Assignment 1

1. Write a program to calculate average of all numbers between n1 and n2(eg.100 to 300 Read values of n1 and n2 from user).

```scala
object Main {
  def main(args: Array[String]): Unit = {

    println("Enter the first number:")
    val n1 = scala.io.StdIn.readInt()
    println("Enter the second number:")
    val n2 =  scala.io.StdIn.readInt()


    var sum = 0
    var count = 0
    for (i <- n1 to n2) {
      sum += i
      count += 1
    }


    val average = sum.toDouble / count


    println(s"The average of the numbers between $n1 and $n2 is:
$average")
  }
}
```

Output

```
Enter the first number:4
Enter the second number:45
The average of the numbers between 4 and 45 is: 24.5
```

2. Write a program to calculate factorial of a number.

```
object factorial{
    def main(args:Array[String])=
    {
        var f=1
        println("Enter number:")
        var n=scala.io.StdIn.readInt()
        for(i<-1 to n.toInt)
        {
            f=f*i
        }
        println(s"Factorial of $n :$f")
    }
}
```

Output

```
Enter number:4
Factorial of 4 :24
```

3. Write a program to read five random numbers and check that   random numbers are perfect number or not.

```
def isPerfect(num: Int): Boolean = {
  var sum = 0
  for (i <- 1 until num) {
    if (num % i == 0) {
      sum += i
    }
  }
  sum == num
}

// Read in five random numbers
println("Enter five random numbers:")
val num1 = scala.io.StdIn.readInt()
val num2 = scala.io.StdIn.readInt()
val num3 = scala.io.StdIn.readInt()
val num4 = scala.io.StdIn.readInt()
val num5 = scala.io.StdIn.readInt()
```

```
// Check if each number is a perfect number
if (isPerfect(num1)) println(num1 + " is a perfect number") else
println(num1 + " is not a perfect number")
if (isPerfect(num2)) println(num2 + " is a perfect number") else
println(num2 + " is not a perfect number")
if (isPerfect(num3)) println(num3 + " is a perfect number") else
println(num3 + " is not a perfect number")
if (isPerfect(num4)) println(num4 + " is a perfect number") else
println(num4 + " is not a perfect number")
if (isPerfect(num5)) println(num5 + " is a perfect number") else
println(num5 + " is not a perfect number")
```

Output

```
Enter five random numbers:
4
4
5
6
7

4 is not a perfect number
4 is not a perfect number
5 is not a perfect number
6 is a perfect number
7 is not a perfect number
```

4. Write a program to find second maximum number of four given numbers.

```
object A6
{
def main(args:Array[String])=
{
var a=0;
var b=0;
for(i<- 1 to 4)
{
println("Enter number")
var n=scala.io.StdIn.readInt()
if(n>a)
{
b=a
a=n
}
else if(n>b)
{
```

```
b=n
}

}
println("second maximun number:"+b)
}
}
```

Output

```
Enter the first number:1
Enter the second number:2
Enter the third number:3
Enter the fourth number:4
The second maximum number is: 3
```

5. Write a program to find maximum and minimum of an array.

```
  object A6
{
    def main(args:Array[String])
    {
        var number=Array(1,2,3,4)
        var max=0
        var min=0
        min=number(0)

        for(i<-0 to (number.length)-1)
        {

            if(max<number(i))
            {
                max=number(i)
            }
            if(min>number(i))
            {
                min=number(i)
            }
        }
        println("Maximum number in array:- "+max+"Minimum number
in array:- "+min)

    }
}
```

```
Maximum number in array:- 4
Minimum number in array:- 1
```

6. Write a program to calculate determinant of a matrix.

a) for 2x2 matrix

```
object Main {
  def main(args: Array[String]): Unit = {
    // Read the elements of the matrix from the user
    println("Enter the elements of the matrix:")
    println("Enter element (0,0):")
    val a = scala.io.StdIn.readInt()
    println("Enter element (0,1):")
    val b =  scala.io.StdIn.readInt()
    println("Enter element (1,0):")
    val c =  scala.io.StdIn.readInt()
    println("Enter element (1,1):")
    val d =  scala.io.StdIn.readInt()

    // Calculate the determinant of the matrix
    val determinant = a * d - b * c

    // Print the determinant
    println(s"The determinant of the matrix is: $determinant")
  }
}
```

```
Enter the elements of the matrix:
Enter element (0,0):1
Enter element (0,1):2
Enter element (1,0):3
Enter element (1,1):4
The determinant of the matrix is: -2
```

b) for 3x3 matrix

```
object Main {
```

```scala
  def main(args: Array[String]): Unit = {

    println("Enter the elements of the matrix:")
    println("Enter element (0,0):")
    val a = scala.io.StdIn.readInt()
    println("Enter element (0,1):")
    val b = scala.io.StdIn.readInt()
    println("Enter element (0,2):")
    val c = scala.io.StdIn.readInt()
    println("Enter element (1,0):")
    val d = scala.io.StdIn.readInt()
    println("Enter element (1,1):")
    val e = scala.io.StdIn.readInt()
    println("Enter element (1,2):")
    val f = scala.io.StdIn.readInt()
    println("Enter element (2,0):")
    val g = scala.io.StdIn.readInt()
    println("Enter element (2,1):")
    val h = scala.io.StdIn.readInt()
    println("Enter element (2,2):")
    val i = scala.io.StdIn.readInt()



    val determinant = a * (e * i - f * h) - b * (d * i - f * g) + c
* (d * h - e * g)


    println(s"The determinant of the matrix is: $determinant")
  }
}
```

Output

```
Enter the elements of the matrix:
Enter element (0,0):2
Enter element (0,1):4
Enter element (0,2):5
Enter element (1,0):2
Enter element (1,1):3
Enter element (1,2):4
Enter element (2,0):5
Enter element (2,1):6
Enter element (2,2):7
The determinant of the matrix is: 3
```

Assignment 2

1. Write a program to count uppercase letters in a string and convert it to lowercase and display the new string.

```
object ass2_1{

def countUppercase(s: String): Int = {
  s.count(c => c.isUpper)
}

def main(args:Array[String])={
val s = "HEllo World"
val uppercaseCount = countUppercase(s)
print(uppercaseCount)
print(" ")
print(s.toLowerCase())
}

}
```

Output

```
3 hello world
```

2. Write a program to read a character from user and count the number of occurrences of that character.

```scala
object ass22 {

def main(args:Array[String])={
val s = "Hello World"
val c = scala.io.StdIn.readChar()




val count = s.filter(_ == c).length
println(s"The character '$c' appears $count times in the string '$s'")
}

}
```

Output

```
o
The character 'o' appears 2 times in the string 'Hello World'
```

3. Write a program to read two strings. Remove the occurrence of second string in first string.

```
object ass23{

def main(args:Array[String])={
val s1 = scala.io.StdIn.readLine()
val s2 = scala.io.StdIn.readLine()

val s3 = s1.replaceAll(s2, "")
println(s"Original string: '$s1', modified string: '$s3'")

}
}
```

Output

```
hello world
world
Original string: 'hello world', modified string: 'hello '
```

4. Create array of strings and read a string from user. Display all the elements of array containing given string.

```
object ass24{

def main(args:Array[String])={

val arr = Array("apple", "banana", "cherry", "date", "elderberry")
val s = scala.io.StdIn.readLine()
arr.filter(_.contains(s)).foreach(println)
}

}
```

Output

```
rr
cherry
elderberry
```