

Input / Output in C

# Data Types in C Language

The main five data types in C language are :

- int, long int : integer type
- float, double: any real number
- char: any single character

# Variable Declaration in C

- Variable is a name of some memory which can contain some value
- `int n;` //n is an integer type variable
- `int i=0;` //i is an integer having a value 0
- `float pi=3.14` //pi is a real number having value 3.14
- `float area, circumference;`// area, circumference are real numbers

# Input Statement

- The frequently used Input statement is scanf

**SYNTAX: scanf(“Format String”, Address of Variables);**

## **EXAMPLE 1**

- int a;
- scanf(“%d”, &a);
- integer data entered through keyboard will be stored in variable a
- %d is used for decimal integer
- &a gives the address of memory location assigned to a

## **EXAMPLE 2:**

- float x;
- scanf(“%f”, &x);
- real number entered through keyboard will be stored in variable x.

## **EXAMPLE 3:**

- int a, b, c;
- scanf(“%d %d %d”, &a, &b, &c);
- integer data entered through keyboard separated by space will be stored in variable a, b, c.

# Output Statement

- The frequently used Output Statement is printf.

**SYNTAX: printf(“Conversion String”, List of Variables);**

## **EXAMPLE 1:**

- int area=154;
- printf(“Area=%d”, area);
- By the execution of the statement it will display:
- Area=154
- %d for decimal integers

## EXAMPLE 2:

- `float sum=0.5;`
- `printf("Sum=%f", sum);`
- By the execution of the statement it will display:
- Sum=0.5
- %f is used for floating point numbers

### **EXAMPLE 3:**

- `float sum=0.500123;`
- `printf("Sum=%10.3f", sum);`
- By the execution of the statement it will display:
- `Sum=0.500`
- Three numbers after decimal point will be displayed



```
/*C Program To Find Area and Circumference of a Circle given Radius*/
```

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

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

```
void main()
```

```
{
```

```
    float radius, area, circumference; float pi=22/7.0;
```

```
    clrscr();
```

```
    printf("Enter Radius: ");
```

```
    scanf("%f", &radius);
```

```
    area = pi * radius * radius;
```

```
    circumference = 2 * pi * radius;
```

```
    printf("\nArea = ", area);
```

```
    printf("\nCircumference = ", circumference);
```

```
    getch();
```

```
}
```

- The first statement tells about the program it will not be compiled by the compiler
- The header file `stdio.h` is included to use `scanf` and `printf`.
- The header file `conio.h` is included to use `clrscr()` and `getch()`.
- `clrscr()` clears the output screen.
- `getch()` does not allow to close the output screen until a key is pressed.
- If `getch()` is not written the output screen will be automatically closed and output will not be seen

- `void main()` is our only one function used in program.
- A c program must contain at least one main function.
- Here we are writing `void` means this function does not return any thing.
- The first line inside the function declares variables.
- We are initializing `pi` to  $22/7.0$ ;
- `clrscr()` clear the output screen
- Next `printf` statement prompts to Enter Radius
- By the execution of `scanf` statement data entered will be stored in variable `radius`.
- Next two statements calculates area and circumference.
- The last two statements prints values of area and circumference.
- `getch ()` will not allow to close output screen until a key is pressed.

# Commands to remember

- **F2**: Save The source program
- **F3**: Open a Source Program
- **Alt F9**: Compile the Source Program
- **Ctrl F9**: Run the Program
- **File New** : Open a New Source Program
- **Window Close All** : Close All opened Source Programs

# *Sequence of steps to run the Program:*

1. Open the Turbo C++
2. Close All opened Source Programs (Window Close All)
3. Open a New Source Program (File New)
4. Write the C Program
5. Save the C program ( F2 and Your Program name ) extension should be .cpp
6. Compile the program (use Alt F9)
7. If it shows any syntax error try to correct the first few errors and goto step 5
8. If there is no errors run the program using Ctrl F9
9. Provide input check the output if you are getting wrong output, check and modify the program and goto step 5
10. If it provides correct result for all input then your program is correct

- The Input For this Program may be: 7
- So the Output of this Program must be:
- Area = 154
- Circumference = 44
- Since `\n` is used in printf conversion string both output will be displayed in new line