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.*;
publiv 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 = n;i>=1;i--)
		{
```

```
                for(int j=1;j<=n;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 = 1;i<=n;i++)
        {
                for(int j=1;j<=n;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++;
                }
            }
         }
}
```