Sentinel Program

Instructions for the Program:

In this exercise, you will create a Java program that calculates the average of multiple exam scores entered by the user and assigns a grade based on that average. The program keeps reading input until the user enters 999, which will stop the input process.

Steps:

1. **Import Required Classes**:

   o The program uses the Scanner class for reading user input, and it must import the java.util.Scanner package to use it.

2. **Method for Grading**:

   o There is a method called getGrade that takes the average score as a parameter and returns a letter grade based on the following scale:

     - A: 90 or above

     - B: 80 to 89

     - C: 70 to 79

     - D: 60 to 69

     - F: Below 60

3. **Main Method Flow**:

   o The program starts by initializing a Scanner object to take user input.

   o It initializes a variable oneExam with a value of 1 (just a starting value, it will be updated later).

   o The program uses a **while loop** to continuously ask the user to enter exam scores until the sentinel value 999 is entered. This sentinel value is used to stop the loop and indicates that the user is finished entering scores.

4. **Input Validation**:

   o For each score entered, the program checks if it is within the valid range of 0 to 100:

     - If the score is valid, it adds the score to the sum and increments a counter (counter) to keep track of how many scores were entered.

     - If the score is not valid but not equal to 999, the program prints a message asking the user to enter a valid score.

5. **Calculating the Average**:

   o Once the loop ends (when the user inputs 999), the program calculates the average by dividing the total sum of scores by the number of valid scores entered (counter).

6. **Displaying Results**:

o The program prints:

- The sum of all valid scores.

- The average, formatted to 2 decimal places.

- The letter grade, which is determined by the getGrade method based on the average.

Example Run:

Enter a score (the inputs ends if it is 999): 95
Enter a score (the inputs ends if it is 999): 100
Enter a score (the inputs ends if it is 999): 84
Enter a score (the inputs ends if it is 999): 150
Enter a VALID score (0-100):
Enter a score (the inputs ends if it is 999): 45
Enter a score (the inputs ends if it is 999): 999
The sum is 324.0
The average is : 81.00
Grade is: B

Important Notes:

- **Sentinel Value**: The input 999 is used to indicate the end of input. It is not counted as a valid score.

- **Input Validation**: The program only accepts scores between 0 and 100. If an invalid score is entered, the user will be prompted to enter a valid score.

- **Edge Case**: If the user doesn't enter any valid scores (e.g., enters 999 right away or only invalid scores), you may want to handle this scenario to avoid dividing by zero.