

# 02\_Student\_Grading\_System

**1. What happens if the user enters invalid marks (e.g., negative values or values greater than 100) for any subject?**

**Answer:**

The program checks the validity of marks. If the user enters marks outside the valid range (0-100), the program will display:

css

Copy code

Invalid marks! Please enter marks between 0 and 100.

It then asks the user to re-enter the marks for the same subject.

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**2. What happens if the user enters an extremely large roll number (greater than `long long` limit)?**

**Answer:**

The program uses `long long` for the roll number, which can store large numbers, but if the user enters a roll number greater than the `long long` limit (greater than 9,223,372,036,854,775,807), the roll number will overflow, causing incorrect behavior or unpredictable results.

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**3. What happens if the user enters zero marks for all subjects?**

**Answer:**

If the user enters zero for all subjects:

- **Total Marks:** 0
- **Percentage:** 0.0%
- **Grade:** F
- **Status:** Failed

The program will output:

yaml

Copy code

Total Marks: 0/500

Percentage: 0%

Grade: F

Status: Failed

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#### 4. What happens if the user enters 100 marks for all subjects?

**Answer:**

If the user enters 100 for all subjects:

- **Total Marks:** 500/500
- **Percentage:** 100%
- **Grade:** A
- **Status:** Passed

The program will output:

yaml

Copy code

Total Marks: 500/500

Percentage: 100%

Grade: A

Status: Passed

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#### 5. What happens if the user enters an invalid roll number (e.g., a string or special characters)?

**Answer:**

Currently, the program expects a numeric input for the roll number. If a user enters a non-numeric value (e.g., "ABC"), the program will not function as expected and may enter an infinite loop or produce incorrect results unless input validation is added.

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#### 6. What if the user enters a name with leading or trailing spaces?

**Answer:**

The `getline(cin, studentName)` function captures the name with spaces, including leading or trailing spaces. If you want to remove them, you could use `studentName.erase()` to trim the spaces.

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## 7. How does the program handle the case where the user inputs a valid roll number but no name?

### Answer:

Currently, the program does not handle empty names explicitly. If the user presses "Enter" without typing a name, the program will assign an empty string to the `studentName` variable and display an empty name in the report.

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## 8. What happens if the user inputs invalid data for marks (like entering a letter or special character instead of a number)?

### Answer:

If the user enters invalid data (e.g., a letter or special character), the program may behave incorrectly or crash due to the failure of the `cin` input stream. Proper input validation is needed to handle such cases.

**Solution:** Add input validation to check for `cin.fail()` and prompt the user to re-enter the marks.

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## 9. What happens if the user inputs marks in decimal format (e.g., 75.5)?

### Answer:

The program allows decimal values for marks, as it uses `float` for the marks array. It will accept marks like `75.5` and calculate the total and percentage accordingly.

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## 10. How does the program handle a case where the user inputs marks below 60%?

### Answer:

If the percentage is below 60%, the program assigns a grade of `F` and outputs:

makefile

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Grade: `F`

Status: `Failed`

For example, if the user scores below 60% in total, they will receive a failing status, and the grade will be `F`.

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