NORTH SOUTH UNIVERSITY
Center of Excellence in Higher Education

Department of Electrical and Computer Engineering

CSE215 : Programming Language II

Assignment 01

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Course Title	: Programming Language II
Course Code	: CSE215
Section	: 13
Faculty	: Dr. Mohammad Abu Yousuf
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Assignment Topic	: Design and Implement of Customized Exception Based on Any Real Life Scenario
Discussed Topic	: Admission test of a university

Description

Our discussed scenario is about an admission test of a university. Here a student can apply and sit for admission test. But based on some condition they can get a chance to study on the university. It's noteworthy that **anybody** can apply and sit for the admission test, but if he fulfills some particular requirements, he/she will be able to get admit. As anybody can sit for admission, so we need to consider these each condition as an exception. These exception work as a validator which check the eligibility of a student. Also, there are some different kinds of exception. Like certain mark on particular subject for particular department or program.

Exceptions

- **InsufficientGPAException** : The minimum GPA required is 4.00. If a student's GPA is less than 4.00, then the system will throw this exception.
- **TooOldException** : If the candidate's age is more than 21, he/she will not be able to study in that university
- **NotEnoughMarkException:** If a student cannot score more than 0 marks in admission test, he/she is not accepted.
- **InvalidMark** : If a student cannot score more than 80 marks in Math, Physics and Chemistry in HSC he/she is not accepted for engineering department.
- **InvalidHSCSSCYearException:** If a student's HSC year is before 2019 and SSC year is before2017, he/she will be disqualified.
- **NoCodeException** : If a student has no prior coding experience, he/she will not be accepted for CSE.
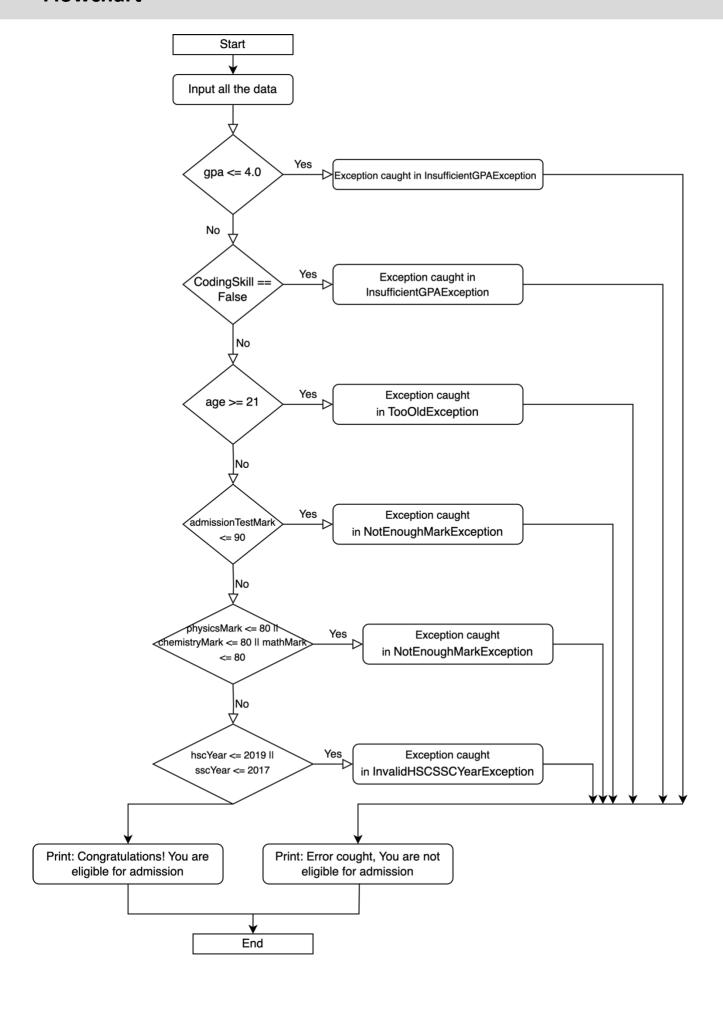
Code

```java
import java.util.Scanner;
class InsufficientGPAException extends Exception {
    public InsufficientGPAException(String message) {
        super(message);
    }
}

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

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

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

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

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

class Info {
    Scanner scan = new Scanner(System.in);
    double gpa;
    boolean CodingSkill;
    int age;
```

```java
    int admissionTestMark;
    int physicsMark;
    int chemistryMark;
    int mathMark;
    int hscYear;
    int sscYear;

    public void info() {


        System.out.print("Enter Your GPA: ");
        gpa = scan.nextDouble();

        System.out.print("Do you have any prior coding skill? (true/false): ");
        CodingSkill = scan.nextBoolean();

        System.out.print("Enter Your Age: ");
        age = scan.nextInt();

        System.out.print("Enter Your Admission test mark: ");
        admissionTestMark = scan.nextInt();

        System.out.print("Enter Your mark in Physics in HSC: ");
        physicsMark = scan.nextInt();

        System.out.print("Enter Your mark in Chemistry in HSC: ");
        chemistryMark = scan.nextInt();

        System.out.print("Enter Your mark in Math in HSC: ");
        mathMark = scan.nextInt();

        System.out.print("Enter Your HSC year: ");
        hscYear = scan.nextInt();

        System.out.print("Enter Your SSC year: ");
        sscYear = scan.nextInt();
    }
}

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


        Info obj = new Info();

        obj.info();
```

```java
    try {

        if (obj.gpa <= 4.0) {
            throw new InsufficientGPAException("Insufficient GPA for admission");
        }
        if (!obj.CodingSkill) {
            throw new NoCodeException("Coding skill is required for admission in CSE
department");
        }
        if (obj.age >= 21) {
            throw new TooOldException("Age must be less than 21 for admission");
        }
        if (obj.admissionTestMark <= 90) {
            throw new NotEnoughMarkException("Minimum admission test mark requirement
not met");
        }
        if (obj.physicsMark <= 80 || obj.chemistryMark <= 80 || obj.mathMark <= 80) {
            throw new InvalidMarkException("Minimum mark requirement not met in Physics,
Chemistry or Math to admit in Engineering Department");
        }
        if (obj.hscYear <= 2019 || obj.sscYear <= 2017) {
            throw new InvalidHSCYearException("Invalid HSC or SSC year");
        }


        System.out.println("Congratulations! You are eligible for admission.");
    } catch (InsufficientGPAException | NoCodeException | TooOldException |
NotEnoughMarkException | InvalidMarkException | InvalidHSCYearException ex) {
        System.out.println("Error caught: " + ex.getMessage());
    }
  }
}
```

Flowchart

Start

Input all the data

gpa <= 4.0 — Yes → Exception caught in InsufficientGPAException

No

CodingSkill == False — Yes → Exception caught in InsufficientGPAException

No

age >= 21 — Yes → Exception caught in TooOldException

No

admissionTestMark <= 90 — Yes → Exception caught in NotEnoughMarkException

No

physicsMark <= 80 || chemistryMark <= 80 || mathMark <= 80 — Yes → Exception caught in NotEnoughMarkException

No

hscYear <= 2019 || sscYear <= 2017 — Yes → Exception caught in InvalidHSCSSCYearException

Print: Congratulations! You are eligible for admission

Print: Error cought, You are not eligible for admission

End

Output

Fig 1.1: Output for no exception caught

Fig 1.2: Exception caught in InsufficientGPAException

Fig 1.3: Exception caught in NoCodeException

Fig 1.4: Exception caught in TooOldException

Fig 1.5: Exception caught in NotEnoughMarkException

Fig 1.6: Exception caught in InvalidMark

Fig 1.7: Exception caught in InvalidHSCSSCYearException