

# School Management System

This project implements a basic school management system in Python. It consists of classes representing a School, Classroom, Subject, Teacher, and Student.

## 1. School:

### - Attributes:

- name: Name of the school.
- address: Address of the school.
- teachers: Dictionary to store teachers associated with subjects.
- classrooms: Dictionary to store classrooms.

### - Methods:

- add\_classroom(classroom): Adds a classroom to the school.
- add\_teacher(subject, teacher): Adds a teacher to a specific subject.
- student\_admission(student): Enrolls a student into a classroom.
- calculate\_grade(marks): Static method to calculate the grade based on marks.
  - grade\_to\_value(grade): Static method to convert grade to its corresponding value.
  - value\_to\_grade(value): Static method to convert value to its corresponding grade.
  - \_\_repr\_\_(): String representation of the school, including classroom details and student exam marks.

## 2. Classroom:

### - Attributes:

- name: Name of the classroom.
- students: List to store students.
- subjects: List to store subjects taught in the classroom.

### - Methods:

- add\_student(student): Adds a student to the classroom.
- add\_subject(subject): Adds a subject to the classroom.
- take\_semester\_final(): Conducts semester final exams for all subjects.
- get\_top\_students(): Method to sort students by grade (TODO).

### **3. Subject:**

- Attributes:
  - name: Name of the subject.
  - teacher: Teacher associated with the subject.
  - max\_marks: Maximum marks for the subject.
  - pass\_marks: Passing marks for the subject.
- Methods:
  - exam(students): Conducts exam for students and records their marks.

### **4. Person:**

- Attributes:
  - name: Name of the person.

### **5. Teacher (inherits from Person):**

- Attributes:
  - Inherits name from Person.
- Methods:
  - teach(): Placeholder method for teaching.
  - evaluate\_exam(): Evaluates exams and returns random marks.

### **6. Student (inherits from Person):**

- Attributes:
  - Inherits name from Person.
  - classroom: Classroom the student is enrolled in.
  - marks: Dictionary to store marks obtained in subjects.
  - subject\_grade: Dictionary to store grades obtained in subjects.
  - grade: Final grade of the student.
- Methods:
  - calculate\_final\_grade(): Calculates the final grade of the student.
- Properties:
  - id: Getter and setter for student ID.