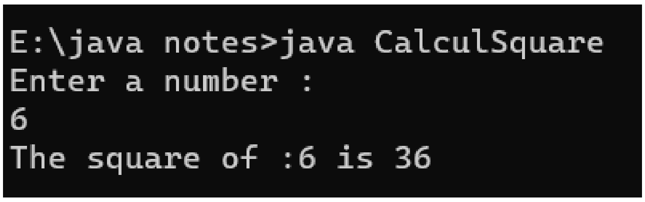
OBJECT ORIENTED PROGRAMMING WITH JAVA 8– LAB 7

Q1. Write a program to calculate the square value of any number given by the user. Add an exception handling block to check whether the user enter letters instead of numbers.

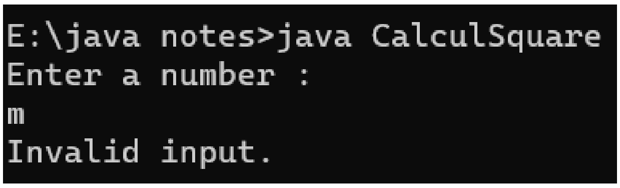
Program:

```
 import java.util.InputMismatchException;
import java.util.Scanner;
class CalculSquare
{
  public static void main(String args[])
  {
    Scanner s = new Scanner(System.in);
    try
    {
      System.out.println("Enter a number :");
      int num = s.nextInt();
      int square = num * num;
      System.out.println("The square of :" + num + " is " + square);
    }
    catch (InputMismatchException e)
    {
      System.out.println("Invalid input.");
    }
   }
}
```

Output:



```
E:\java notes>java CalculSquare
Enter a number :
6
The square of :6 is 36
```



```
E:\java notes>java CalculSquare
Enter a number :
m
Invalid input.
```

Q 4. Create a class named MarkProcess to process the marks with following members:

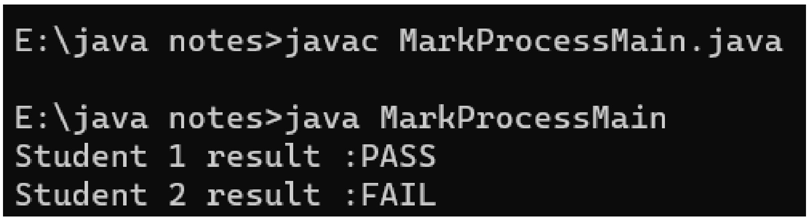
a. Data Members
i. regno
ii. marks
b. Function members

i. Constructor to accept all values
ii. validation()- checking marks < 0 and throwing a user defined
exception named IllegalMarkException.
iii. result()- declaring PASS if marks>=40 and FAIL otherwise
Create a user defined exception class named IllegalMarkException and handle with the message 'Illegal Mark'.
Write a main() method that will create an object of type MarkProcess and call the methods in it to declare the result only for valid marks.
.

Program:

```
   class IllegalMarkException extends Exception
{
 public IllegalMarkException() {
   super ("Illegal Mark");
  }
}
class MarkProcess
{
 int regno , marks;
 public MarkProcess(int regno,int marks)
 {
   this.regno = regno;
   this.marks = marks;
 }
 public void validation() throws IllegalMarkException {
   if( marks < 0) {
     throw new IllegalMarkException();
    }
 }
 public String result() {
   if (marks >= 40)
     return "PASS";
   else
     return "FAIL";
   }
}
 public class MarkProcessMain
 {
   public static void main(String args[])
   {
    try
    {
     MarkProcess m = new MarkProcess(11,80);
     m.validation();
     System.out.println("Student 1 result :" + m.result());
     MarkProcess n = new MarkProcess(12,20);
     n.validation();
     System.out.println("Student 2 result :" + n.result());
    }
    catch (IllegalMarkException e) {
      System.out.println("Wrong :" + e.getMessage());
    }
  }
}
```

Output:



```
E:\java notes>javac MarkProcessMain.java

E:\java notes>java MarkProcessMain
Student 1 result :PASS
Student 2 result :FAIL
```

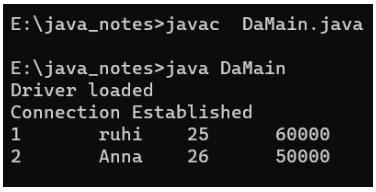
Q6 Use MySQL to create database named company and table named emp.
emp (id integer primary key, name varchar(25), age int , salary int);
Insert some rows in emp table
insert into emp values(.........);
Write separate methods in a Java application to do the following tasks:
a) Select entire content of emp table and display on screen
b) Display the name and salary of a particular employee whose id is given
c) Insert new row in the emp table
d) Update salary of a particular employee whose id is given
e) Delete the details of an employee whose id is given
f) Select the details of employees whose age is greater than a particular value
Use Statement for a) and b) and use
PreparedStatement for c), d), e) and f).

Program: a)

```
      import java.sql.*;
        class DaMain
        {
                public static void main(String[] args)
                {
                        try
                        {
                        Class.forName("com.mysql.cj.jdbc.Driver");
                        System.out.println("Driver loaded");
                        }
                        catch(ClassNotFoundException cfe)
                        {
                        System.out.println(cfe);
                        }
                        try
                        {
```

```
                    Connection con=
        DriverManager.getConnection("jdbc:mysql://localhost:3306/company?useSSL=false",
        "root","rajshree@1603");
                    System.out.println("Connection Established");
                    Statement stmt=con.createStatement();
                    String sql="select * from emp";
                    ResultSet rst=stmt.executeQuery(sql);
                    while(rst.next())
                    System.out.println(rst.getInt("id") +"\t"+rst.getString("name") +"\t"
        +rst.getInt("age") +"\t"+rst.getInt("salary"));
                    }
                    catch(SQLException e)
                    {
                    System.out.println(e);
                    }
                }
        }
```

Output:



```
E:\java_notes>javac  DaMain.java

E:\java_notes>java DaMain
Driver loaded
Connection Established
1       ruhi    25      60000
2       Anna    26      50000
```

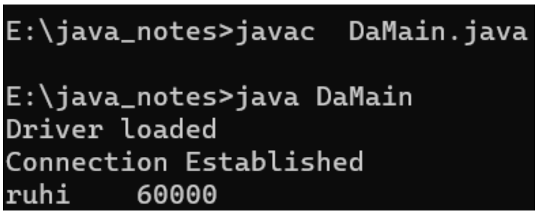
b)

program:

```
 import java.sql.*;
class DaMain
{
        public static void main(String[] args)
        {
                try
                {
                Class.forName("com.mysql.cj.jdbc.Driver");
                System.out.println("Driver loaded");
                }
                catch(ClassNotFoundException cfe)
                {
                System.out.println(cfe);
                }
                try
                {
                Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/company?useSSL=false",
"root","rajshree@1603");
                System.out.println("Connection Established");
                Statement stmt=con.createStatement();

         String sql="select name,salary from emp where id=1";
```

```
           ResultSet rst=stmt.executeQuery(sql);
           while(rst.next())
           System.out.println(rst.getString("name") +"\t"+rst.getInt("salary"));
                    }
                    catch(SQLException e)
                    {
                    System.out.println(e);
                    }
          }
}
```

Output:



```
E:\java_notes>javac  DaMain.java

E:\java_notes>java DaMain
Driver loaded
Connection Established
ruhi    60000
```

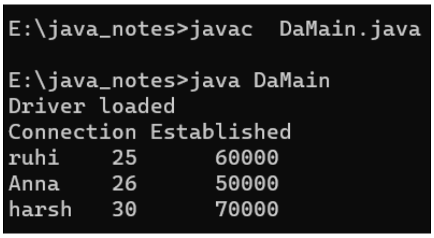
c)Insert value:

program:

```
          import java.sql.*;
          class DaMain
          {
                    public static void main(String[] args)
                    {
                              try
                              {
                              Class.forName("com.mysql.cj.jdbc.Driver");
                              System.out.println("Driver loaded");
                              }
                              catch(ClassNotFoundException cfe)
                              {
                              System.out.println(cfe);
                              }
                              try
                              {
                              Connection con =
          DriverManager.getConnection("jdbc:mysql://localhost:3306/company?useSSL=false",
          "root","rajshree@1603");
                              System.out.println("Connection Established");
                              Statement stmt=con.createStatement();
                     String insert="insert into emp values(3,'harsh',30,70000)";
                     int r=stmt.executeUpdate(insert);
                     String sql="select * from emp ";
                     ResultSet rst=stmt.executeQuery(sql);
                     while(rst.next())
                     System.out.println(rst.getString("name")
          +"\t"+rst.getInt("age")+"\t"+rst.getInt("salary"));
```

```
                }
                catch(SQLException e)
                {
                System.out.println(e);
                }
        }
}
```

Output:



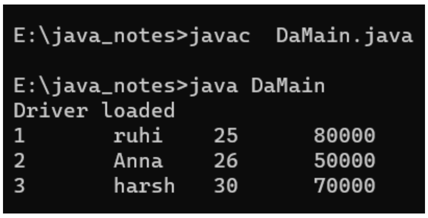
```
E:\java_notes>javac  DaMain.java

E:\java_notes>java DaMain
Driver loaded
Connection Established
ruhi    25      60000
Anna    26      50000
harsh   30      70000
```

d)update :

program:

```
 import java.sql.*;
class DaMain
{
        public static void main(String[] args)
        {
                try
                {
                Class.forName("com.mysql.cj.jdbc.Driver");
                System.out.println("Driver loaded");
                }
                catch(ClassNotFoundException cfe)
                {
                System.out.println(cfe);
                }
                try
                {
                Connection con = 
DriverManager.getConnection("jdbc:mysql://localhost:3306/company?useSSL=false", 
"root","rajshree@1603");
         PreparedStatement ps1=con.prepareStatement("update emp set salary=80000 
where id=1");
         int r=ps1.executeUpdate();
         PreparedStatement ps=con.prepareStatement("select * from emp");
         ResultSet rst=ps.executeQuery();
         while(rst.next())

System.out.println(rst.getInt(1)+"\t"+rst.getString(2)+"\t"+rst.getInt(3)+"\t"+rst.getInt(4));
                }
                catch(SQLException e)
                {
                    System.out.println(e);
                    }
          }
  }
```

Output:



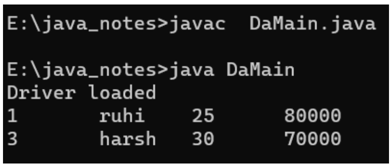
```
E:\java_notes>javac  DaMain.java

E:\java_notes>java DaMain
Driver loaded
1       ruhi    25      80000
2       Anna    26      50000
3       harsh   30      70000
```

e)) Delete the details of an employee whose id is given

program:

```
import java.sql.*;
class DaMain
{
          public static void main(String[] args)
          {
                    try
                    {
                    Class.forName("com.mysql.cj.jdbc.Driver");
                    System.out.println("Driver loaded");
                    }
                    catch(ClassNotFoundException cfe)
                    {
                    System.out.println(cfe);
                    }
                    try
                    {
                    Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/company?useSSL=false",
"root","rajshree@1603");
           PreparedStatement ps1=con.prepareStatement("delete from emp where id=2");
           int r=ps1.executeUpdate();
           PreparedStatement ps=con.prepareStatement("select * from emp");
           ResultSet rst=ps.executeQuery();
           while(rst.next())

System.out.println(rst.getInt(1)+"\t"+rst.getString(2)+"\t"+rst.getInt(3)+"\t"+rst.getInt(4));
                    }
                    catch(SQLException e)
                    {
                    System.out.println(e);
                    }
          }
}
```

Output:



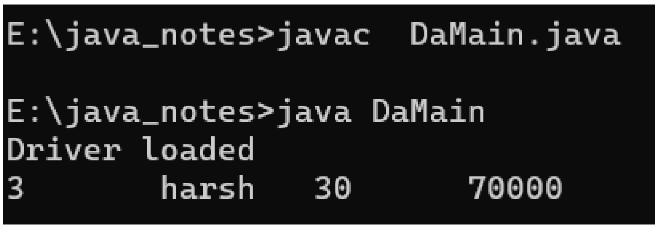
```
E:\java_notes>javac  DaMain.java

E:\java_notes>java DaMain
Driver loaded
1       ruhi    25      80000
3       harsh   30      70000
```

f) Select the details of employees whose age is greater than a particular value

program:

```
import java.sql.*;
class DaMain
{
        public static void main(String[] args)
        {
                try
                {
                Class.forName("com.mysql.cj.jdbc.Driver");
                System.out.println("Driver loaded");
                }
                catch(ClassNotFoundException cfe)
                {
                System.out.println(cfe);
                }
                try
                {
                Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/company?useSSL=false",
"root","rajshree@1603");

         PreparedStatement ps=con.prepareStatement("select * from emp where age>?");
         ps.setInt(1,27);
         ResultSet rst=ps.executeQuery();
         while(rst.next())

System.out.println(rst.getInt(1)+"\t"+rst.getString(2)+"\t"+rst.getInt(3)+"\t"+rst.getInt(4));
                }
                catch(SQLException e)
                {
                System.out.println(e);
                }
        }
}
```

Output:



```
E:\java_notes>javac  DaMain.java

E:\java_notes>java DaMain
Driver loaded
3       harsh   30      70000
```

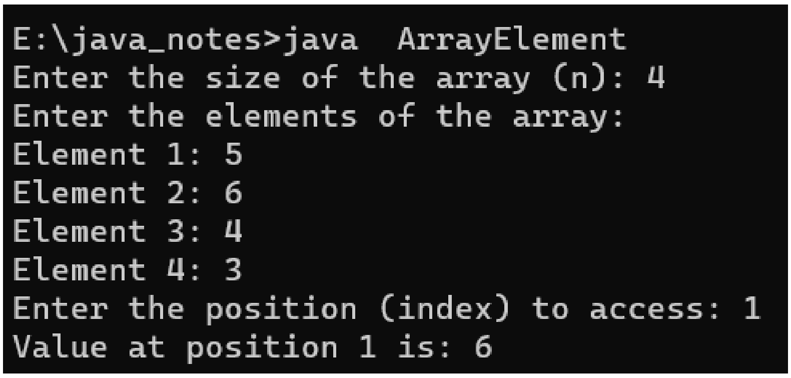
Q2. Create an integer array of size n and read the elements from the user. Add an exception handling block to print the value at nth position of the array.

Program:

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

     try {
                                    // Read the size of the array
      System.out.print("Enter the size of the array (n): ");
      int n = scanner.nextInt();

                                   // Create an integer array of size n
      int[] arr = new int[n];

                                  // Read the elements from the user
      System.out.println("Enter the elements of the array:");
      for (int i = 0; i < n; i++) {
        System.out.print("Element " + (i + 1) + ": ");
        arr[i] = scanner.nextInt();
```

```
            }

          System.out.print("Enter the position (index) to access: ");
            int position = scanner.nextInt();

                                        // Check if the position is valid
            if (position >= 0 && position < n) {
                                  // Access and print the value at the specified position
                int value = arr[position];
                System.out.println("Value at position " + position + " is: " + value);
            } else {
                System.out.println("Invalid position. Please provide a valid index between 0 and " +
(n - 1));
            }
        } catch (ArrayIndexOutOfBoundsException e) {
            System.out.println("Error: Index out of bounds. Please provide a valid position.");
        } catch (Exception e) {
            System.out.println("Error: " + e.getMessage());
        } finally {}
        }
    }
```

Output :



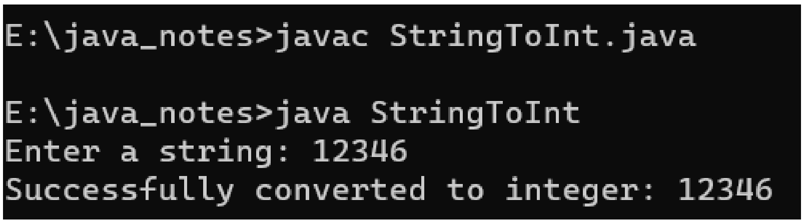
```
E:\java_notes>java  ArrayElement
Enter the size of the array (n): 4
Enter the elements of the array:
Element 1: 5
Element 2: 6
Element 3: 4
Element 4: 3
Enter the position (index) to access: 1
Value at position 1 is: 6
```

Q3. Write a program to read a string and convert to integer using try catch block.

Program:

```
              import java.util.Scanner;
            public class StringToInt
             {
               public static void main(String[] args) {
                Scanner sc = new Scanner(System.in);
             try {
                       System.out.print("Enter a string: ");
                       String input = sc.next();
                       int number = Integer.parseInt(input);
                       System.out.println("Successfully converted to integer: " + number);
                   } catch (NumberFormatException e) {
                       System.out.println("Error: The input is not a valid integer.");
                   } finally {}
                }
            }
```

Output:



```
E:\java_notes>javac StringToInt.java

E:\java_notes>java StringToInt
Enter a string: 12346
Successfully converted to integer: 12346
```

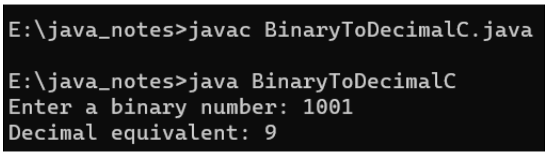
Q5Write a program to read a binary number and convert it to decimal number. Throw user defined exception named InvalidBinaryException if the number entered is not binary and handle with the message ‘Not a valid Binary number’.

Program :

```
import java.util.Scanner;

    class InvalidBinaryException extends Exception
     {
        public InvalidBinaryException(String message)
        {
           super(message);
        }
    }

        public class BinaryToDecimalC {
        public static void main(String[] args) {
              Scanner sc = new Scanner(System.in);

           try {
              System.out.print("Enter a binary number: ");
              String binaryString = sc.next();

                        // Check if input is a valid binary number
              if (!isValidBinary(binaryString))
                {
                 throw new InvalidBinaryException("Not a valid Binary number");
                }

                      // Convert the binary string to a decimal integer
              int decimalNumber = Integer.parseInt(binaryString, 2);
```

```
            System.out.println("Decimal equivalent: " + decimalNumber);
          }  catch (InvalidBinaryException e) {
            System.out.println("Error: " + e.getMessage());
          } catch (NumberFormatException e) {
            System.out.println("Error: Invalid binary format.");
          } finally {}
        }

                // Function to check if a string is a valid binary number
        private static boolean isValidBinary(String binaryString) {
          return binaryString.matches("[01]+");
        }
    }
```

Output:



```
E:\java_notes>javac BinaryToDecimalC.java

E:\java_notes>java BinaryToDecimalC
Enter a binary number: 1001
Decimal equivalent: 9
```

Q7. Create a stored procedure empproc in the database from MySQL.Use the following command:

```
create procedure empproc(in eid int , out ename varchar(25))
begin
select name into ename from emp where id =eid;
end
```

Write a Java application which calls the above procedure.

Program:

```
import java.sql.*;
class DaMain
{
    public static void main(String[] args)
    {
        try
        {
        Class.forName("com.mysql.cj.jdbc.Driver");
        System.out.println("Driver loaded");
        }
        catch(ClassNotFoundException cfe)
        {
        System.out.println(cfe);
        }
        try
        {
```

```
                        Connection con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/company?useSSL=false",
"root","rajshree@1603");

             CallableStatement stmt=con.prepareCall("{call epmproc(?,?)}");
             stmt.registerOutParameter(3,Types.VARCHAR);
             stmt.setInt(1,3);
             ResultSet rs=stmt.executeQuery();
             System.out.println(stmt.getString(2));
             stmt.close();
             con.close();
                        }
                        catch(SQLException e)
                        {
                        System.out.println(e);
                        }
            }
}
```