

## **Problem Statement:** University Student & Event Management System

The university wants a software system to **manage students**, their **participation in various events**, and **their performance/results** in a single program. The system should be able to:

### **Register Students**

**Each student has:** roll number, name, age, and contact info (phone, email).

Students can participate in multiple events (cultural, sports, and technical).

(Hint: Think about whether to use structs, arrays, or nested structs to store all info.)

Store Event Information

Each event has a name, type, maximum marks, and score obtained by each participant.

(Hint: Should each event have a separate array, or should it be part of the student record? Could enums help for event type?)

### **Record Performance**

For each student, track marks for every event.

Students may only have one type of score per event (either sports score OR cultural score).

(Hint: Consider a union to save memory if only one score per event is stored.)

### **d) Operations to Perform**

Add new students and event details.

Compute total marks, average, and grade for each student.

Rank students by total marks.

Search for a student by roll number.

Print a leaderboard with student names, total marks, and grades.

(Hint: Functions for modularity; arrays for multiple students; loops for traversal.)

### **e) String Operations**

Names and event names should allow operations like concatenation, reverse, and comparison.

(Hint: Use string functions or character arrays.)

### **f) Dynamic Decisions**

Decide how to organize students and event data efficiently.

Decide which data types to use for marks, scores, and grades.

Decide where to use typedef, enum, or union.