

G. H. Raisoni College Of Engineering And Management, Wagholi Pune  
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Subject Name /Code	<u>Object Oriented Programming / UTIL201/UITP201</u>		
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Assignment No. 1

# Aim: Write a program to compute the area of triangle and circle by overloading the area() function.

# Theory :-

# What is C++?

- C++ is an object oriented programming (OOP) language with cross platform compatibility used to create high-performance applications.
- C++ is a superset of the C language developed by Bjarne Stroustrup as extension of C language.
- C++ gives programmers a high level of control over system resources and memory.
- It was updated 3 major times in 2011, 2014, and 2017, to C++11, C++14, C++17.

# Why use C++?

- C++ is used in operating system, graphical user interfaces and embedded system.
- C++ is a OOP language used to give a clear structure to programs and allows code to be reused, lowering development costs.
- It is portable and used to develop applications that can be adapted to multiple platforms.



- It is used to develop new Applications, Games, Animation, web Browser, Database Access, Media Access, compilers, operating system, Scanning-like camera scanners.

## # C++ Get Started

- The 1<sup>st</sup> Step before starting learning program in C++ is to Get a C++ Compiler.

- A compiler, like GCC is the GNU compiler
  - It is a collection of a bunch of different compilers created by GNU.
  - Clang,
  - Visual C++ 2017 community.

and a text editor like Notepad if needed.

## # C++ Instal IDE

An IDE (Integrated development Environment) is used to edit and compile the code.

Some popular IDE's includes  $\Rightarrow$  Code::Blocks, Eclipse, and Visual Studio.

The download link is

Code::Blocks  $\Rightarrow$  <http://www.codeblocks.org/downloads/26>

Gcc  $\rightarrow$  <https://gcc.gnu.org/>

Clang  $\rightarrow$  <http://clang.llvm.org/get-started.html>

Visual C++ 2017 community -

<https://www.visualstudio.com/us/cpp/plus/>



## # Write a C++ program

Step 1:-

Open codeblocks and go to File > New > Empty file.

Step 2:- Save the file as myfirstprogram.cpp  
(File > Save file as)

8

Step 3:-

myfirstprogram.cpp

```

L1 #include <iostream>
L2 using namespace std;
L3 int main()
L4 {
L5     cout << "Hello world!";
L6     return 0;
L7 }
    
```

# Line 1 > #include <iostream>

The hash sign (#) are directive lines being read and interpreted by processor.

iostream → used I/O is a Header file used to perform Standard input and output operations.

Line 2 > using namespace std; → Standard library names for objects and console output.

Line 3 > int main() → The main function is declared by the return type of int.main().

Line 5 > Standard console output (cout)  
<< → instruction operator

Statement ends with a semicolon (;)

return(0) → used to return the '0' to main function  
} → actually end the main function.

## # C++ Structures

Structures is a collection of variables of different data types under a single name.

Ex: you want to store some information about a person: his/her name, citizenship number and salary. we can easily create different variables name, CitNo, Salary to store these information separately.

## # declaration of Structures

Ex. Syntax: struct <sup>name</sup> ~~name~~;

↓  
struct keyword is used  
defines a structure type

↑  
Identifier (name of the structure)

Inside the curly braces, we can declare one or more members.

Ex

```
struct Person  
{  
    char name[50];  
    int age;  
    float Salary;  
};
```

Here a Structure person is defined which has three members: name, age, Salary



Features	Structure	class
ref <sup>n</sup> →	A Structure is a grouping of variables of various data types referenced by the same name	In C++ a class is defined as a collection of related variables and functions contained within a single structure.
Basic	If no access specified, all members are set to public	If no access specifier is defined, all members are set to private.
decl <sup>n</sup> →	<pre> struct Structure_Name {     type struct_member 1;     type struct_member 2;     ⋮     type struct_member N; }; </pre>	<pre> class class_name {     data member;     member function; }; </pre>
usage	It is used for smaller amount of data	It is used for a huge amount of data
instance	Structure variable	object
inheritance	Not support	Supports
memory allocated	allocated at stack	allocated on heap
Purpose	grouping of data	Data abstraction and further inheritance
constructor	only parameterized constructor.	all types of constructors and destructors

```
/**write a program to compute the area of triangle and circle by overloading the area function**/
```

```
#include<iostream>
```

```
using namespace std;
```

```
float area(float r)
```

```
{
```

```
    return(3.14 * r * r);
```

```
}
```

```
float area(float b,float h)
```

```
{
```

```
    return(0.5 * b * h);
```

```
}
```

```
int main()
```

```
{
```

```
    float b,h,r;
```

```
    int ch;
```

```
    do
```

```
    {
```

```
        cout<<"SCOB77_Pratham pittu\n\n";
```

```
        cout<<"write a program to compute the area of triangle and circle by overloading the area function";
```

```
        cout<<"\n\n *****select from list***** \n";
```

```
        cout<<"\n 1. Area of Circle";
```

```
        cout<<"\n 2. Area of Triangle";
```

```
        cout<<"\n 3. Exit";
```

```

cout<<"\n\n Enter Your Choice : ";
cin>>ch;
switch(ch)
{
    case 1:
    {
        cout<<"\n Enter the Radius of Circle : ";
        cin>>r;
        cout<<"\n Area of Circle : "<<area(r);
        cout<<"\n \n ";
        cout<<"-----\n";
        break;
    }
    case 2:
    {
        cout<<"\n Enter the Base & Height of Triangle : ";
        cin>>b>>h;
        cout<<"\n Area of Triangle : "<<area(b,h);
        cout<<"\n \n ";
        cout<<"-----\n";
        break;
    }
    case 3:
        exit(0);
    default:
        cout<<"\n Invalid Choice... ";
}
}while(ch!=3);
return 0;
}

```



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write a program to compute the area of triangle and circle by overloading the area function

\*\*\*\*\*select from list\*\*\*\*\*

1. Area of Circle
2. Area of Triangle
3. Exit

Enter Your Choice : 1

Enter the Radius of Circle : 4

Area of Circle : 50.24

-----  
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write a program to compute the area of triangle and circle by overloading the area function

\*\*\*\*\*select from list\*\*\*\*\*

1. Area of Circle
2. Area of Triangle
3. Exit

Enter Your Choice : 2

Enter the Base & Height of Triangle : 2 4

Area of Triangle : 4

-----  
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write a program to compute the area of triangle and circle by overloading the area function

\*\*\*\*\*select from list\*\*\*\*\*

1. Area of Circle
2. Area of Triangle
3. Exit

Enter Your Choice : 3

Process returned 0 (0x0) execution time : 12.705 s

Press any key to continue.