



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
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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 before 2017, he/she will be disqualified.
- **NoCodeException** : If a student has no prior coding experience, he/she will not be accepted for CSE.

Code

```
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;
```

```

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();
    }
}

```

```

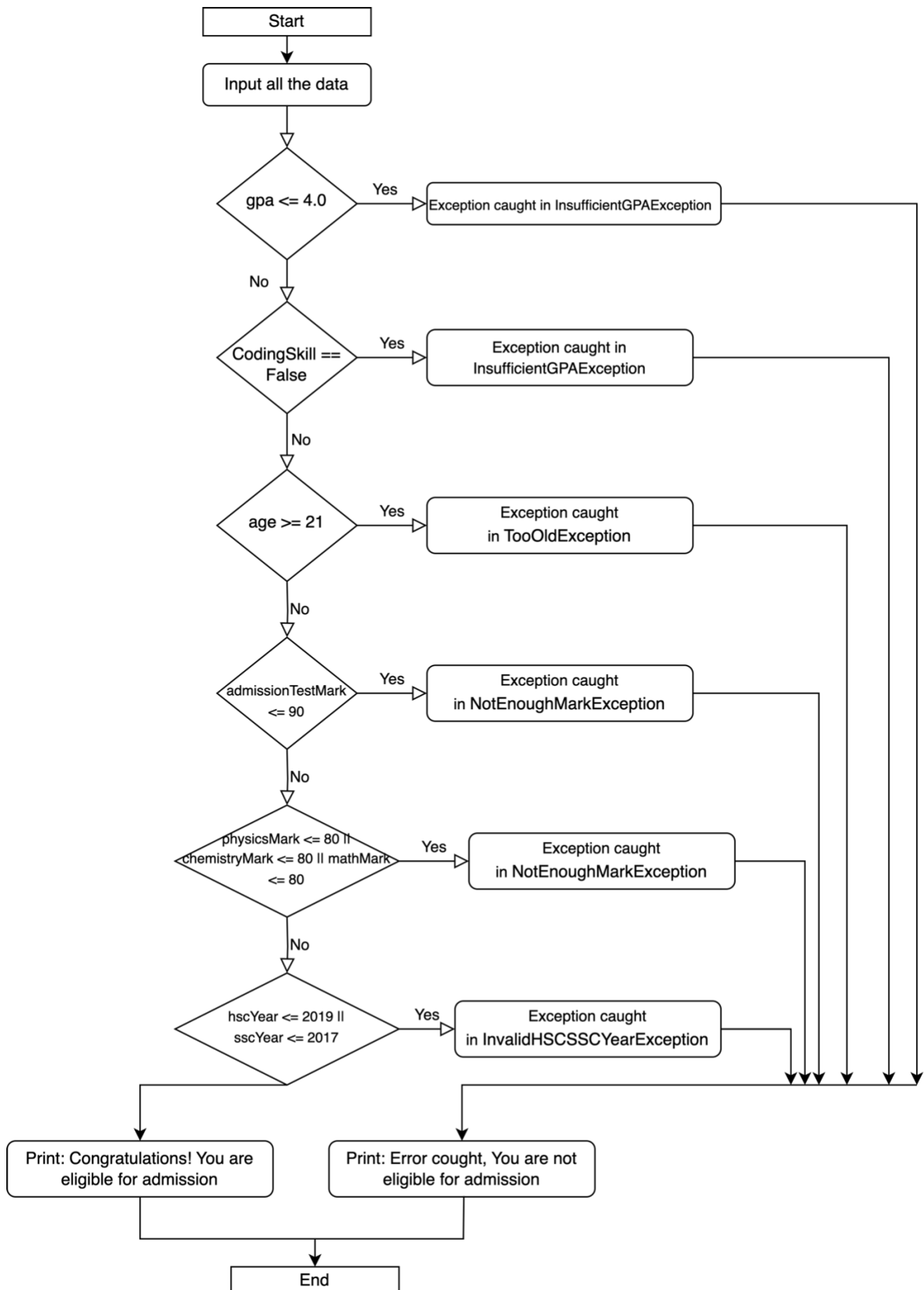
try {

    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



Output



The screenshot shows the Run console for a Java application named AdmissionTest. The output displays a series of prompts and user inputs, followed by a congratulatory message. The process finished with exit code 0.

```
Run AdmissionTest x
/Users/misbahkhan/Library/Java/JavaVirtualMachines/openjdk-20.0.1/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=52203:/
Enter Your GPA: 5.00
Do you have any prior coding skill? (true/false): true
Enter Your Age: 19
Enter Your Admission test mark: 98
Enter Your mark in Physics in HSC: 89
Enter Your mark in Chemistry in HSC: 98
Enter Your mark in Math in HSC: 97
Enter Your HSC year: 2022
Enter Your SSC year: 2020
Congratulations! You are eligible for admission.
Process finished with exit code 0
```

Fig 1.1: Output for no exception caught



The screenshot shows the Run console for AdmissionTest. The output displays a series of prompts and user inputs, followed by an error message: "Error caught: Insufficient GPA for admission". The process finished with exit code 0.

```
Run AdmissionTest x
/Users/misbahkhan/Library/Java/JavaVirtualMachines/openjdk-20.0.1/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=52211:/
Enter Your GPA: 3.00
Do you have any prior coding skill? (true/false): true
Enter Your Age: 20
Enter Your Admission test mark: 99
Enter Your mark in Physics in HSC: 81
Enter Your mark in Chemistry in HSC: 83
Enter Your mark in Math in HSC: 86
Enter Your HSC year: 2022
Enter Your SSC year: 2020
Error caught: Insufficient GPA for admission
Process finished with exit code 0
```

Fig 1.2: Exception caught in InsufficientGPAException



The screenshot shows the Run console for AdmissionTest. The output displays a series of prompts and user inputs, followed by an error message: "Error caught: Coding skill is required for admission in CSE department". The process finished with exit code 0.

```
Run AdmissionTest x
/Users/misbahkhan/Library/Java/JavaVirtualMachines/openjdk-20.0.1/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=52228:/
Enter Your GPA: 5.00
Do you have any prior coding skill? (true/false): false
Enter Your Age: 19
Enter Your Admission test mark: 90
Enter Your mark in Physics in HSC: 92
Enter Your mark in Chemistry in HSC: 88
Enter Your mark in Math in HSC: 87
Enter Your HSC year: 2023
Enter Your SSC year: 2021
Error caught: Coding skill is required for admission in CSE department
Process finished with exit code 0
```

Fig 1.3: Exception caught in NoCodeException

```
Run AdmissionTest x
/Users/misbahkhan/Library/Java/JavaVirtualMachines/openjdk-20.0.1/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=52284:/...
Enter Your GPA: 4.50
Do you have any prior coding skill? (true/false): true
Enter Your Age: 25
Enter Your Admission test mark: 88
Enter Your mark in Physics in HSC: 98
Enter Your mark in Chemistry in HSC: 89
Enter Your mark in Math in HSC: 48
Enter Your HSC year: 2022
Enter Your SSC year: 2018
Error caught: Age must be less than 21 for admission

Process finished with exit code 0
```

Fig 1.4: Exception caught in TooOldException

```
Run AdmissionTest x
/Users/misbahkhan/Library/Java/JavaVirtualMachines/openjdk-20.0.1/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=52284:/...
Enter Your GPA: 5.00
Do you have any prior coding skill? (true/false): true
Enter Your Age: 19
Enter Your Admission test mark: 12
Enter Your mark in Physics in HSC: 73
Enter Your mark in Chemistry in HSC: 45
Enter Your mark in Math in HSC: 23
Enter Your HSC year: 2017
Enter Your SSC year: 2015
Error caught: Minimum admission test mark requirement not met

Process finished with exit code 0
```

Fig 1.5: Exception caught in NotEnoughMarkException

```
Run AdmissionTest x
/Users/misbahkhan/Library/Java/JavaVirtualMachines/openjdk-20.0.1/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=52296:/...
Enter Your GPA: 5.00
Do you have any prior coding skill? (true/false): true
Enter Your Age: 19
Enter Your Admission test mark: 98
Enter Your mark in Physics in HSC: 23
Enter Your mark in Chemistry in HSC: 25
Enter Your mark in Math in HSC: 34
Enter Your HSC year: 2022
Enter Your SSC year: 2019
Error caught: Minimum mark requirement not met in Physics, Chemistry or Math to admit in Engineering Department

Process finished with exit code 0
```

Fig 1.6: Exception caught in InvalidMark



```
Run AdmissionTest x
/Users/misbahkhan/Library/Java/JavaVirtualMachines/openjdk-20.0.1/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=52310:/
Enter Your GPA: 5.00
Do you have any prior coding skill? (true/false): true
Enter Your Age: 19
Enter Your Admission test mark: 98
Enter Your mark in Physics in HSC: 89
Enter Your mark in Chemistry in HSC: 85
Enter Your mark in Math in HSC: 84
Enter Your HSC year: 2016
Enter Your SSC year: 2014
Error caught: Invalid HSC or SSC year
Process finished with exit code 0
```

Test > AdmissionTest.java > AdmissionTest > main 7:40 LF UTF-8 4 spaces

Fig 1.7: Exception caught in InvalidHSCSSCYearException