1

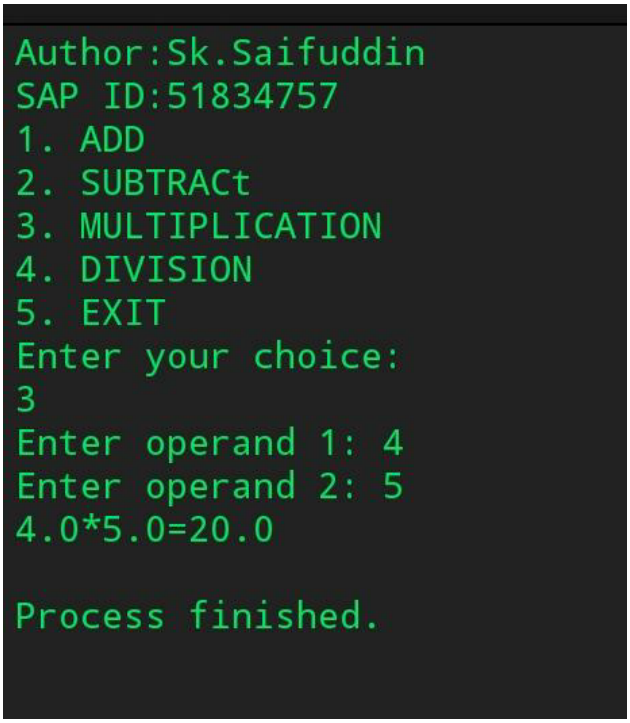
```
import java.util.Scanner;
import java.util.InputMismatchException;
class Calculator
{

   public void add(float a,float b, float c)
   {
      System.out.println(a+"+"+b+"+"+c+"="+(a+b+c));
   }
   public void add(float a,float b)
   {
      System.out.println(a+"+"+b+"="+(a+b));
   }



   public void subtract(float a,float b, float c)
   {
      System.out.println(a+"-"+b+"-"+c+"="+(a-b-c));
   }
   public void subtract(float a,float b)
   {
      System.out.println(a+"-"+b+"="+(a-b));
   }
```

```
    public void product(float a,float b)
    {
        System.out.println(a+"*"+b+"="+(a*b));
    }



    public void division(float a,float b)
    {
        System.out.println(a+"/"+b+"="+(a/b));
    }
}
public class Main
{
    public static void main (String[] args) {
        Calculator cal=new Calculator();
        Scanner sc=new Scanner(System.in);
        System.out.println("Author:Sk.Saifuddin \nSAP ID:51834757");
        try
        {
            System.out.println("1. ADD\n2. SUBTRACt\n3. MULTIPLICATION\n4. DIVISION\n5.
EXIT\nEnter your choice: ");
            int op=sc.nextInt();
            switch(op)
            {
                case 0:
```

```
    System.out.println("Exit...");
    System.exit(0);
    break;
  case 1:
    System.out.print("Enter operand 1: ");
    float add1=sc.nextFloat();
    System.out.print("Enter operand 2: ");
    float add2=sc.nextFloat();
    System.out.print("Enter operand 3(if you want. else enter 0): ");
    float add3=sc.nextFloat();
    if(add3==0)
    {
       cal.add(add1, add2);
    }
    else
    {
       cal.add(add1, add2, add3);
    }
    break;
  case 2:
   System.out.print("Enter operand 1: ");
    float sub1=sc.nextFloat();
    System.out.print("Enter operand 2: ");
    float sub2=sc.nextFloat();
    System.out.print("Enter operand 3(if you want. else enter 0): ");
```

```
    float sub3=sc.nextFloat();
    if(sub3==0)
    {
       cal.subtract(sub1, sub2);
    }
    else
    {
       cal.subtract(sub1, sub2, sub3);
    }
    break;
 case 3:
    System.out.print("Enter operand 1: ");
    float mul1=sc.nextFloat();
    System.out.print("Enter operand 2: ");
    float mul2=sc.nextFloat();
    cal.product(mul1,mul2);
    break;
 case 4:
    System.out.print("Enter operand 1: ");
    float div1=sc.nextFloat();
    System.out.print("Enter operand 2: ");
    float div2=sc.nextFloat();
    if(div2==0)
    {
       throw new ArithmeticException("Number cannot be divided by zero!!");
```

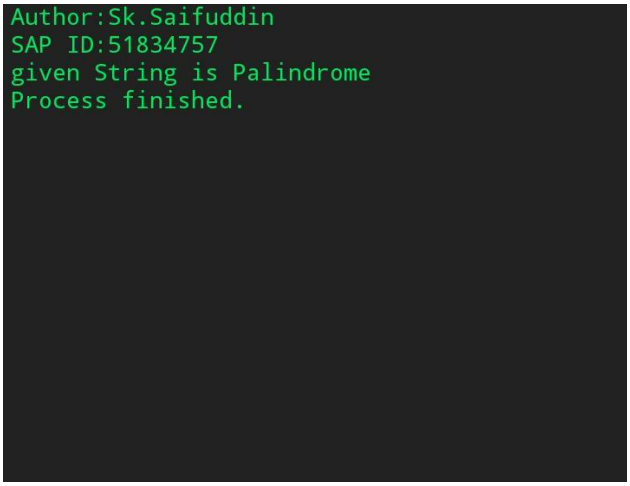
```
                }
                cal.division(div1,div2);
                break;
            default:
                System.out.println("Invalid choice: ");
          }
       }
       catch(InputMismatchException ime)
       {
          System.out.println("You have entered input of wrong datatype!!");
       }
       catch(ArithmeticException ae)
       {
          System.out.println(ae.getMessage());
       }
    }
}
```



Question: 2

```
public class Main
{
    public static boolean isPalindrome(String string, int low, int high)
    {
        if (low >= high) {

            return true;
        }

        if (string.charAt(low) != string.charAt(high)) {
            return false;
        }
```

```
            return isPalindrome(string, low + 1, high - 1);
        }

        public static void main(String[] args)
        {
            String string = "radar";

            if (isPalindrome(string, 0, string.length() - 1)) {
                System.out.println("Author:Sk.Saifuddin \nSAP ID:51834757");
                System.out.print("given String is Palindrome");
            } else {
                System.out.print("given String is Not Palindrome");
            }
        }
}
```



Question : 3

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

```
public class Main
{
  public static void main (String[] args)
  {
    System.out.println("Author :Sk.Saifuddin \n SAP ID:51834757");
    int count=0;
    int rem=0 ;
    Scanner sc=new Scanner(System.in);
    System.out.println("enter a number :");

    int n= sc.nextInt();
    while(n>0)
    {
      rem=n%10;
      if(rem%2!=0)
      {
        count++;
      }
      n=n/10;

    }
    System.out.println("no of odd digits in number are ; "+count);

  }
}
```

```
Author :Sk.Saifuddin
 SAP ID:51834757
enter a number :
5
no of odd digits in number are ; 1

Process finished.
```

Question:5

```
import java.util.Arrays;


class Main
{
	public static void swap(int[] arr, int a, int b)
	{
		int temp = arr[a];
		arr[a] = arr[b];
		arr[b] = temp;
	}


	public static void bubbleSort(int[] arr, int m)
	{
		for (int a = 0; a < m - 1; a++) {
			if (arr[a] > arr[a + 1]) {
				swap(arr, a, a + 1);
			}
		}
```

```
            if (m - 1 > 1) {
                bubbleSort(arr, m - 1);
            }
        }

        public static void main(String[] args)
        {
            int[] arr = { 5, 1, 7, 9, 8, 0, 2 };

            bubbleSort(arr, arr.length);

            System.out.println("Author:Sk.Saifuddin \n SAP ID:51834757");
            System.out.println(Arrays.toString(arr));
        }
}
```