

# Solution of Assignment 5

## Question 1.

```
import java.util.*;

class Q1
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter first number: ");
        int no1 = sc.nextInt();
        System.out.println("Enter second number: ");
        int no2 = sc.nextInt();
        int no1_sum = 0, no2_sum = 0;
        for(int i = 1; i <= no1/2; i++)
        {
            if(no1%i == 0)
            {
                no1_sum += i;
            }
        }
        for(int i = 1; i <= no2/2; i++)
        {
            if(no2%i == 0)
            {
                no2_sum += i;
            }
        }
        if(no1_sum == no2 && no2_sum == no1)
        {
            System.out.println(no1 + " and " + no2 + " are amicable numbers");
        }
        else
        {
            System.out.println(no1 + " and " + no2 + " are not amicable numbers");
        }
    }
}
```

## Question 2.

```
import java.util.*;
```

```
class Q2
```

```
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter a number: ");
        int number = sc.nextInt();
        int count = 0, rev_count = 0;
        int rev = 0;
        int no = number;
        for(int i = 2; i <= no/2; i++)
        {
            if(no%i == 0)
            {
                count = 1;
                break;
            }
        }
        while(no != 0)
        {
            int rem = no%10;
            rev = rev*10 + rem;
            no /= 10;
        }
        for(int i = 2; i <= rev/2; i++)
        {
            if(rev%i == 0)
            {
                rev_count = 1;
                break;
            }
        }
        if(count == 0 && rev_count == 0)
        {
            System.out.println(number + " is twisted prime");
        }
        else
        {
            System.out.println(number + " is not twisted prime");
        }
    }
}
```

```
    }  
}
```

### Question 3.

```
import java.util.*;  
  
class Q3  
{  
    public static void main(String[] args)  
    {  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter the first number: ");  
        int first = sc.nextInt();  
        System.out.println("Enter the last number: ");  
        int last = sc.nextInt();  
        System.out.print("List of prime number between "+first+" and "+last+" are: ");  
        for(int i = first; i <= last; i++)  
        {  
            int count = 0;  
            for(int j = 2; j <= i/2; j++)  
            {  
                if(i%j == 0)  
                {  
                    count = 1;  
                    break;  
                }  
            }  
            if(count == 0)  
            {  
                System.out.print(i+" ");  
            }  
        }  
    }  
}
```

### Question 4.

```
import java.util.*;  
  
class Q4  
{  
    public static void main(String[] args)  
    {
```

```

Scanner sc = new Scanner(System.in);
System.out.println("Enter the value of m: ");
int m = sc.nextInt();
System.out.println("Enter the value of n: ");
int n = sc.nextInt();
for(int i = m; i <= n; i++)
{
    long fact = 1;
    for(int j = i; j >= 1; j--)
    {
        fact *= j;
    }
    System.out.println("Factorial of "+i+" is: "+fact);
}
}

```

### Alternative

```

import java.util.*;
public class Q4
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the value of m: ");
        int m = sc.nextInt();
        System.out.println("Enter the value of n: ");
        int n = sc.nextInt();
        long fact = 1;
        for(int i = m; i >= 1; i--)
        {
            fact *= i;
        }
        System.out.println("Factorial of "+m+" is: "+fact);
        for(int i = m+1; i <= n; i++)
        {
            fact *= i;
            System.out.println("Factorial of "+i+" is: "+fact);
        }
    }
}

```

### Question 5.

```
import java.util.*;
public class Q5
{
    public static void main(String[] args)
    {
        for(int i = 2;i<=15;i++)
        {
            System.out.println("Multiplication table of "+i);
            for(int j = 1;j<=10;j++)
            {
                System.out.println(j+" X "+i+" = "+(j*i));
            }
        }
    }
}
```

### Question 6.

**A.**

```
*
* *
* * *
* * * *
* * * * *
```

```
import java.util.*;
public class Q6_A
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of line: ");
        int n = sc.nextInt();
        for(int i = 1;i<=n;i++)
        {
            for(int j = 1;j<=i;j++)
            {
                System.out.print("* ");
            }
            System.out.println();
        }
    }
}
```

```

    }
}

```

## B.

```

1
2 2
3 3 3
4 4 4 4
5 5 5 5 5

```

```

import java.util.*;
public class Q6_B
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of line: ");
        int n = sc.nextInt();
        for(int i = 1; i <= n; i++)
        {
            for(int j = 1; j <= i; j++)
            {
                System.out.print(i + " ");
            }
            System.out.println();
        }
    }
}

```

## C.

```

1
2 3
4 5 6
7 8 9 10
11 12 13 14 15

```

```

import java.util.*;
public class Q6_C
{
    public static void main(String[] args)

```

```

{
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the number of line: ");
    int n = sc.nextInt();
    int k = 1;
    for(int i = 1;i<=n;i++)
    {
        for(int j = 1;j<=i;j++)
        {
            System.out.print(k+++" ");
        }
        System.out.println();
    }
}

```

**D.**

```

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5

```

```

import java.util.*;
public class Q6_D
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of line: ");
        int n = sc.nextInt();
        for(int i = 1;i<=n;i++)
        {
            for(int j = 1;j<=i;j++)
            {
                System.out.print(j+" ");
            }
            System.out.println();
        }
    }
}

```

**Question 7.**

**A.**

**A**  
**A B**  
**A B C**  
**A B C D**  
**A B C D E**

```
import java.util.*;
public class Q7_A
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of line: ");
        int n = sc.nextInt();
        for(int i = 1;i<=n;i++)
        {
            for(int j = 1;j<=i;j++)
            {
                System.out.print((char)(64+j)+" ");
            }
            System.out.println();
        }
    }
}
```

**B.**

**\$ \$ \$ \$ \$ \$**  
**\$ \$ \$ \$ \$**  
**\$ \$ \$ \$**  
**\$ \$ \$**  
**\$ \$**  
**\$ \$**  
**\$**

```
import java.util.*;
public class Q7_B
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
```



```

        System.out.println("Enter the number of line: ");
        int n = sc.nextInt();
        for(int i = 1;i<=n;i++)
        {
            for(int j = n;j>=i;j--)
            {
                System.out.print("$ ");
            }
            System.out.println();
        }
    }
}

```

**C.**

```

    1
   2 2
  3 3 3
 4 4 4 4
5 5 5 5 5

```

```

import java.util.*;
public class Q7_C
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of line: ");
        int n = sc.nextInt();
        for(int i = 1;i<=n;i++)
        {
            for(int j = 1;j<=n-i;j++)
            {
                System.out.print(" ");
            }
            for(int j = 1;j<=i;j++)
            {
                System.out.print(i+" ");
            }
            System.out.println();
        }
    }
}

```

**Question 8.**

```
import java.util.*;

public class Main
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of terms: ");
        int n = sc.nextInt();
        int sum = 0;
        for(int i=1;i<=n;i++)
        {
            for(int j = 1;j<=i;j++)
            {
                sum += j;
            }
        }
        System.out.println(sum);
    }
}
```

**Question 9.**

```
import java.util.*;

public class Q9
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of terms: ");
        int n = sc.nextInt();
        double sum = 0.0;
        for(int i=1;i<=n;i++)
        {
            sum += (1/Math.pow(i,2));
        }
        System.out.println(sum);
    }
}
```

### Question 10.

```
import java.util.*;
class Q10
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of terms: ");
        int n = sc.nextInt();
        int a = 0, b = 1, c = 1;
        System.out.print("Series are: "+a+", "+b+", "+c);
        int i = 4;
        while(i<=n)
        {
            int sum = a+b+c;
            System.out.print(", "+sum);
            a=b;
            b=c;
            c=sum;
            i++;
        }
    }
}
```

## Home Assignment

### Question 1.

```
import java.util.*;

class Ass_Q1
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of lines: ");
        int n = sc.nextInt();
        for(int i = 1; i<=n;i++)
        {
```

```

        for(int j=n;j>=1;j--)
        {
            if(j==i)
                System.out.print("* ");
            else
                System.out.print(j+" ");
        }
        System.out.println();
    }
}

```

### Alternative solution

```

import java.util.*;

public class class Ass_Q1
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of lines: ");
        int n = sc.nextInt();
        for(int i = n; i>=1;i--)
        {
            for(int j=n;j>=1;j--)
            {
                if(j==n-i+1)
                    System.out.print("* ");
                else
                    System.out.print(j+" ");
            }
            System.out.println();
        }
    }
}

```

### Question 2.

```

import java.util.*;

```

```

public class Ass_Q2
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of lines: ");
        int n = sc.nextInt();
        for(int i = 1; i <= n; i++)
        {
            for(int j=1; j<=n-i; j++)
            {
                System.out.print(" ");
            }
            for(int k=1; k<=2*i-1; k++)
            {
                System.out.print("* ");
            }
            System.out.println();
        }
    }
}

```

### Question 3.

```

import java.util.*;

public class Ass_Q3
{
    public static void main(String[] args)
    {
        Scanner obj = new Scanner (System.in);
        double sum=0.0d;
        System.out.println("Enter the value of x: ");
        int x=obj.nextInt();
        System.out.println("Enter a number of terms: ");
        int n=obj.nextInt();
        int p = 1;
        double r = Math.toRadians(x);
        for(int i = 1; i<=n; i++)
        {
            int f = 1;
            for(int j=p; j>=1; j--)
            {
                f *=j;
            }
        }
    }
}

```

```

    }
    double power = Math.pow(r, p);
    if(i%2==0)
    {
        sum = sum - power/f;
    }
    else
    {
        sum = sum + power/f;
    }
    p +=2;
}
System.out.println("sin (" + x + ") = " + sum);
}
}

```

#### Question 4.

```

class Ass_Q4
{
    public static void main(String[] args)
    {
        Scanner obj = new Scanner (System.in);
        double sum=0.0d;
        System.out.println("Enter the value of x: ");
        int x=obj.nextInt();
        System.out.println("Enter a number of terms: ");
        int n=obj.nextInt();
        int p = 0;
        double r = Math.toRadians(x);
        for(int i = 1;i<=n;i++)
        {
            int f = 1;
            for(int j=p;j>=1;j--)
            {
                f *=j;
            }
            double power = Math.pow(r, p);
            if(i%2==0)
            {
                sum = sum - power/f;
            }
            else
            {

```

```

        sum = sum + power/f;
    }
    p +=2;
}
System.out.println("cos ("+x+") = "+sum);
}
}

```

### Question 5.

```

import java.util.*;

public class Ass_Q5
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of terms: ");
        int n = sc.nextInt();
        int a = 0, b = 1;
        if(n==1)
            System.out.print("Series are: "+a);
        else if(n==2)
            System.out.print("Series are: "+a+", "+b);
        else
        {
            System.out.print("Series are: "+a+", "+b);
            int i = 3;
            while(i<=n)
            {
                int sum = a+b;
                System.out.print(", "+sum);
                a=b;
                b=sum;
                i++;
            }
        }
    }
}

```