Experiment 3 : Write a program to find area of circle, square, triangle and rectangle and perform equivalence class testing.

Solution:

```
#include<iostream>
using namespace std;
int main()
{
	int ch;
	char c;
	float b, h, a;
	start:
	cout<<"\n1 Triangle";
	cout<<"\n2 Square";
	cout<<"\n3 Rectangle";
	cout<<"\n4 Circle";
	cout<<"\n5 Exit\n";
	cout<<"Enter your choice";
	cin>>ch;

	switch(ch)
	{
		case 1 :
		b:
		 cout<<"\nEnter the base of the triangle (1-200)";
		cin>>b;
		if ((b<=0)||(b>200))
		{
			cout<<"\nInvalid entry for base \n";
			goto b;
		}
		h:
		cout<<"\nEnter the height of the triangle (1-200)";
		cin>>h;
		if ((h<=0)||(h>200))
		{
			cout<<"\nInvalid height\n";
			goto h;
		}
		a= 0.5*b*h;
		cout<<"\nThe area is "<< a;
		cout<<"\nWant to enter more?(y/n) ";
```

```
cin>>c;
if((c=='y')||(c=='Y'))
goto start;
break;

case 2 :
s:
cout<<"\nEnter the side of the square (1-200)";
cin>>b;
if ((b<=0)||(b>200))
{
        cout<<"\nInvalid entry for base \n";
        goto s;
}
a= b*b;
cout<<"\nThe area is "<< a;
cout<<"\nWant to enter more?(y/n) ";
cin>>c;
if((c=='y')||(c=='Y'))
goto start;
break;

case 3:
d:
cout<<"\nEnter the base of the triangle (1-200)" ;
cin>>b;
if((b<=0)||(b>200))
{
        cout<<"\nInvalid entry for base \n";
        goto d;
}
p:
cout<<"\nEnter the height of the triangle (1-200) ";
cin>>h;
if ((h<=0)||(h>200))
{
        cout<<"\nInvalid height\n";
        goto p;
}
a=b*h;
cout<<"\nThe area is "<< a;
cout<<"\nWant to enter more?(y/n) ";
```

```
                cin>>c;
                if((c=='y')||(c=='Y'))
                goto start;
                break;

                case 4:
                t:
                cout<<"\nEnter the radius of the circle ";
                cin>>b;
                if ((b<=0)||(b>200))
                {
                        cout<<"\nInvalid entry for base \n";
                        goto t;
                }
                a= 3.14*b*b;
                cout<<"\nThe area is "<< a;
                cout<<"\nWant to enter more?(y/n)";
                cin>>c;
                if ((c=='y')||(c=='Y'))
                goto start;
                break;

                case 5:
                exit(0);
                break;
                default :
                cout<<"\n WRONG CHOICE";
                goto start;
        }
return 0;
}
```

Output :

Area Of Triangle:

```
/tmp/96z3RK5Ofa.o
1 Triangle
2 Square
3 Rectangle
4 Circle
5 Exit
Enter your choice1
Enter the base of the triangle (1-200) 1
1

Enter the height of the triangle (1-200) 100
100

The area is 50
Want to enter more?(y/n)
```

Test case	H	B	Expected Output
1	0	100	Invalid Output
2	100	100	5000
3	201	100	Invalid Output
4	100	0	Invalid Output
5	100	100	5000
6	100	201	Invalid Output

Area of Square :

```
1 Triangle
2 Square
3 Rectangle
4 Circle
5 Exit
Enter your choice 2
2

Enter the side of the square (1-200) 0
0

Invalid entry for base

Enter the side of the square (1-200) 100
100

The area is 10000
Want to enter more?(y/n) y
1 Triangle
2 Square
3 Rectangle
4 Circle
5 Exit
Enter your choice 2
2

Enter the side of the square (1-200) 201
201

Invalid entry for base

Enter the side of the square (1-200)
```

Test Case	S	Expected Output
1.	0	Invalid Output
2	100	10000
3	201	Invalid Output

Area of Rectangle :

```
1 Triangle
2 Square
3 Rectangle
4 Circle
5 Exit
Enter your choice 3
3

Enter the base of the triangle (1-200) 0
0

Invalid entry for base

Enter the base of the triangle (1-200) 201
201

Invalid entry for base

Enter the base of the triangle (1-200) 100
100

Enter the height of the triangle (1-200) 100
The area is 10000
Want to enter more?(y/n)
```

Test Case	L	B	Expected Output
1	0	100	Invalid input
2.	100	100	10000
3.	201	100	Invalid input
4.	100	0	Invalid input
5.	100	100	10000
6.	100	201	Invalid input

Area of Circle :

```
1 Triangle
2 Square
3 Rectangle
4 Circle
5 Exit
Enter your choice 4
4

Enter the radius of the circle 0
Invalid entry for base

Enter the radius of the circle 201
Invalid entry for base

Enter the radius of the circle 100
The area is 31400
Want to enter more?(y/n)
```

Test Case	Radius	Generated Output
1.	0	Invalid Output
2.	100	31400
3.	201	Invalid Output