Assignment 1

1. **Write a java program to find the area of rectangle**

Program :

```
import java.util.Scanner;
class Area
	{
		public static void main(String args[])
		{
			Scanner sc=new Scanner(System.in);
			float len=sc.nextFloat();
			float wid=sc.nextFloat();
			float a=len*wid;
			System.out.println("Area of triangle is : "+a);
		}
	}
```

Output:

```
F:\RSC>javac Area.java

F:\RSC>java Area
34.5
45.2
Area of triangle is : 1559.4
```

2. **Write a java program to check the given no is Armstrong or not(153 is Armstrong no 1*1*1+5*5*5+3*3*3=153)**

Program :

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

```
{
        int cnt=0,r,res=0;

        System.out.println("Enter any Number");
    Scanner sc = new Scanner(System.in);
        int num=sc.nextInt();
        int temp=num,fin=num;
        while(num!=0)
        {
            num=num/10;
            cnt+=1;
        }
        while(temp!=0)
        {
            r=temp%10;
            res+=Math.pow(r,cnt);
            temp=temp/10;
        }
        if(fin==res){
            System.out.println("The entered number is
ARMSTRONG");}
        else{
        System.out.print("The entered number is NOT ARMSTRONG");}
    }
}
```

Output:

```
F:\RSC>javac Armstrong.java

F:\RSC>java Armstrong
Enter any Number
153
```

The entered number is ARMSTRONG

F:\RSC>java Armstrong
Enter any Number
1634
The entered number is ARMSTRONG

F:\RSC>java Armstrong
Enter any Number
123
The entered number is NOT ARMSTRONG

3. **Write a java program to check the given no is palindrome or not**

Program :

```
import java.util.Scanner;
class Palindrome
        {
                public static void main(String args[])
                {
                  int r,sum=0,temp;
                  Scanner sc = new Scanner(System.in);
                  int n=sc.nextInt();
                  temp=n;
                  while(n>0)
                  {
                   r=n%10;
                   sum=(sum*10)+r;
                   n=n/10;
              }
                  if(temp==sum)
                   System.out.println("Given number: "+temp+" is a PALINDROME ");
```

```
            else
             System.out.println("Given number: "+temp+"is NOT
PALINDROME");
            }
      }
```

Output:

```
F:\RSC>javac Palindrome.java

F:\RSC>java Palindrome
3456543
Given number: 3456543 is a PALINDROME

F:\RSC>java Palindrome
123432
Given number: 123432is NOT PALINDROME
```

4. Write a java program to generate first N prime numbers

Program :

```
import java.util.Scanner;
class PrimeNumbers
{
  public static void main(String args[])
  {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter number of values :");
        int n=sc.nextInt();
        int val= 1;
        int num = 3;
        System.out.println("The "+n+" Prime numbers are :");
```

```
            if(n>=1)
            {
                  System.out.println(2);
            }
            for(int i=2;i<=n;  )
            {
                  for(int j=2;j<=Math.sqrt(num);j++ )
                  {
                        if ( num%j==0 )
                        {
                              val= 0;
                              break;
                        }
                  }
          if ( val!= 0 )
          {
            System.out.println(num);
            i++;
          }
          val= 1;
          num++;
        }
      }
  }
```

Output:

F:\RSC>javac PrimeNumbers.java

F:\RSC>java PrimeNumbers
Enter number of values :
8
The 8 Prime numbers are :
2

3
5
7
11
13
17
19

5. **Write a java program to print even numbers in between given two numbers.**

Program :

```
import java.util.Scanner;
public class EvenNumbers {
        public static void main(String[] args)
        {
                Scanner sc=new Scanner(System.in);
                int lb=sc.nextInt();
                int ub=sc.nextInt();
                System.out.println("The prime numbers between "+lb+" and"+ub+" are
:");
       for(int i=lb+1;i<ub;i++)
                {
                        if( i % 2 == 0)
                                System.out.print(i + " ");
       }
    }
}
```

Output:

F:\RSC>javac EvenNumbers.java

```
F:\RSC>java EvenNumbers
2
20
The prime numbers between 2 and20 are :
4 6 8 10 12 14 16 18
```

1. **What is Abstraction?**

   Abstraction is a process of hiding the implementation details and showing only functionality to the user.It can be achieved either by Abstract classes or interfaces.

2. **What is Encapsulation?**

   The process of binding data and corresponding methods together into a single unit , thereby we can keep variables and methods safes from outside interference and misuse is known as Encapsulation.

3. **What is JDK?**

   Java Development Kit is a collection of tools for developing,packaging and distributing Java Applications.

   It's a super set of JRE and contains everything that is in JRE and other tools such as compilers and debuggers for developing application.

4. **What is JVM?**

   Java Virtual Machine is an Abstract Machine.Its a specification that provides runtime environment in which java bytecode can be executed.JVM is a subset of JRE.

5. **Define Inheritance**

   Inheritance can be defined as the process where one class acquires the properties (methods and fields) of another. With the use of inheritance the information is made manageable in a hierarchical order.

   The class which inherits the properties of other is known as subclass (derived class, child class) and the class whose properties are inherited is known as superclass (base class, parent class).

6. **How java achieved platform independence?**

When you compile Java programs using javac compiler it generates bytecode. We need to execute this bytecode using JVM (Java Virtual machine) Then, JVM translates the Java bytecode to machine understandable code.

You can download JVM's (comes along with JDK or JRE) suitable to your operating system and, once you write a Java program you can run it on any system using JVM.

7. **Write the syntax of main function**.
   public static void main(String args[])
   where,
   public ->Access specifier
   static->Keyword
   void ->Return type
   main->Method name
   args[]->Array of string type,we can change the array name
8. **What is conditional operator?**

   The conditional operator is also known as the ternary operator. This operator consists of three operands and is used to evaluate Boolean expressions. The goal of the operator is to decide; which value should be assigned to the variable.

   Variable x=(expression) ? value if true:value if false
9. **How many data types in java?**

   Data types specify the different sizes and values that can be stored in the variable. There are two types of data types in Java:

   1. **Primitive data types:** The primitive data types include boolean, char, byte, short, int, long, float and double.
   2. **Non-primitive data types:** The non-primitive data types include Classes, Interfaces, and Arrays.

10. **What is constant? How it is declared?**
    A constant holds a value that does not change. A constant declaration specifies the name, data type, and value of the constant and allocates storage for it. The declaration can also impose the NOT NULL constraint.

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