

Input - Output Functions & Statements

Formatted Input/Output Functions :-

scanf() Function :- scanf() function is used to read input values of variables using the standard input device (key board).

It has the following form:

scanf ("format string", &v1, &v2, ..., &vn);

where v1, v2, ..., vn are variables whose values are to be read from the keyboard.

printf() Function :-

to print/display values of variables using the standard output device (monitor). It has the following form:

printf ("format string", v1, v2, ..., vn);

where, v1, v2, ..., vn are variables whose values are to be displayed in the monitor.

example: 1. printf (" %f", s);
2. printf (" \n sum = %s.e.f", s);

Escape Sequences :-

control characters used to move the cursor and print characters such as ?, ", \ and so on.

Character Constant	Meaning
.\a	Audible bell
.\b	Backspace
.\f	Form feed
.\n	move to new line.
.\r	carriage return (Enter)
.\t	Horizontal tab.

✓ 1 ✓
" 1 ?
' 1'
" 1"
10

vertical tab.
print back slash.
print question mark.
" single quote.
" double "
Null character.

Assignment Statement :- An assignment statement is used to assign value to a variable. It has the following form:

Variable = Value or expression;
example: $m = 25$; , $y = x * x + 4 * x - 6$; etc.

Multiple Assignment Statement :- A multiple assignment statement is used to assign a value to more than one variable.

Q. Write a C program to find the sum and product of given two numbers.

Ans:→

```
/* program to find sum and product */  
#include <stdio.h>  
main()  
{  
    int a, b, sum, product;  
    scanf ("%d %d", &a, &b);  
    sum = a + b;  
    product = a * b;  
    printf ("%d %d", sum, product);  
}
```

Writing user-friendly programs:-

Users are recommended to write programs in such a way that the computer displays friendly messages to read values for variables. The results are also displayed with appropriate text. Programs written in this manner are called user-friendly programs.

A user-friendly program to find the sum and product of two numbers can be written as follows:

```
/* program to find sum and product */
# include <stdio.h>
# include <conio.h>
main()
{
    int a, b, sum, product;
    clrscr();
    printf ("\n Enter value to A: ");
    scanf ("%d", &a);
    printf ("\n Enter value to B: ");
    scanf ("%d", &b);
    sum = a + b;
    product = a * b;
    printf ("\n SUM = %d", sum);
    printf ("\n PRODUCT = %d", product);
    getch();
}
```

← Comment line

← Header files.

← main program

← Block begins.

← Variables going to be used are declared.

← Functions & statements as per the following flowchart.

← Main program block ends.

Q. Write a C program to find the area of a triangle using three sides.

Ans:- We know that, area of a triangle = $\frac{\sqrt{s(s-a)(s-b)(s-c)}}{2}$.
where, a, b, c are three sides of the triangle
and $s = \frac{a+b+c}{2}$.

```
/* program to find area of a triangle */  
#include <stdio.h>  
#include <math.h>  
#include <conio.h>  
main()  
{  
    float a, b, c, s, area;  
    clrscr();  
    printf ("\n Enter three sides : ");  
    scanf ("%f, %f, %f", &a, &b, &c);  
    s = (a+b+c)/2;  
    area = sqrt (s*(s-a)*(s-b)*(s-c));  
    printf ("\n Area of triangle = %6.2f sq. units",  
        area);  
    getch();  
}
```

Character Input/Output Functions :-

getchar() Function :- getchar() function is used to read one character at a time from the standard input device (keyboard). It has the following form:

```
ch = getchar();
```

putchar() Function:-

putchar() function is used to display one character at a time on the monitor screen. It has the following form:

```
putchar (ch);
```

getch() Function:-

getch() function is used to read a character from the keyboard and it does not expect the enter key press. It has the following form:

```
ch = getch();
```

putch() Function:-

putch() function is used to display a character on the monitor screen. It has the following form:

```
putch(ch);
```

getche() Function:-

getche() function is used to read a character from the keyboard without expecting the enter key press. However any key pressed by the user will be displayed on the monitor. It has the following form:

```
ch = getche();
```

Note:-

getche() is similar to getch() except that getch() displays the key pressed from the keyboard on the monitor screen. The 'e' at the end of getche() stands for echo.

gets() Function:-

gets() function is used to read a string of characters including white space. Note that a string containing white space cannot be read using scanf() with "%s" format specifier. It has the form:

```
gets(st);
```

puts() Function :- puts() function is used to display a character string on the monitor screen. It has the following form:

```
puts (str);
```

clrscr() Function :- clrscr() function is used to clear the monitor screen. It has the following form:

```
clrscr();
```

Q. Write a C program to display the ASCII value of a given character.

Ans: /* program to display ASCII value */

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

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

```
main()
```

```
{
```

```
char ch;
```

```
clrscr();
```

```
printf ("Enter a character : ");
```

```
ch = getch();
```

```
printf ("%c\n\n ASCII value of %c is %d", ch,  
ch);
```

```
puts ("\n Press any key to stop ...");
```

```
getch();
```

```
}
```