**/\* Program No. :**

**Aim : WAP to show the concept of function overloading in virtual functions using a shape class (abstract) and deriving the class in rectangle, square and triangle classes and using the overloaded virtual function.**

**\*/**

#include<iostream.h>

#include<conio.h>

#include<stdlib.h>

#include<math.h>

class shape

{

public:

float a,b,c;

virtual float area(float)=0;

virtual float area(float,float)=0;

virtual float area(float,float,float)=0;

virtual void display()=0;

};

class square:public shape

{

public:

square(float x)

{

a=x;

}

float area(float x)

{

return(x\*x);

}

void display()

{

cout<<"\n\tArea of square is "<<area(a)<<" sq. m";

}

float area(float,float)

{

return(0);

}

float area(float,float,float)

{

return(0);

}

};

class rectangle:public shape

{

public:

rectangle(float x,float y)

{

a=x;

b=y;

}

float area(float x,float y)

{

return(x\*y);

}

void display()

{

cout<<"\n\tArea of rectangle is "<<area(a,b)<<" sq. m";

}

float area(float)

{

return(0);

}

float area(float,float,float)

{

return(0);

}

};

class triangle:public shape

{

public:

triangle(float x,float y,float z)

{

a=x;

b=y;

c=z;

}

float area(float x,float y,float z)

{

float temp;

temp=(x+y+z)/2;

return(sqrt(temp\*(temp-x)\*(temp-y)\*(temp-z)));

}

void display()

{

cout<<"\n\tArea of the triangle is : "<<area(a,b,c)<<" sq. m";

}

float area(float)

{

return(0);

}

float area(float,float)

{

return(0);

}

};

void main()

{

int choice1;

float a,b,c;

char choice2;

do

{

clrscr();

cout<<"\n\n\n\t\t\tMENU"

<<"\n\n\t1. Area of square"

<<"\n\n\t2. Area of rectangle"

<<"\n\n\t3. Area of triangle"

<<"\n\n\t4. Exit";

cout<<"\n\n\t\tEnter your choice (1-4) : ";

cin>>choice1;

switch(choice1)

{

case 1:cout<<"\n\n\n\tEnter the side of square (in m) : ";

cin>>a;

square sq(a);

sq.display();

break;

case 2:cout<<"\n\n\n\tEnter the length of rectangle (in m) : ";

cin>>a;

cout<<"\n\tEnter the breadth of rectangle (in m) : ";

cin>>b;

rectangle rec(a,b);

rec.display();

break;

case 3:cout<<"\n\n\n\tEnter the side 1 of the triangle (in m) : ";

cin>>a;

cout<<"\n\tEnter the side 2 of the triangle (in m) : ";

cin>>b;

cout<<"\n\tEnter the side 3 of the triangle (in m) : ";

cin>>c;

triangle tri(a,b,c);

tri.display();

break;

case 4:exit(0);

default:cout<<"\n\n\n\tInvalid Choice";

}

cout<<"\n\n\tWant to continue (y/n) : ";

cin>>choice2;

}while(choice2=='y'||choice2=='Y');

getch();

}

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**Name : Rohit Aggarwal**

**Roll No. : 7CS-097**

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