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REG NO: SP21-BSE-025

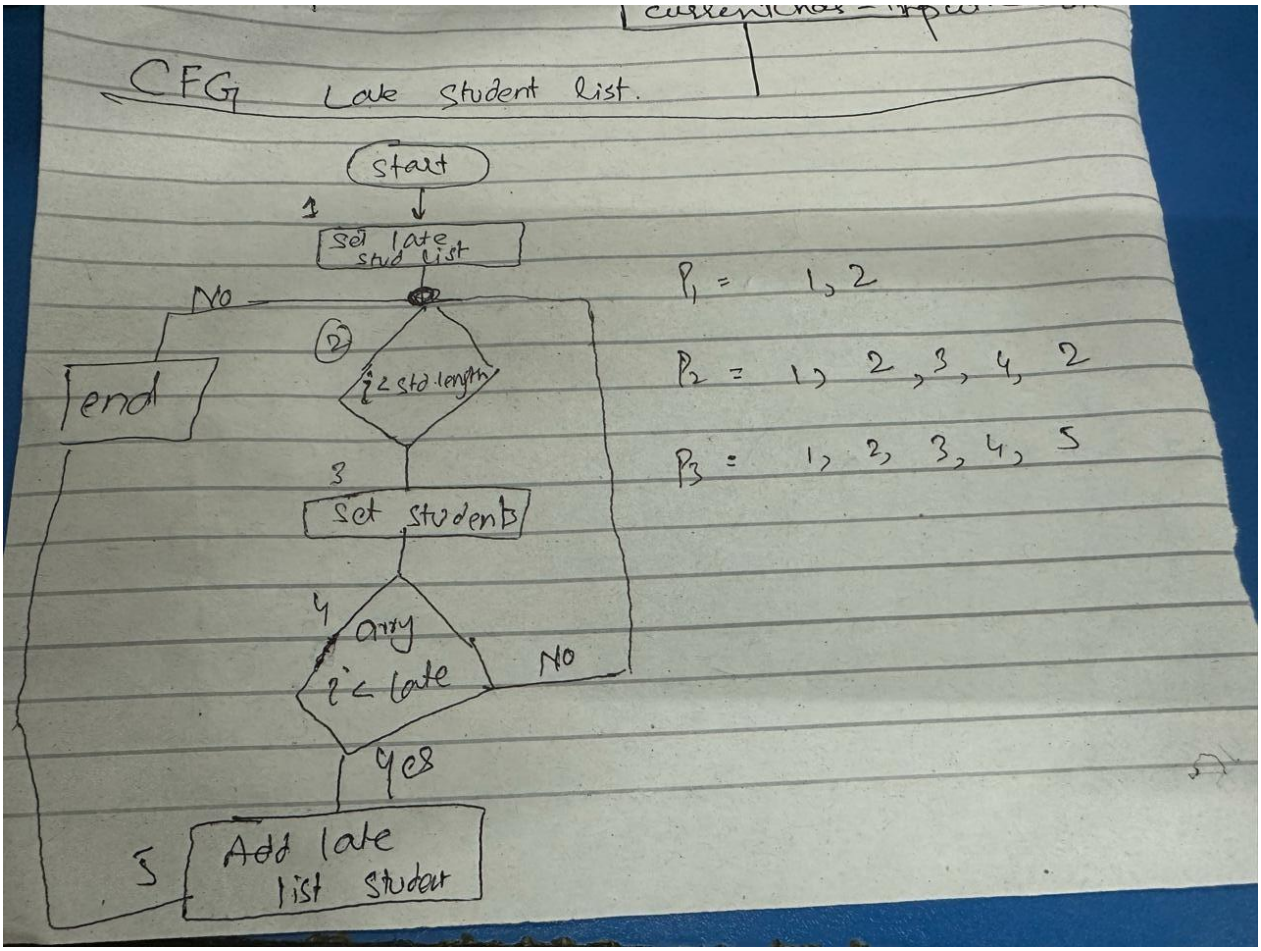
Program for Late Student Attendance Checker

```
import java.util.*;

class Student {
    private String name;
    private int arrivalTime;

    public Student(String name, int arrivalTime) {
        this.name = name;
        this.arrivalTime = arrivalTime;
    }

    public String getName() {
        return name;
    }

    public int getArrivalTime() {
        return arrivalTime;
    }
}

class AttendanceRecord {
    private Map<Student, Integer> lateThreshold;
```

```java
private Map<Student, Integer> lateThreshold;

public AttendanceRecord() {
    lateThreshold = new HashMap<>();
}

public void markLate(Student student, int threshold) {
    lateThreshold.put(student, threshold);
}

public boolean isLate(Student student) {
    int threshold = lateThreshold.getOrDefault(student, 0);
    return student.getArrivalTime() > threshold;
}

public Student getLateStudent() {
    for (Map.Entry<Student, Integer> entry : lateThreshold.entrySet()) {
        if (entry.getKey().getArrivalTime() > entry.getValue()) {
            return entry.getKey();
        }
    }
    return null;
}
```

```java
public class LateStudentAttendanceChecker {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.println("Enter first student name:");
        String name1 = scanner.nextLine();
        System.out.println("Enter arrival time for " + name1 + " (in 24-hour fo
        int arrivalTime1 = scanner.nextInt();

        System.out.println("Enter second student name:");
        scanner.nextLine(); // Consume newline
        String name2 = scanner.nextLine();
        System.out.println("Enter arrival time for " + name2 + " (in 24-hour fo
        int arrivalTime2 = scanner.nextInt();

        Student student1 = new Student(name1, arrivalTime1);
        Student student2 = new Student(name2, arrivalTime2);

        AttendanceRecord attendanceRecord = new AttendanceRecord();

        // Set late threshold for each student
        attendanceRecord.markLate(student1, 845); // Late threshold: 8:45 AM
        attendanceRecord.markLate(student2, 915); // Late threshold: 9:15 AM

        // Check if students are late
        Student lateStudent = attendanceRecord.getLateStudent();
        if (lateStudent != null) {
            System.out.println(lateStudent.getName() + " is late.");
        } else {
            System.out.println("No student is late.");
        }
    }
}
```

CFG


CFG Late student list.
start
1
Set late stud list
No
2
i < std length
end
3
Set students
4
any
i < late
No
Yes
5
Add late
list studen
P1 = 1, 2
P2 = 1, 2, 3, 4, 2
P3 = 1, 2, 3, 4, 5

Listing the Paths

After analyzing your image CFG, list out the paths you've identified in a clear way. For example:

Path 1:

Start --- Get Class Start Time ---> Student Loop (0 times)---- > Calculate Late Threshold -> ... -> End

Path 2:

Start ---> Get Class Start Time ----> Student Loop (1 time)------> Check Arrival Time -----> No Late Students ->----- > End

Path 3:

Start ----> Get Class Start Time ----> Student Loop (1 time)----> Check Arrival Time ----> Late -> Add to Late List ->---- > End

Test Cases:

Test Case ID	**Description**	**Expected Outcome**	**Coverage Criteria**
TC01	No students entered (input "done").	"All students arrived on time!" message.	Statement, Branch
TC02	One student on time (arrival before time deadline).	Student's name not included in the late student list.	Statement, Branch, Decision
TC03	One student late (arrival after time deadline).	Student's name included in the late student list.	Statement, Branch, Decision
TC04	Multiple students, some on time, some late.	List should include only the late students.	Statement, Branch, Decision