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Week 5

Q1. Area Interface

```
//Main Class package
Polygon;

public class Main {
       public static void main(String[] args) {
Circle c1 = new Circle(7);
       Rectangle r1 =  new Rectangle(4, 6);
        Triangle =newt1Triangle(3,4,5);

           System.out.println("Area of Circle: " + c1.area());
           System.out.println("Area of Rectangle: " +  r1.area());
            System.out.println("Area of Triangle: " +t1.area());
       }
} //Circle
package Polygon;
 class Circle implements Shape
{
       private double radius;

       public Circle(double radius) {
           this.radius = radius;
       }

       public double area() {
           return 22* radius * radius/7;
       }
}
//Triangle package
Polygon;

 class Triangle implements Shape {
      private int s1;     private
int s2;      private int s3;
      Triangle(int s1,int s2,int s3)
      {
            this.s1=s1;
      this.s2=s2;
      this.s3=s3;
      }
      public double area() {
      double s=s1+s2+s3;
```

```
            s=s/2;
            double ar =s*(s-s1)*(s-s2)*(s-s3);
            ar =Math.sqrt(ar);              return ar;
      }
}
//Rectangle package Polygon;

class Rectangle implements Shape {   private int width;
       private int height;

       public Rectangle(int width, int height) {
           this.width = width;       this.height = height;
       }
       public double area() {
           return width * height;
       }
}

//Interface  package Polygon;
  interface Shape {  double area();
}
```

```
Area of Circle: 154.0
Area of Rectangle: 24.0
Area of Triangle: 6.0
```

Q2.Play Interface

```
//Main Class package
two;

public class Driver {
      public static void main(String[] args) {
            String name="Neelansh";
            Volleyball v1=new Volleyball(name);
            Basketball b1=new Basketball(name);
      Football f1=new Football(name);
            v1.Play();
      b1.Play();
      f1.Play();
      }

}
```

```java
//Football Class package
two;

public class Football implements Play{
	private String name;
	Football(String name){
	this.name=name;
	}
	public void Play() {
		System.out.println(name+" Plays Football");
	}
}
//Basketball Class package
two;

public class Basketball implements Play{
	private String name;
	Basketball(String name){
	this.name=name;
	}
	public void Play() {
		System.out.println(name+" Plays Basketball");
	}
}
//Volleyball Class package
two;

public class Volleyball implements Play{
	private String name;
	Volleyball(String name){
	this.name=name;
	}
	public void Play() {
		System.out.println(name+" Plays Volleyball");
	}
}
//Interface Play package
two;
 public interface Play
{	void Play();
}
```

```
Neelansh Plays Volleyball
Neelansh Plays Basketball
Neelansh Plays Football
```

3.Try-Catch and Block

```java
package three;
```

```
public class ExceptionExample {
    public static void main(String[] args) {
try {
            int re = 10 / 10;
            System.out.println("Result: " + re);
int result = 10 / 0;
            System.out.println("Result: " + result);
        } catch (ArithmeticException e) {
            System.out.println("An error occurred: " + e.getMessage());
        } finally {
            System.out.println("Finally block executed");
        }
    }
}
```

```
Result: 1
An error occurred: / by zero
Finally block executed
```

4.Integer is Odd or not

```
//Main Class package
four; import
java.util.*;

public class Driver {
    public static void main(String[] args) {
try {
             Scanner sc= new Scanner(System.in);
       int n=sc.nextInt();
       if(n%2!=0)
                    throw new CuEx("Entered Number is odd");
       else
                     System.out.println("Entered Number is even");
        } catch (CuEx e) {
            System.out.println("Caught custom exception: " + e.getMessage());
        }
    }
}
//Custom Exception Class package
four;
 public class CuEx extends Exception
{
     CuEx(String message) {
super(message);
    }
}
```

```
657481
Caught custom exception: Entered Number is odd
```

Q5. No Vowel In string

```
//Main Class package five;
import java.util.Scanner;

import five.CuEx;

public class Driver {
    public static void main(String[] args) {
try {
            Scanner sc= new Scanner(System.in);
            String n=sc.next();
            Vowel v1=new Vowel(n);

            if(v1.hasVowels())
                  System.out.println("Entered String contains vowels");

            else
                  throw new CuEx("Entered String does not contain vowels");
        } catch (CuEx e) {
            System.out.println("Caught custom exception: " + e.getMessage());
        }
    }
}

//Custom Exception Class package five;

public class CuEx extends Exception {
     CuEx(String message) {
super(message);
    }
}

// Vowel Class package five;

public class Vowel {      private
String st;

    public Vowel(String st) {
this.st = st;
    }
    public boolean hasVowels() {
        char[] charArray = st.toCharArray();
for (char c : charArray) {             if
(isVowel(c)) {
                return true;
            }
}
        return false;
    }
    private boolean isVowel(char c) {
c = Character.toLowerCase(c);
        return c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u';
    }
}
```

```
tytytyyttyyttyyty
Caught custom exception: Entered String does not contain vowels
```