Project 2 Test Cases

Polynomial Order Test Cases

Test Case	Input	Output	expected Output	Messages	Pass?
1 (circle)	1, “abc”, -100, 12, n	452.39	area: pi * 144 = 452.39	“invalid input…” “number must be above 0”	yes
2 (rectangle)	2, “qwerty”, 5.5, -4, 4, y, 10	22	area: 5.5 * 4 = 22	“invalid input…” “number must be above 0”	yes
3 (square)	“abc”, 12, “haha”, n	144	area: 12*12 = 144	“invalid input…” “invalid input.”	yes
4 (triangle)	4, 4.4, 7.7, y, 10	16.94	area: (4.4 * 7.7) / 2 = 16.94		yes
5 (sphere)	5, -4.23, “lol”, 5, n	523.6	area: (4/3)pi (5^3) = 523.59	“number must be above 0” “invalid input”	yes
6 (cube, cone, cylinder)	6, 10, 7, 3.7, 7, y, 8, 9, 14, n	1000, 100.35, 3562.57	area: (10^3) = 1000, pi * (3.7^2) * (7/3) = 100.35, pi * (9^2) * 14 = 3562.56		yes
7 (torus)	9, 3, 6, 6, 3, n	1065.92	area: (pi (3^2)) * (2 * pi * 6) = 1065.92	“minor radius can’t be	yes

				bigger than or equal to major radius. try again”	

Project 1 Test Cases:

Test Case 1:

```
********* SHAPE MAKER *********
Select a shape:
1. Make a Circle
2. Make a Rectangle
3. Make a Square
4. Make a Triangle
5. Make a Sphere
6. Make a Cube
7. Make a Cone
8. Make a Cylinder
9. Make a Torus
10. Exit the program

Enter your selection: 1

enter the radius of the circle: abc
invalid input (numbers only). enter the radius of the circle: -100
number must be above 0. enter the radius of the circle: 12
Area of Circle: 452.39

Do you want to continue? Y/N
n
Thank you for using the program. Today is Aug 29 at 21:55 PM
```

Test Case 2:

```
********* SHAPE MAKER *********
Select a shape:
1. Make a Circle
2. Make a Rectangle
3. Make a Square
4. Make a Triangle
5. Make a Sphere
6. Make a Cube
7. Make a Cone
8. Make a Cylinder
9. Make a Torus
10. Exit the program

Enter your selection: 2

enter the length of the rectangle: qwerty
invalid input (numbers only). enter the length of the rectangle: 5.5
enter the width of the rectangle: -4
number must be above 0. enter the width of the rectangle: 4
Area of Rectangle: 22.00

Do you want to continue? Y/N
y

********* SHAPE MAKER *********
Select a shape:
1. Make a Circle
2. Make a Rectangle
3. Make a Square
4. Make a Triangle
5. Make a Sphere
6. Make a Cube
7. Make a Cone
8. Make a Cylinder
9. Make a Torus
10. Exit the program

Enter your selection: 10
Thank you for using the program. Today is Aug 29 at 22:07 PM
```

Test Case 3:

```
********** SHAPE MAKER **********
Select a shape:
1. Make a Circle
2. Make a Rectangle
3. Make a Square
4. Make a Triangle
5. Make a Sphere
6. Make a Cube
7. Make a Cone
8. Make a Cylinder
9. Make a Torus
10. Exit the program

Enter your selection: 4

enter the height of the triangle: 4.2
enter the width of the triangle: 7.7
Area of Triangle: 16.17

Do you want to continue? Y/N
y

********** SHAPE MAKER **********
Select a shape:
1. Make a Circle
2. Make a Rectangle
3. Make a Square
4. Make a Triangle
5. Make a Sphere
6. Make a Cube
7. Make a Cone
8. Make a Cylinder
9. Make a Torus
10. Exit the program

Enter your selection: 10
Thank you for using the program. Today is Aug 29 at 22:06 PM
```

Test Case 4:

```
********** SHAPE MAKER **********
Select a shape:
1. Make a Circle
2. Make a Rectangle
3. Make a Square
4. Make a Triangle
5. Make a Sphere
6. Make a Cube
7. Make a Cone
8. Make a Cylinder
9. Make a Torus
10. Exit the program

Enter your selection: 4

enter the height of the triangle: 4.4
enter the base of the triangle: 7.7
Area of Triangle: 16.94

Do you want to continue? Y/N
```

Test Case 5:

```
********* SHAPE MAKER *********
Select a shape:
1. Make a Circle
2. Make a Rectangle
3. Make a Square
4. Make a Triangle
5. Make a Sphere
6. Make a Cube
7. Make a Cone
8. Make a Cylinder
9. Make a Torus
10. Exit the program

Enter your selection: 5

enter the radius of the sphere: -4.23
number must be above 0. enter the radius of the sphere: lol
invalid input (numbers only). enter the radius of the sphere: 5
Volume of Sphere: 523.60

Do you want to continue? Y/N
n
Thank you for using the program. Today is Aug 29 at 22:24 PM
```

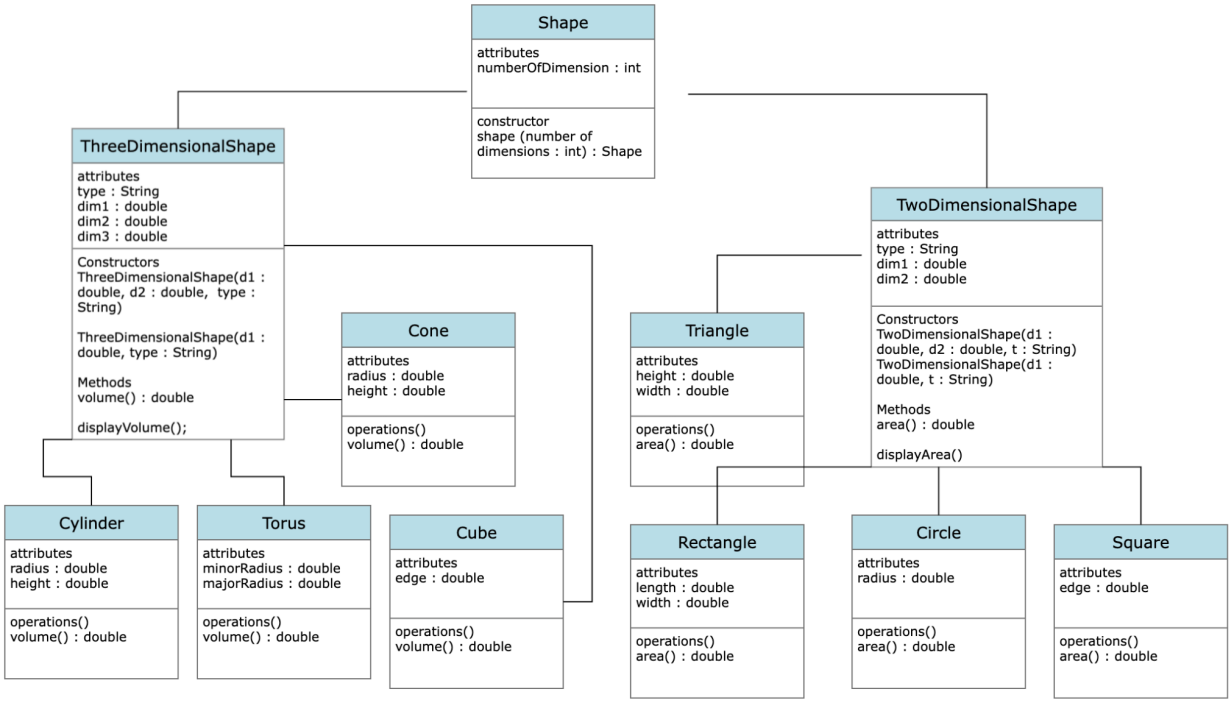
Test Case 6:

```
********* SHAPE MAKER *********
Select a shape:
1. Make a Circle
2. Make a Rectangle
3. Make a Square
4. Make a Triangle
5. Make a Sphere
6. Make a Cube
7. Make a Cone
8. Make a Cylinder
9. Make a Torus
10. Exit the program

Enter your selection: 6

enter the edge length of the cube: 10
Volume of Cube: 1000.00

Do you want to continue? Y/N
y

********* SHAPE MAKER *********
Select a shape:
1. Make a Circle
2. Make a Rectangle
3. Make a Square
4. Make a Triangle
5. Make a Sphere
6. Make a Cube
7. Make a Cone
8. Make a Cylinder
9. Make a Torus
10. Exit the program

Enter your selection: 7

enter the radius of the cone: 3.7
enter the height of the cone: 7
Volume of Cone: 100.35

Do you want to continue? Y/N
y

********* SHAPE MAKER *********
Select a shape:
1. Make a Circle
2. Make a Rectangle
3. Make a Square
4. Make a Triangle
5. Make a Sphere
6. Make a Cube
7. Make a Cone
8. Make a Cylinder
9. Make a Torus
10. Exit the program

Enter your selection: 8

enter the radius of the cylinder: 9
enter the height of the cylinder: 14
Volume of Cylinder: 3562.57

Do you want to continue? Y/N
n
Thank you for using the program. Today is Aug 29 at 22:23 PM
```

Test Case 7:

```
********* SHAPE MAKER *********
Select a shape:
1. Make a Circle
2. Make a Rectangle
3. Make a Square
4. Make a Triangle
5. Make a Sphere
6. Make a Cube
7. Make a Cone
8. Make a Cylinder
9. Make a Torus
10. Exit the program

Enter your selection: 9

enter the major radius of the torus: 3
enter the minor radius of the torus: 6
minor radius can't be bigger than or equal to major radius. try again

enter the major radius of the torus: 6
enter the minor radius of the torus: 3
Volume of Torus: 1065.92

Do you want to continue? Y/N
```

UML Diagram:



Lessons Learned

I learned about inheritance in Java and the relationship between parent and child classes. The parent class's methods can be overridden by its children to produce a different implementation of that method. In this case it was the procedure to calculate the area or volume of a shape that differed from shape to shape. I also learned about overloaded constructors as not every shape had the same number of input parameters. Some required 2 or 3 parameters in their construction. This project further solidified my java knowledge and cemented these concepts in my head.