf("size of double = %d\n", sizeof(d));
```

```
printf("size of char = %d\n", sizeof(c));
```

```
return 0;
```

```
}
```

### Answer

size of int = 4

size of float = 4

size of double = 8

size of char = 1

```
#include <stdio.h>
```

```
int main
```

```
{
```

```
int n;
```

```
printf ("Enter any ASCII value : ");
```

```
scanf ("%d", &n);
```

```
printf ("The ASCII character is %c", n);
```

```
return 0;
```

```
}
```

*(1) to ASCII, "n" is converted to ASCII*

*Decimal to ASCII value function returns character*

*CHARACTER A = 65 = A      32 = space*

*(2) words*

*is words*

```
#include <stdio.h>
```

```
int main ()
```

```
{
```

```
char ch;
```

```
printf ("Enter any character = ");
```

```
scanf ("%c", &ch);
```

```
printf ("The ASCII value is %d (%c, ch);
```

```
return 0;
```

```
}
```

$\therefore A = 65$

$B = 66$

newlines

*H = back to ASCII*

*T = tabs to ASCII*

*L = lines to ASCII*

#include <stdio.h>

int main ()

{

char lower;

printf ("Enter any lowercase letter: ");

scanf ("%c", &lower); // b = 98

printf ("The uppercase letter: %c", lower - 32); // D = 66

■

// uppercase to lower case

#include <stdio.h>

int main () {

int

char upper;

printf ("Enter the uppercase letter: ");

scanf ("%c", &upper);

printf ("The lowercase letter: %c", toupper + 32);

return 0;

}



// lower and uppercase letter.

{  
char lower, upper;

printf ("Enter any lowercase letter:");

scanf ("%c", &lower);

~~upper~~ (lower);

upper = toupper (lower);

printf ("Uppercase letter = %c", upper);

}



{ char lower, upper;

printf ("Enter any uppercase letter:");

scanf ("%c", &upper);

lower = tolower (upper);

printf ("lowercase letter = %c", lower);

}

\* " Decimal to Octal (using loop)"

```
{
    int a;
    printf("Decimal number = ");
    scanf("%d", &a);
    printf("Octal number = %o", a);
}
```

\* " Decimal to ~~hexa~~ hexadecimal."

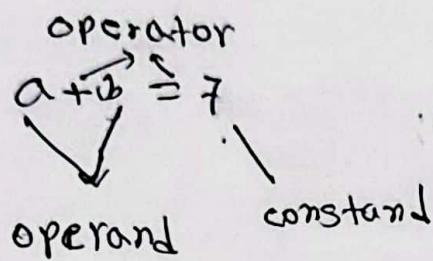
```
{
    int a;
    printf("Decimal number = ");
    scanf("%d", &a);
    printf("Hexa-decimal number = %x", a);
}
```

\* " Octal to Hexa-decimal."

```
{
    int a;
    printf("Octal number = ");
    scanf("%o", &a);
    printf("Hexadecimal number = %x", a);
}
```

# Operator

(+) ADDITION, (-) SUBTRACTION, (\*) MULTIPLICATION, (/) DIVISION



$(a+b)$  is called addition formula  
 $(a/b)$  is called division formula

#

statement for program

$$x = a - 2ab + b^2$$

$$x = a \times a - 2 \times a \times b + b \times b$$

$$x = Y$$

$$x = Y \text{ of } \text{for loop}$$

$$D = u/y$$

$$D = u/y ;$$

$$D = \sqrt{(b^2 - 4ac) / 2a}$$

$$D = \sqrt{b^2 - 4ac} / 2a$$

// write a program that takes two integers and display sum  $x = \text{scanf}(“%d %d”, &a, &b);$

{

```
int a, b, c;
```

for loop - output of lotsof \*

```
printf("Enter 1st number:");
```

```
scanf("%d", &a);
```

```
printf("Enter 2nd number:");
```

```
scanf("%d", &b);
```

$$c = a + b$$

```
printf("The sum is %d\n", c);
```

## \* // sum plus str- input

```
{
float avg;
int a, b, sum;
printf("Enter two numbers: ");
scanf("%d %d", &a, &b);
sum = a + b;
printf("The sum is = %d\n", sum);
avg = (float)sum/2; // type casting
printf("The average is = %.2f\n", avg);
}
```

## \* // remainder or mod total

```
{
int a, b, c;
printf("Enter two numbers: ");
scanf("%d %d", &a, &b);
c = a % b;
printf("Reminder = %d\n", c);
}
```

## \* # Triangle area

```
{
    float base, height; area;
    printf ("x.f so");
    printf ("Base = ");
    scanf ("%f", &base);
    printf ("height = ");
    scanf ("%f", &height);
    area = (float) 1/2 * base * height; // (float) 1/2
    printf ("Area = %f\n", area);
}
```

## \* # Average

```
{
    int a, b, c; sum;
    float avg;
    printf ("Enter 3 numbers ");
    scanf ("%d %d %d", &a, &b, &c);
    sum = a + b + c;
    avg = (float) sum / 3;
    printf ("Average = %f\n", avg);
}
```

\* यहाँ एक विभिन्न फ़ैसले

\*

$$\# \text{1} \text{ area} = \text{sart}(s * (s-a) * (s-b) * (s-c))$$

$$\# s = (a+b+c)/2$$

{

double a, b, c, s, area;

printf (" Enter 3 value ");

scanf ("%f %f %f", &a, &b, &c);

s = (a+b+c)/2;

area = sart(s\*(s-a)\*(s-b)\*(s-c))

printf (" Area of triangle = %f", area);

}

त्रिकोण का क्षेत्रफल

7.3.4.00ft

1 area of rectangle = length \* width;

{

float length, width; area;

@ printf (" Enter length and width = ");

scanf ("%f %f", &length, &width);

area = Length \* width;

printf (" Area of rectangle = %f", area);

}

## प्र० ३ अंकारा का क्षेत्रफल

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\* ॥ area =  $3.1416 * \text{radius} * \text{radius}$  )  $\pi r^2 = 3.1416 r^2$

$$\{ \quad \pi(2+3+0) = 2 \quad \}$$

float radius, area,

printf ("Enter radius = ");

scanf ("%f", &radius);

area =  $3.1416 * \text{radius} * \text{radius}$  ;

printf ("Area of circle = %f\n", area);

$$\} \quad ((2+2) * (2+2) * 3.1416) = 2$$

\* ॥  $^{\circ}\text{C}$  to  $^{\circ}\text{F}$  convert

$$\boxed{\frac{C}{5} = \frac{F-32}{9} = \frac{F-273}{5}}$$

$$F = (C * 1.8) + 32$$

float C, F

printf ("Enter  $^{\circ}\text{C}$  centigrade = ");

scanf ("%f", &C);

$$F = (C * 1.8) + 32; \quad (0.8 \text{ is coefficient of } ^{\circ}\text{F})$$

printf (" $^{\circ}\text{F}$  = %f\n", F);

$$\} \quad (0.8 \text{ is coefficient of } ^{\circ}\text{F})$$

(0.8 is coefficient of  $^{\circ}\text{F}$ )

// swap // swap

{

int num1 = 10;

int num2 = 5;

int temp;

temp = num1;

num1 = num2;

num2 = temp;

printf (" num1 = %d\n", num1); // (a+b) + c = a + b

printf (" num2 = %d\n", num2); // (b+c) + a = a + b

}

# again another way

{

int num1 = 10;

int num2 = 5;

num1 = num1 - num2; // 10 - 5 = 5

num2 = num1 + num2; // 5 + 5 = 10

num1 = num2 - num1; // 10 - 5 = 5

printf (" num1 = %d\n", num1);

printf (" num2 = %d\n", num2);

}

## # द्वितीय डिक्री समीकरण का निकाल

$$11 \quad n = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

you will have }

{

double, a, b, c, d, n1, n2;

(a) = number term

(b) = linear term

(c) = constant term

printf ("Enter a b c = ");

(a) = print

scanf ("%lf %lf %lf", &amp;a, &amp;b, &amp;c);

(a) = 1 null

d = sqrt (b\*b - (4\*a\*c)); /\* bX = answer \*/ thing

(b) = 1 null

n1 = (-b + d) / (2\*a); /\* bX = answer \*/ thing

printf ("n1 = %f\n", n1);

{

n2 = (-b - d) / (2\*a); /\* result mapped # \*/

printf ("n2 = %f\n", n2);

(a) = print

(b) = print

}

OR      (square - square = square)  
 OR      (square + square = square)  
 OR      (square - square = square)

((square, "bX = square") thing

((square, "bX + bX = square") thing

{

## 1) absolute value

{

int a = abs(-10);

printf("%d", a); // output is 10

}

## 2) square root

{

double a = sqrt(25);

$$\sqrt{25} = 5$$

printf("%f", a);

$$\sqrt{49} = 7$$

}

\*

again

{

int n;

printf("Enter any number = ");

scanf("%d", &amp;n);

double a = sqrt(n);

printf("The square root is %f", a);

}

## # to the power

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```
{  
    double result = pow(x,y);  
}  
  
int main()  
{  
    int n,y;  
    printf("Enter n = ");  
    scanf("%d",&n);  
    printf("Enter y = ");  
    scanf("%d",&y);  
    double result = pow(n,y);  
    printf("x^y = %f",result);  
}
```

## log of a number

```
{  
    double n,result = log(n);  
}  
  
int main()  
{  
    double n;  
    printf("log(n) = %f \n", log(n));  
}
```

more \*

{

# sin का नाम -

{

```
double n = 0.35;
```

```
double s = sin(n);
```

```
printf ("sin(x)f = %.lf\n", n, s);
```

}

# नाम- राप्ता- वा- रभारा (.) ग्र- एक # round

{

```
double n = 5.35;
```

Output = 5.00

```
double s = round(n);
```

```
printf ("round (x)f = %.lf\n", n, s);
```

}

# ceil

```
{ double n = 3.1, s = ceil(n);
```

Output  
 $\lceil 3.1 \rceil = 4$

```
printf ("ceil (x)f = %.lf\n", n, s);
```

}

```
{ double n = 3.1, s = floor(n);
```

Output  $\lfloor 3.1 \rfloor = 3$

```
printf ("floor (x)f = %.lf\n", n, s);
```

}

## # Assignment operator #

$=, \quad y = n + 5$

$+=, \quad n += 5; \quad n = n + 5;$

$-=, \quad n -= 5; \quad n = n - 5;$

$*=, \quad n *= 5; \quad n = n * 5;$

$/=, \quad n /= 5; \quad n = n / 5;$

$\% =, \quad n \% = 5; \quad n = n \% 5;$

{

int  $a = 5;$       output = 10      sub

~~$a = 5;$~~       //  $a = a + 5;$       output = 10      sub

printf ("%.d\n", a);      (0x1000) + 5 = 10      sub

}

{

~~#include~~

Prog. #

{      ((0)1000 = 2, 1.E = 11      sub ) }

int  $a = 5$       (2, 0, "Hello! \n a = (%d)\n", a)      sub

$a *= 5$

Output = 25

printf ("%.d\n", a);

    ((0)1000 = 2, 1.E = 11      sub )

    (2, 0, "Hello! \n a = (%d)\n", a)      sub

## # Unary operators

{

int a=6, s=-a; output = -6

printf("y.d\n", s);

}

#

{ ("=" shows ref) thing

{ ("&amp;, &amp;.r") two }

int a=6, s+=a; output = +6

printf("y.d\n", s); { ("&amp;," ref) thing }

}

} (a=1, s=6) ti

## # increment and decrement { ("++" or --) thing .

a++, a--

{

int n=10;

int y=n++;

printf("n=%d\n", n);

printf("y=%d\n", y);

}

output n= 10 { / 11  
y= 11 / 10