Programming Fundamental

Lab#13

Contents

Header files

iostream is the header file which contains all the functions of program like cout, cin etc. and #include tells the preprocessor to include these header file in the program

Using namespace std

Using the using keyword doesn't mean we add functionality, it means we say that we read things by default. If we say using namespace std; then we say: If we come across an object name that doesn't exist in our current namespace, check if there exists a namespace std in which it does exist, and use that object. Thus, it doesn't really add a function, it is the include <iostream> that "loads" cout, cin, endl and all the like.

Syntax

Basic syntax of C program:

1. Header file
2. Using namespace std
3. Main body

```
#include<iostream>
using namespace std;
int main()
{

    return 0;
}
```

Datatype

All variables use data-type during declaration to restrict the type of data to be stored. Therefore, we can say that data types are used to tell the variables the

type of data it can store.

Whenever a variable is defined in C++, the compiler allocates some memory for that variable based on the data-type with which it is declared. Every data type requires different amount of memory.

Primitive Data Types: These data types are built-in or predefined data types and can be used directly by the user to declare variables. example: int, char , float, bool etc. Primitive data types available in C++ are:

- Integer
- Character
- Boolean
- Floating Point
- Double Floating Point

Integer:

Keyword used for integer data types is **int**. Integers typically requires 4 bytes of memory space and ranges from -2147483648 to 2147483647.

Character:

Character data type is used for storing characters. Keyword used for character data type is **char**. Characters typically requires 1 byte of memory space and ranges from -128 to 127 or 0 to 255.

Boolean:

Boolean data type is used for storing boolean or logical values. A boolean variable can store either true or false. Keyword used for boolean data type is **bool**.

Floating Point:

Floating Point data type is used for storing single precision floating point values or decimal values. Keyword used for floating point data type is **float**. Float variables typically requires 4 byte of memory space.

Double Floating Point:

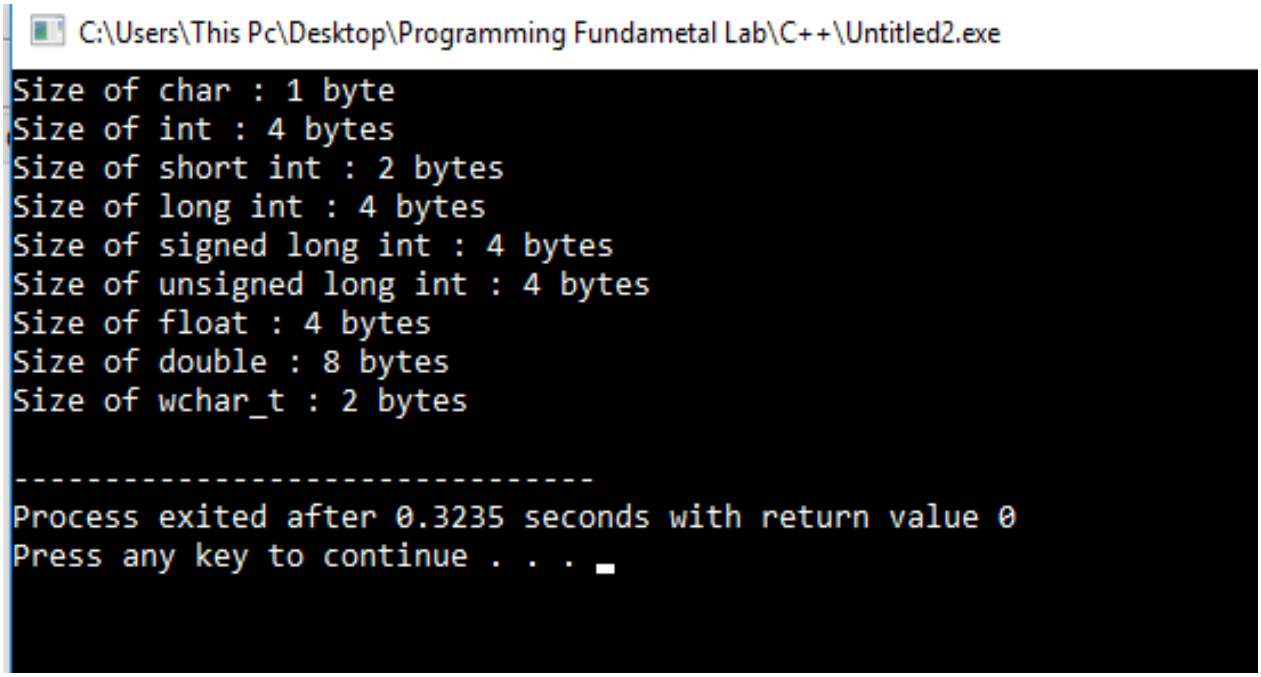
Double Floating Point data type is used for storing double precision floating point values or decimal values. Keyword used for double floating point data type is **double**. Double variables typically requires 8 byte of memory space.

Data Types	Sizes in byte	Sizes in bits
int	4 bytes	32bits
unsigned int	4 bytes	32 bits
float	4 bytes	32 bits
double	8 bytes	64 bits
long double	10 bytes	80 bits
char	1 byte	8 bits

```
// C++ program to sizes of data types
#include<iostream>
using namespace std;

int main()
{
   cout << "Size of char : " << sizeof(char)
     << " byte" << endl;
   cout << "Size of int : " << sizeof(int)
     << " bytes" << endl;
   cout << "Size of short int : " << sizeof(short int)
     << " bytes" << endl;
   cout << "Size of long int : " << sizeof(long int)
     << " bytes" << endl;
   cout << "Size of signed long int : " << sizeof(signed long int)
     << " bytes" << endl;
   cout << "Size of unsigned long int : " << sizeof(unsigned long int)
     << " bytes" << endl;
   cout << "Size of float : " << sizeof(float)
     << " bytes" <<endl;
   cout << "Size of double : " << sizeof(double)
     << " bytes" << endl;
   cout << "Size of wchar_t : " << sizeof(wchar_t)
     << " bytes" <<endl;

   return 0;
}
```



Variables

While declaring a variable you have to explicitly tell the data type with the variable.

```
int a, b;
float a, b;
double a, b;
float a, b;
bool a, b;
char a, b;
string s; (for string you have to include header file string.h)
```

```
// operating with variables

#include <iostream>
using namespace std;

int main ()
{
  // declaring variables:
  int a, b;
  int result;

  // assigning value:
  a = 5;
  b = 2;

  // printing :
```

```
  cout << a<<b;

  // terminate the program:
  return 0;
}
```

Print /display

cout command is use to print the message on console screen.

```
// print out the result:
  cout << result;
```