Experiment No.7

```
package MyMath;

public class Trig {
   private double angle;

   public Trig(double angle) {
      this.angle = Math.toRadians(angle); // Convert degrees to radians
   }

   public double getSine() {
      return Math.sin(angle);
   }

   public double getCosine() {
      return Math.cos(angle);
   }

   public double getTangent() {
      return Math.tan(angle);
   }

   public double getSecant() {
      return 1 / Math.cos(angle);
   }

   public double getCosecant() {
      return 1 / Math.sin(angle);
   }
```

```
    public double getCotangent() {
        return 1 / Math.tan(angle);
    }
}
```

Arithmetic.java

```
package MyMath;

public class Arithmetic {

    public float add(float a, float b) {
        return a + b;
    }

    public float subtract(float a, float b) {
        return a - b;
    }

    public float multiply(float a, float b) {
        return a * b;
    }

    public float divide(float a, float b) {
        if (b != 0) {
            return a / b;
        } else {
            throw new ArithmeticException("Division by zero is not allowed.");
```

```
        }
    }
}
```

Stat.java

```
package MyMath;

public class Stat {

    public int min(int[] arr) {
        int minVal = arr[0];
        for (int num : arr) {
            if (num < minVal) {
                minVal = num;
            }
        }
        return minVal;
    }

    public int max(int[] arr) {
        int maxVal = arr[0];
        for (int num : arr) {
            if (num > maxVal) {
                maxVal = num;
            }
        }
        return maxVal;
    }
```

```
    public int count(int[] arr) {
        return arr.length;
    }

    public int sum(int[] arr) {
        int sumVal = 0;
        for (int num : arr) {
            sumVal += num;
        }
        return sumVal;
    }

    public double average(int[] arr) {
        return sum(arr) / (double) count(arr);
    }
}
```

Main Code

```
import MyMath.Trig;
import MyMath.Arithmetic;
import MyMath.Stat;
import java.util.Scanner;
public class PackDemo {
    public static void main(String[] args) {
        // Trigonometric operations
        Scanner sc=new Scanner(System.in);
        System.out.print("Enter Degrees :");
        int a=sc.nextInt();
```

```
if(a<0 && a>360)
{
   System.out.println("\nInvalid Angle.");
   return;
}
Trig trig = new Trig(a);
System.out.println("\nSine: " + trig.getSine());
System.out.println("Cosine: " + trig.getCosine());
System.out.println("Tangent: " + trig.getTangent());
System.out.println("Secant: " + trig.getSecant());
System.out.println("Cosecant: " + trig.getCosecant());
System.out.println("Cotangent: " + trig.getCotangent());

// Arithmetic operations
System.out.print("Enter 1st number : ");
int b=sc.nextInt();
System.out.print("\nEnter 2nd number : ");
int c=sc.nextInt();
Arithmetic arithmetic = new Arithmetic();
System.out.println("\nAddition: " + arithmetic.add(b,c));
System.out.println("Subtraction: " + arithmetic.subtract(b,c));
System.out.println("Multiplication: " + arithmetic.multiply(b,c));
System.out.println("Division: " + arithmetic.divide(b,c));

// Statistical operations
System.out.print("Enter Array Size : ");
int d=sc.nextInt();
int[] numbers = new int[d];
System.out.print("\nEnter Array : ");
```

```
        for(int i=0;i<d;i++)
        {
           numbers[i]=sc.nextInt();
        }
        Stat stat = new Stat();
        System.out.println("Minimum: " + stat.min(numbers));
        System.out.println("Maximum: " + stat.max(numbers));
        System.out.println("Count: " + stat.count(numbers));
        System.out.println("Sum: " + stat.sum(numbers));
        System.out.println("Average: " + stat.average(numbers));
    }
}
```