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Student Management System Object Oriented Programming

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Introduction

The application simulates a basic student management system. It is designed to store information about students, their teachers, the courses in each they are enrolled and the grades. To interact with those, I have created a numbered menu from where each selection represents an action made to the specified data.

To build the program there were used 2 main classes: Student and Teacher. The application was programmed such that Student is the base class, from which Teacher inherits its elements. For all the classes there were created a set of attributes, setters and getters, constructors, and destructors as well as additional methods where needed

When running the application, the user is asked to introduce a number of student and their data, as well as a number of teachers and their data. After that the selection screen pops up where the user can make multiple choices to display certain information.

Program structure

The build application is structured as follows:

1. A base class called **Student** containing information about the students

A. This class has the following attributes:

string name;

int age;

char gender;

int year;

string course1, course2, course3, course4; //The student is allowed to join 4 different courses

float grade1, grade2, grade3, grade4; //The grades from the courses

B. The class contains the following methods:

i) Setters to give values to the attributes

ii) Getters to return the values of the attributes

- iii) Implicit and parameters constructors
- iv) Destructor

2. A class called **Teacher** which inherits the elements of **Student**

A. The class contains as attributes:

- i) string subject

B. The class has the following methods:

- i) Setter to give value to attribute
- ii) Getter to return the value of the attribute
- iii) Implicit and parameters constructor
- iv) Destructor

Application demonstration

In the image below you can observe the input the program asks for in the beginning . This contains the number of students you wish to add, number of teachers, as well as their details and the students grades.

```
Introduce number of students : 3
Implicit constructor was called(Student)

Implicit constructor was called(Student)

Implicit constructor was called(Student)

Student 1
Name = Popescu

Age = 20

Gender = M

Year = 2

Course 1 = maths

Course 2 = physics

Course3 = english

Course4 = biology

Student 2
Name = Ionescu

Age = 21

Gender = F

Year = 3

Course 1 = maths

Course 2 = chemistry

Course3 = french

Course4 = sports

Student 3
Name = Nita

Age = 19

Gender = M

Year = 1

Course 1 = maths

Course 2 = chemistry

Course3 = english

Course4 = biology
```

Teacher 1	Introduce grades : Student 1
Name = Dragos	Grade 1 = 6
Age = 41	
Gender = M	
Subject = maths	Grade 2 = 8
Teacher 2	
Name = Tomulescu	Grade 3 = 4
Age = 52	
Gender = F	Grade 4 = 10
Subject = physics	
Teacher 3	Student 2
Name = Olteanu	Grade 1 = 9
Age = 38	
Gender = M	Grade 2 = 8
Subject = sports	
Teacher 4	
Name = Ciobanu	Grade 3 = 10
Age = 61	
Gender = F	Grade 4 = 10
Subject = english	
Teacher 5	Student 3
Name = Dinu	Grade 1 = 5
Age = 45	
Gender = F	Grade 2 = 6
Subject = french	
Teacher 6	
Name = Andreescu	Grade 3 = 7
Age = 31	
Gender = F	Grade 4 = 9
Subject = chemistry	

After that the user will be greeted with the selection menu which can be seen in the picture attached below

```
1.Display student details  
  
2.Display teacher details  
  
3.Display courses enrollment  
  
4.Display student grades  
  
5.Exit  
  
Choose your selection
```

The user can pick whatever action he wants , as well as to leave the program when wanted to do so

Example of student details:

Choose your selection

1

Student details : 1

Name : Popescu

Age : 20

Gender: M

Year: 2

Course 1 = maths

Course 2 = physics

Course 3 = english

Course 4 = biology

Student details : 2

Name : Ionescu

Age : 21

Gender: F

Year: 3

Course 1 = maths

Course 2 = chemistry

Course 3 = french

Course 4 = sports

Student details : 3

Name : Nita

Age : 19

Gender: M

Year: 1

Course 1 = maths

Course 2 = chemistry

Course 3 = english

Course 4 = biology

Example of student grades display. In this case the program also does the arithmetical mean off all the grades and displays the final grade

Choose your selection

4

Grades information : 1

Grade 1 = 6

Grade 2 = 8

Grade 3 = 4

Grade 4 = 10

Final grade = 7

Grades information : 2

Grade 1 = 9

Grade 2 = 8

Grade 3 = 10

Grade 4 = 10

Final grade = 9.25

Grades information : 3

Grade 1 = 5

Grade 2 = 6

Grade 3 = 7

Grade 4 = 9

Final grade = 6.75
