

LAB: 4

SAMPLE PROGRAM

(*)

A sample program finds the volume of different shapes by using the concept of function overloading.

Program:

```
#include<iostream>
using namespace std;
class shape{
public:
int volume(int);
double volume(double,int);
long volume(long,int,int);

};
int shape::volume(int r){ return 4*3.14*r*r*r/3;}
double shape::volume(double r,int h){return 3.14*r*r*h;}
long shape::volume(long l,int b,int h){return l*b*h;}

int main() {
shape sphere,cylinder,cube;
cout<<"volume of sphere is "<<sphere.volume(10)<<endl;
cout<<"volume if cylinder is "<<cylinder.volume(2.5,8)<<endl;
cout<<"volume of cube is "<<sphere.volume(100L,75,15)<<endl;
return 0;
}
```

output:

```
kashyap@kash:~/cpp/LAB_4
kashyap@kash:~/cpp/LAB_4 60x32
kashyap@kash ~/cpp ➔ cd LAB_4
kashyap@kash ~/cpp/LAB_4 ➔ ls
a.out  exe1.cpp  modification1  modification1.cpp  sample_prog
og  sample_prog.cpp  test.cpp
kashyap@kash ~/cpp/LAB_4 ➔ g++ sample_prog.cpp
kashyap@kash ~/cpp/LAB_4 ➔ ./a.out
volume of sphere is 4186
volume if cylinder is 157
volume of cube is 112500
kashyap@kash ~/cpp/LAB_4 ➔
```

modification:

Modify the above program to include a function Area which can calculate the surface areas of a sphere, a cylinder or a cube using the concept of function overloading.

Program:

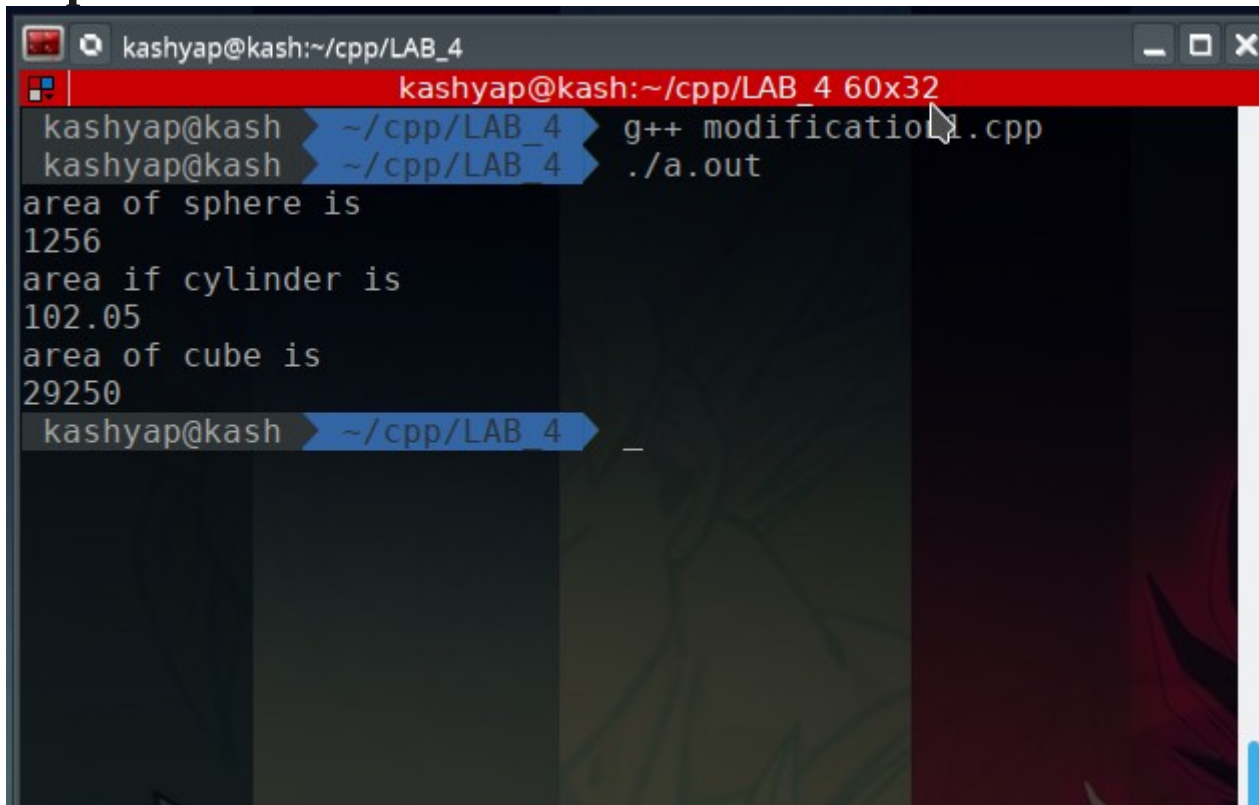
```
#include<iostream>
using namespace std;

class shape{
public:
int area(int);
double area(double,int);
long area(long,int,int);
};

int shape::area(int r){ return 4*3.14*r*r;}
double shape::area(double r,int h){return (3.14*r*h+2*3.14*r*r);}
long shape::area(long l,int b,int h){return (2*l*b+2*b*b+2*h*l);}

int main(){
shape sphere,cylinder,cube;
cout<<"area of sphere is\n"<<sphere.area(10)<<endl;
cout<<"area if cylinder is\n"<<cylinder.area(2.5,8)<<endl;
cout<<"area of cube is\n"<<sphere.area(100L,75,15)<<endl;
return 0;
}
```

output:



```
kashyap@kash:~/cpp/LAB_4
kashyap@kash:~/cpp/LAB_4$ g++ modification1.cpp
kashyap@kash:~/cpp/LAB_4$ ./a.out
area of sphere is
1256
area if cylinder is
102.05
area of cube is
29250
kashyap@kash:~/cpp/LAB_4$
```

The image shows a terminal window with a dark background. The title bar at the top reads 'kashyap@kash:~/cpp/LAB_4'. The terminal content shows the compilation of 'modification1.cpp' using 'g++' and the execution of the resulting binary 'a.out'. The program outputs three lines of text: 'area of sphere is' followed by '1256', 'area if cylinder is' followed by '102.05', and 'area of cube is' followed by '29250'. The prompt 'kashyap@kash:~/cpp/LAB_4\$' is visible at the bottom.