1. Write a program to demonstrate checked Exception Handling using nested try, multiple catch statements.

Code:

```java
public class Main {
  public static void main(String[] args) {
    try {

      try {
        int[] num = { 1, 2, 3 };
        int b = num[4];
      } catch (Exception e) {
        System.out.println(e);
      } finally {
        System.out.println("The inner try block executed");
      }

      System.out.println("Dividing 10/0");
      int a = 10 / 0;
    } catch (Exception e) {
      System.out.println(e);
    } finally {
      System.out.println("The outer try block executed");
    }
  }
}
```

Output:

```
PS C:\Users\Ajay kumar\Desktop\SEIT-B\Java Practical\8\Q.1> javac .\Main.java
PS C:\Users\Ajay kumar\Desktop\SEIT-B\Java Practical\8\Q.1> java Main

java.lang.ArrayIndexOutOfBoundsException: Index 4 out of bounds for length 3
The inner try block executed
Dividing 10/0
java.lang.ArithmeticException: / by zero
The outer try block executed

PS C:\Users\Ajay kumar\Desktop\SEIT-B\Java Practical\8\Q.1>
```

ii. Write a Java Program to calculate the Result. Result should consist of name, seatno, date, centre number and marks of sem-2 examination. Create a user defined exception class MarksOutOfBoundsException, If Entered marks of any subject is greater than 100 or less than 0, and then program should create a user defined Exception of type MarksOutOfBoundsException and must have a provision to handle it.

Code:

```
import java.util.Scanner;

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

class Sem2Result {
  String name;
  int seatNo;
  String date;
  int centerNo;
  int marks;

  Sem2Result(String name, int seatNo, String date, int centerNo, int
marks) {
    this.name = name;
    this.seatNo = seatNo;
    this.date = date;
    this.centerNo = centerNo;
    this.marks = marks;
  }

  void display() {
    System.out.println("Result Details:");
    System.out.println("Name: " + name);
    System.out.println("Seat No: " + seatNo);
    System.out.println("Date: " + date);
    System.out.println("Center Number: " + centerNo);
    System.out.println("Semester 2 Marks: " + marks);
  }
}

class Main {
  public static void main(String[] args) {

    Scanner sc = new Scanner(System.in);
```

```
    System.out.print("Enter the Marks: ");
    int marks = sc.nextInt();
    try {
      Sem2Result studentResult = new Sem2Result("Ajaykumar Nadar",
123456, "2023-09-22", 001, marks);
      if (studentResult.marks < 0 || studentResult.marks > 100) {
        throw new MarksOutOfBoundsException("Marks out of bounds (0-
100): " + studentResult.marks);
      }
      studentResult.display();
    } catch (MarksOutOfBoundsException e) {
      System.out.println("Error: " + e.getMessage());
    }
  }
}
```

Output:

```
PS C:\Users\Ajay kumar\Desktop\SEIT-B\Java Practical\8\Q.2> javac .\Main.java
PS C:\Users\Ajay kumar\Desktop\SEIT-B\Java Practical\8\Q.2> java Main
Enter the Marks: 85
Result Details:
Name: Ajaykumar Nadar
Seat No: 123456
Date: 2023-09-22
Center Number: 1
Semester 2 Marks: 85
PS C:\Users\Ajay kumar\Desktop\SEIT-B\Java Practical\8\Q.2> java Main
Enter the Marks: 101
Error: Marks out of bounds (0-100): 101
PS C:\Users\Ajay kumar\Desktop\SEIT-B\Java Practical\8\Q.2>
```

1. Write java program where user will enter loginid and password as input. The password should be 8 digit containing one digit and one special symbol. If user enter valid password satisfying above criteria then show “Login Successful Message”. If user enter invalid Password then create InvalidPasswordException stating Please enter valid password of length 8 containing one digit and one Special Symbol.

Code:

```
import java.util.Scanner;
import java.lang.Character;

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

class User {
  private String loginid;
  private String password;

  void login(String loginid, String password) {
    if (this.passwordChecker(password)) {
      this.loginid = loginid;
      this.password = password;
      System.out.println("Login Successful");
    }
    else {
      System.out.println("Login failed");
    }
  }

  boolean passwordChecker(String password) {
    try {
      if (password.length() < 8) {
        throw new InvalidPasswordException("Password must contain
minimum 8 characters.");
      }
      boolean isDigit = false;
      boolean isSymbol = false;
      for (int i = 0; i < password.length(); i++) {
        if (Character.isDigit(password.charAt(i))) {
          isDigit = true;
        } else if (!Character.isLetter(password.charAt(i)) &&
!Character.isWhitespace(password.charAt(i))) {
          isSymbol = true;
        }
```

```
      }
      if (!isDigit) {
        throw new InvalidPasswordException("Password must contain a
digit");
      }
      else if (!isSymbol) {
        throw new InvalidPasswordException("Password must contain a
symbol.");
      }
      else {
        return true;
      }
    } catch (InvalidPasswordException e) {
      System.out.println("Error: " + e.getMessage());
      return false;
    }

  }
}

public class Main {
  public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    System.out.print("Enter the Login ID: ");
    String id = sc.next();
    System.out.print("Enter the password: ");
    String password = sc.next();

    User user = new User();
    user.login(id, password);
  }
}
```

Output:

```
PS C:\Users\Ajay kumar\Desktop\SEIT-B\Java Practical\8\PE_Q.1> javac .\Main.java
PS C:\Users\Ajay kumar\Desktop\SEIT-B\Java Practical\8\PE_Q.1> java Main
Enter the Login ID: ajaykumar
Enter the password: ajaykumar1
Error: Password must contain a symbol.
Login failed
PS C:\Users\Ajay kumar\Desktop\SEIT-B\Java Practical\8\PE_Q.1> java Main
Enter the Login ID: ajaykumar
Enter the password: ajaykumar@1
Login Successful
PS C:\Users\Ajay kumar\Desktop\SEIT-B\Java Practical\8\PE_Q.1>
```