

Week 01 Exercise

OOP in Dart

Instructions:

For your exercise, you are going to create a Flutter app with Dart. The goal of this exercise is to practice you with the basic syntax of Dart and how it implements OOP. A problem statement is given below. You are going to create the classes and specifications needed to run the given main file template from the assignment repository.

Problem Statement:

A section has a name, subject tied to it, and a list of students. Each section can have a maximum of 5 students. A subject has a course code, course title, and prerequisite. A student has a name, age, student number, course, running GWA, and subjects taken.

In the application, a student can enlist to a section as long as the maximum number of students has not been reached yet. If the subject has a prerequisite, make sure that the student has already taken the prerequisite before they can enlist. You can assume that the student will not enlist in 2 or more sections at the same time.

For each section, a user should be able to:

- compute the mean GWA of all students;
- search a student given the name; and
- print all students enlisted in that section.

Make sure to put the correct fields and methods necessary for the application. Make the class members private, if needed. As much as possible, make your program modular. The main file can give you a clue as to how you can design and implement your program.

Since there is no user interface to create yet, the user input will be simulated via the main method. The output of the program (in the terminal) will look like this:

```
I/flutter (13181): Student Number: 2021-00000  
I/flutter (13181): Name: Snow White  
I/flutter (13181): Age: 20  
I/flutter (13181): Course: BSCS  
I/flutter (13181): GWA: 1.23  
I/flutter (13181): Subjects Taken:  
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null  
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
```

I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00001
I/flutter (13181): Name: Cinderella
I/flutter (13181): Age: 21
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 2.12
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00002
I/flutter (13181): Name: Aurora
I/flutter (13181): Age: 21
I/flutter (13181): Course: BSSTAT
I/flutter (13181): GWA: 1.56
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00003
I/flutter (13181): Name: Ariel
I/flutter (13181): Age: 22
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.89
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00004
I/flutter (13181): Name: Belle
I/flutter (13181): Age: 20
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 2.05
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00005
I/flutter (13181): Name: Jasmine
I/flutter (13181): Age: 22
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.09
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00006
I/flutter (13181): Name: Florian
I/flutter (13181): Age: 21
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 2.12
I/flutter (13181): Subjects Taken:

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I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00007
I/flutter (13181): Name: Henry
I/flutter (13181): Age: 20
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.78
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00008
I/flutter (13181): Name: Philip
I/flutter (13181): Age: 21
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 2.02
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00009
I/flutter (13181): Name: Eric
I/flutter (13181): Age: 22
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.82
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00010
I/flutter (13181): Name: Adam
I/flutter (13181): Age: 21
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.67
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00010
I/flutter (13181): Name: Adam
I/flutter (13181): Age: 21
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.67
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): =====
I/flutter (13181): Student Number: 2021-00011
I/flutter (13181): Name: Aladdin
I/flutter (13181): Age: 21
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.03
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): =====
I/flutter (13181): Successfully added Snow White to the section.
I/flutter (13181): Successfully added Cinderella to the section.
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I/flutter (13181): Successfully added Aurora to the section.
I/flutter (13181): Successfully added Ariel to the section.
I/flutter (13181): Successfully added Belle to the section.
I/flutter (13181): Maximum number of students reached for this section.
I/flutter (13181): Successfully added Jasmine to the section.
I/flutter (13181): Successfully added Florian to the section.
I/flutter (13181): Successfully added Henry to the section.
I/flutter (13181): Philip did not take the prerequisite course yet.
I/flutter (13181): Eric did not take the prerequisite course yet.
I/flutter (13181): Adam did not take the prerequisite course yet.
I/flutter (13181): Aladdin did not take the prerequisite course yet.
I/flutter (13181): =====
I/flutter (13181): A-1L: 1.77
I/flutter (13181): A-2L: 1.605
I/flutter (13181): A-3L: 1.78
I/flutter (13181): =====
I/flutter (13181): Student found!
I/flutter (13181): Student Number: 2021-00002
I/flutter (13181): Name: Aurora
I/flutter (13181): Age: 21
I/flutter (13181): Course: BSSTAT
I/flutter (13181): GWA: 1.56
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): Student Aurora not found
I/flutter (13181): Student Aurora not found
I/flutter (13181): Student found!
I/flutter (13181): Student Number: 2021-00000
I/flutter (13181): Name: Snow White
I/flutter (13181): Age: 20
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.23
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): ===== STUDENTS IN A-1L =====
I/flutter (13181): Student Number: 2021-00000
I/flutter (13181): Name: Snow White
I/flutter (13181): Age: 20
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.23
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): *
I/flutter (13181): Student Number: 2021-00001
I/flutter (13181): Name: Cinderella
I/flutter (13181): Age: 21
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 2.12
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21

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I/flutter (13181): *
I/flutter (13181): Student Number: 2021-00002
I/flutter (13181): Name: Aurora
I/flutter (13181): Age: 21
I/flutter (13181): Course: BSSTAT
I/flutter (13181): GWA: 1.56
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): *
I/flutter (13181): Student Number: 2021-00003
I/flutter (13181): Name: Ariel
I/flutter (13181): Age: 22
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.89
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): *
I/flutter (13181): Student Number: 2021-00004
I/flutter (13181): Name: Belle
I/flutter (13181): Age: 20
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 2.05
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): *
I/flutter (13181): ===== STUDENTS IN A-2L =====
I/flutter (13181): Student Number: 2021-00005
I/flutter (13181): Name: Jasmine
I/flutter (13181): Age: 22
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.09
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): *
I/flutter (13181): Student Number: 2021-00006
I/flutter (13181): Name: Florian
I/flutter (13181): Age: 21
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 2.12
I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): *
I/flutter (13181): ===== STUDENTS IN A-3L =====
I/flutter (13181): Student Number: 2021-00007
I/flutter (13181): Name: Henry
I/flutter (13181): Age: 20
I/flutter (13181): Course: BSCS
I/flutter (13181): GWA: 1.78

I/flutter (13181): Subjects Taken:
I/flutter (13181): Course Code: CMSC 12 | Course Title: Foundations of Computer Science | Prerequisite: null
I/flutter (13181): Course Code: CMSC 21 | Course Title: Fundamentals of Programming | Prerequisite: CMSC 12
I/flutter (13181): Course Code: CMSC 22 | Course Title: Object-oriented Programming | Prerequisite: CMSC 21
I/flutter (13181): *
I/flutter (13181): =====
I/flutter (13181): Sections in CMSC 23: 3