Session #002

What is a function?

A set of statements given some name to perform some predefined task.

How these functions get managed?

C manages the functions into special files known as header files (.h)

stdio.h Standard Input and Output Header file e.g. printf(), scanf() etc.

conio.h Console input and output header file

math.h Mathematical functions e.g. log(), cos(), pow() etc.

string.h String functions e.g. strupr(), strlwr(), strrev() etc.

ctype.h Character functions e.g. toupper(), tolower() etc.

How to use the functions from a header file?

Before using a function from a header file, we need to include that header file into our programs using any of two ways

#include <filename.h> for C/C++
#include "filename.h" for C/C++
#include <filename> for C++

How to see the purpose and usage of a function?

- Write the function name in Turbo C++ then right click on it
- Write a header file name then right click on it to see all the functions inside the header file

How a program works?

Data or Input → Operations → Output

To perform some operations we require some operators e.g. Arithmetic Operators

Arithmetic Operators

+	addition
-	subtraction
*	multiplication
/	division
%	remainder

Test Case 1

Write a C Program to show the product of 5 and 6.

What are different types of data that we can operate in C/C++?

1. Integer type data e.g. 45
2. Floating type data e.g. 4.5
3. String type data e.g. R-13/112, Raj Nagar
4. Character type data e.g. M for Male, F for Female

What are the keywords?

Special words defined a language for its own purpose

Integer -> **int**

Floating → **float**

Single Character → **char**

String or Character Array → **char []**

How to store the data inside the memory?

- We can define some name to the memory location to store and retrieve the data, called as ***memory variable***.
- To declare a variable we need data type and variable name.

```
int x=5,y=6;
```

- C/C++ also known as ***static type*** languages

How to print data on the monitor?

- To print some kind of data to themonitor we need to specify the format of data using special codes known as **format specifiers**
- All such codes start with % sign
  - %d for decimal number integer
  - %o for octal number integer
  - %x for hexa decimal number integer
  - %c for single character
  - %s for string
  - %f for floating data
- Use printf() function to print formatted data using format specifiers

Solution

```
#include<stdio.h>
main(){
        int x=5, y=6;
        int p=x*y;
        printf("Product of %d and %d is %d",x,y,p);
}
```

How C++ manages the functions?

- C++ provides some additional header files e.g. **iostream.h**
- C++ gives some name to the system devices
  - **cin** standard input (keyboard)
  - **cout** standard output (monitor)
- The iostream.h provides a ***container*** to hold all such names named as **std** ***namespace***
- Use special operator ***scope resolution operator*** (**::**) to access the devices provided inside the **std** namespace
- To insert something to the monitor use ***insertion operator*** (<<)

Test Case 2

Write a C++ Program to show the product of 5 and 6.

Note: Save the file with .cpp extension

Solution of C++

```
#include<iostream>
main(){
	int x=5, y=6;
	int p=x*y;
	std::cout << "Product of " << x << " and " << y << " is " << p;
}
```

Note: We can also import all the items inside the std namespace and use those items directly with using scope resolution operator (::)

Use **using namespace std** command

Test Case 3

Write a C++ Program to show the product of 5 and 6 using the namespace.

```
#include<iostream>
using namespace std;
main(){
	int x=5, y=6;
	int p=x*y;
	cout << "Product of " << x << " and " << y << " is " << p;
}
```