Question 1:

```java
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));
    }
```

```java
    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("Program by Manasa\n JAVA1 \nSAP ID:51834754");

        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:
```

```java
            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): ");
```

```java
        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!!");
```

```java
                }
            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());
    }
  }
}
```

Output:

QUESTION 2:

```java
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);
  }
```

```java
    public static void main(String[] args)

    {

      String string = "level";


      if (isPalindrome(string, 0, string.length() - 1)) {

        System.out.println("Program by Manasa\n JAVA1\nSAP ID:51834754");

        System.out.print("given String is Palindrome");

      } else {

        System.out.print("given String is Not Palindrome");

      }

    }

}
```

OUTPUT:

```
1  public class Main
2  {
3    public static boolean isPalindrome(String string,
4    {
5      if (low >= high) {
6        return true;
7      }
8
9      if (string.charAt(low) != string.charAt(high))
10       return false;
11     }
12
13     return isPalindrome(string, low + 1, high - 1);
14   }
15
16   public static void main(String[] args)
17   {
18     String string = "level";
19
20     if (isPalindrome(string, 0, string.length() - 1
21       System.out.println("Program by Manasa\n JAVA1
22       System.out.print("given String is Palindrome"
23     } else {
24       System.out.print("given String is Not Palindr
25     }
26   }
27 }
```

| ✕ | Terminal | | ⧉ |

```
Program by Manasa
 JAVA1
SAP ID:51834754
given String is Palindrome
Process finished.
```

QUESTION 3 :

import java.util.*;

public class Main

{

  public static void main (String[] args)

  {

    System.out.println("Program by Manasa\nJAVA1 \n SAP ID:51834754");

    int count=0;

    int rem=0 ;

```java
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);


}
}
```

```
1  import java.util.*;
2  public class Main
3  {
4    public static void main (String[] args)
5    {
6      System.out.println("Program by Manasa\nJAVA1 \n
7      int count=0;
8      int rem=0 ;
9      Scanner sc=new Scanner(System.in);
10     System.out.println("enter a number :");
11     int n= sc.nextInt();
12     while(n>0)
13     {
14       rem=n%10;
15       if(rem%2!=0)
16       {
17         count++;
18       }
19       n=n/10;
20
21     }
22     System.out.println("no of odd digits in number
23
24   }
25 }
```

```
×    Terminal                          ▢

Program by Manasa
JAVA1
 SAP ID:51834754
enter a number :
1357539
no of odd digits in number are : 7

Process finished.
```

QUESTION 5:

public class Main {

  public static void main(String []args) {

    String str[] = { "s", "k", "r", "v", "n"};

    String temp;

    System.out.println("Program by Manasa\n JAVA1\n SAP:51834754");

    System.out.println("Sorted string...");

    for (int j = 0; j < str.length; j++) {

      for (int i = j + 1; i < str.length; i++) {

        // comparing strings

        if (str[i].compareTo(str[j]) < 0) {

```
        temp = str[j];

        str[j] = str[i];

        str[i] = temp;

      }

    }

    System.out.println(str[j]);

  }

 }

}
```

```
4      String temp;
5      System.out.println("Program by Manasa\n JAVA
6      System.out.println("Sorted string...");
7      for (int j = 0; j < str.length; j++) {
8          for (int i = j + 1; i < str.length; i++)
9              // comparing strings
10             if (str[i].compareTo(str[j]) < 0) {
11                 temp = str[j];
12                 str[j] = str[i];
13                 str[i] = temp;
14             }
15         }
16         System.out.println(str[j]);
17     }
18  }
19 }
```

×   Terminal   ⧉

```
Program by Manasa
 JAVA1
 SAP:51834754
Sorted string...
k
n
r
s
v

Process finished.
```