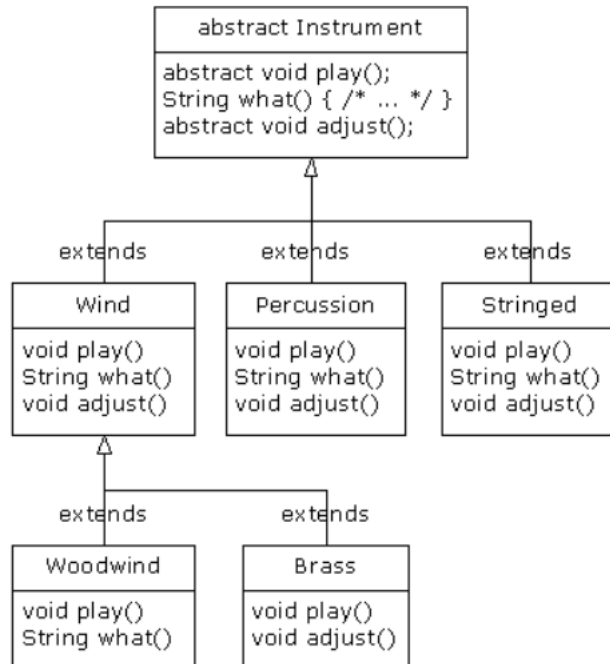


Programmation orientée objet 2 (TP)
ABSTRACT

Exercise 01 :



- Write a Java program based on the previous scheme.
- Add two methods to the main : tune(Instrument i) and tuneAll(Instrument[] e), with the goal to play by instrument or all instruments.
- Create objects of instruments to play an orchestra (orchestra is a table or List), using the previous methods.

The execution should show at the end :

Wind is playing

Percussion is playing

Stringed is playing

Brass is playing

Woodwind is playing

Exercise 02 :

Write a Java program to create an abstract class Employee with abstract methods calculateSalary() and displayInfo(). Create subclasses Manager and Programmer that extend the Employee class and implement the respective methods to calculate salary and display information for each role.

Sample Output:

Manager Name: Corona Cadogan

Base Salary: \$6000.0

Bonus: \$1000.0

Total Salary: \$7000.0

Programmer Name: Antal Nuka

Base Salary: \$5000.0

Overtime Hours: 20

Hourly Rate: \$25.0

Total Salary: \$5500.0

Exercise03 (HomeWork): Student Grade Management System

Description:

Design a program to manage students' grades for multiple abstraction and polymorphism.

Requirements:

Create an abstract class **Student** with the following attributes and methods:

Attributes: **studentID**, **studentName**

Methods: **calculateGrade()**, **displayDetails()**

Implement concrete subclasses of Student for different types of students:

- **RegularStudent**: Represent a regular student with attributes such as **attendance**, **assignments**, and **exam scores**.

- **HonorStudent:** Represent an honor student with attributes such as **project scores**, **research papers**, and **exam scores**.

Implement the **calculateGrade()** method in each subclass to calculate the final grade for the student based on specific criteria (e.g., weighted average of scores).

Create a **GradeManagementSystem** class to manage student grades.

Provide methods to **add** new students, **remove** students, and **display** student details.

Implement a **method to calculate and display the overall average** grade of all students.

MAIN :

- Create a **Main class** to test the functionality of the grade management system.
- Create **instances** of regular and honor students.
- Add students to the system and input their scores for different subjects.
- Display the details and final grades of each student using polymorphism.
- Ensure proper error handling and validation for scenarios such as invalid input for student scores