CS 202 Lab Assignment 10 (Total Marks= 20)

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Q. To develop a multithreaded Java application that reads student marks from multiple text files, performs statistical analysis on each file, and writes a summarized report into a common output file using synchronization.

[Marks = File Creation (5)+Thread Creation (5)+ Calculations of student number, marks etc (5)+ Thread Synchronization (5)= 20]

Tasks to Accomplish:

1. You are given a list of text files such as (classA.txt, classB.txt, classC.txt). Each file contains marks of students (one mark per line).

   Example of classA.txt could be

   78

   65

   89

   91

   72

2. For each file, create a **separate thread** that performs the following operations:
   - Reads all marks using FileReader (or BufferedReader).
   - Calculates:
     1. Total number of students (lines)
     2. Highest mark
     3. Lowest mark
     4. Average mark
3. Each thread should write its computed result into a shared summary file named MarksSummary.txt in the following format:

   Class: classA | Students: 5 | Highest: 91 | Lowest: 65 | Average: 79.0

4. Since multiple threads will attempt to write to the same file (MarksSummary.txt), use synchronization (e.g., synchronized block or synchronized method) to prevent concurrent write conflicts.

5. After all threads have completed their execution, the main thread should display a confirmation message: "***All class records processed successfully. MarksSummary.txt is ready."***