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**Objective:** To become familiar with integer and float data types and getting them as input

In previous lab, we studied how to display a message to user. In other word, we were showing some information to user using cout. In this lab, we will be getting some information such as numbers from user of our program.

We will get required information from user and will store them in variable of required datatype. Before going into details of inputting numbers from user, let’s discuss a few datatypes.

1. **Integers**

Integer is the datatype that holds non-fractional numbers. For example -8, -6, 0, 1, 2, 4 etc.

As we know that before getting information from user, we need to define variable of required datatype, therefore, in order to define variable of integer datatype, we have to write

int var\_int;

This will define an integer variable with the name of var\_int. You can create variables with any name. The variable var\_int occupy memory space of 4 byte since integer datatype require 4 byte of memory space. In order to confirm the space requirement for integer, we write

cout<<"Size of Integer data types is=" <<sizeof(int)<<" Bytes "<<endl;

Similarly, sizes of some other datatypes that we will be studying in next classes can be determined using program below

#include<iostream>

#include<conio.h>

using namev,space std;

void main(){

cout<<"Size of Integer data types is=" <<sizeof(int)<<" Bytes "<<endl;

cout<<"Size of Float data types is=" <<sizeof(float)<<" Bytes "<<endl;

cout<<"Size of Double data types is= "<<sizeof(double)<<" Bytes "<<endl;

cout<<"Size of char data types is="<<sizeof(char)<<" Bytes "<<endl;

cout<<"Size of Boolean data types is="<<sizeof(bool)<<" Bytes "<<endl;

cout<<"Size of String data types is="<<sizeof(string)<<" Bytes "<<endl;

getch();

}

1. **Getting input from user**

In order to get input from user, we use the object of cin. It uses same header file and library as of cout. Remember, we need to store information obtained from user into a variable, therefore, syntax of cin is

cin>>var\_name;

Since we have defined variable var\_int of datatype integer, let’s use the same variable.

cin>>var\_int;

But it’s better to display some message in order to give user a clue that what kind of information we want. For example,

cout<<”Enter any number”<<endl;

cin>>var\_int;

In order to let the user know what he entered, we can display the value of that variable using cout object since this time we are not getting values, rather we are displaying it.

cout<<”The value that you entered is “<<var\_int<<endl;

All the above instructions can be combined into a single example using

void main()

{

int var\_int;

cout<<”Enter any number”<<endl;

cin>>var\_int;

cout<<”The value that you entered is “<<var\_int<<endl;

getch();

}

Now let’s try to create multiple variables and perform some operations on them.

1. **Getting values of multiple variables**

We can define multiple variables and perform different operations on them. We can define multiple variables using command

datatype var1, var2, …

Since we are using integer datatype, we have to write

int var1, var2;

The above syntax will define two variables and assign them memory storage of 4 byte each.

In order to input their values, we have to write

cout<<”Please enter any two numbers”<<endl;

cin>>var1>>var2;

cout<<”The two numbers that you entered are ”<<var1<<” and ”<<var2<<endl;

1. **Performing different operations on variables**

We can perform different arithmetic operations such as addition, multiplication, division, subtraction and modulus on variables as well. Therefore, the above program can be modified using

#include <iostream>

#include<conio.h>

using namespace std;

void main()

{

int num1, num2;

cout<<"Enter two numbers"<<endl;

cin>>num1>>num2;

cout<<num1+num2<<endl;

cout<<num1-num2<<endl;

cout<<num1\*num2<<endl;

cout<<num1/num2<<endl;

cout<<num1%num2<<endl;

getch();

}

We can perform an operation on two or more than two numbers and store them in another variable. For example,

#include <iostream>

#include<conio.h>

using namespace std;

void main()

{

int num1, num2, sum;

cout<<"Enter two numbers"<<endl;

cin>>num1>>num2;

sum = num1 + num2;

cout<<”sum of ”<<num1<<” and ”<<num2<<” is “<<sum<<endl;

getch();

}

1. **Problem with integers**

Suppose we have the following source code

void main()

{

int var\_int;

cout<<”Enter any number”<<endl;

cin>>var\_int;

cout<<”The value that you entered is “<<var\_int<<endl;

getch();

}

Let’s say user enter 3.1416 and try to store it in var\_int, he won’t be able to do so.

Try and start playing with it.

For that, we have some other datatypes such as float. Float is the datatype that holds both fractional and non-fractional numbers. You can store any number such as 2, 2.12, 3, 3.14 and so on. In order to define a float variable, we write

float var\_name;

All the operations for float are same as defined earlier.

**2.1 Write a program in C++, which takes radius from the user and calculate the area of sphere**

Area=4\*p i\*

(Hint p = 3.1416

Area = 4 \* 3.1416 \* r \* r)

Solution:-

Source code:

#include<iostream>

#include<conio.h>

using namespace std;

int main()

{

float Area , pi=3.1416 ,radius;

cout<<"Enter the Radius "<<endl;

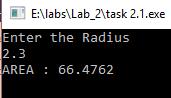
cin>>radius;

Area=4\*pi\*radius\*radius;

cout<<"AREA : "<<Area<<endl;

getch();

}



**2.2 Write a program in C++that calculates zakat on any amount. The formula for zakat is**

**Zakat = amount \*0.025;**

**Source code**

**#include<iostream>**

**#include<conio.h>**

**using namespace std;**

**int main(){**

**float zakat,amount;**

**cout<<"Enter the amount "<<endl;**

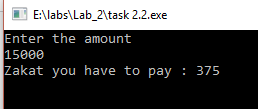
**cin>>amount;**

**zakat=amount\*0.025;**

**cout<<"Zakat you have to pay : "<<zakat<<endl;**

**getch();**

**}**



Amount should be integer variable whereas zakat should be float.