CS112: Programming II

Dr. Sameer M. Alrehaili
srehaili@taibahu.edu.sa

January 31, 2022
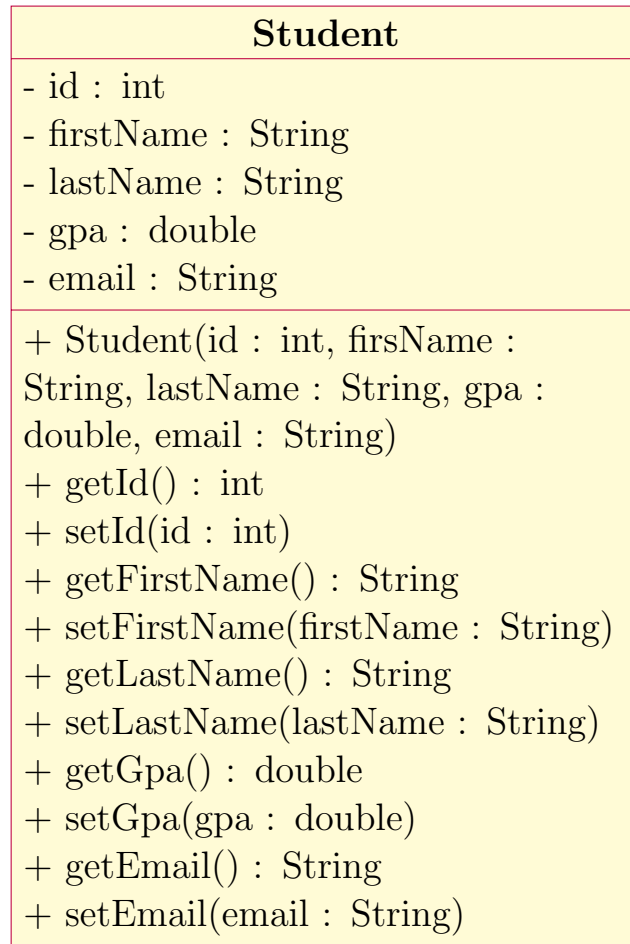
Coursework01 Solution

Instructions

1. You must submit your solution using Blackboard. **Email submissions will not be accepted**. Blackboard can be accessed from the University's website using the following address : https://lms.taibahu.edu.sa

2. You can discuss answers with your colleagues, but **cheating is prohibited and there will be extreme consequences**.

Problem 1

Design a class called **Student** that represents relevant information about a student, including the student's id, first name, last name, gpa, and email. The class should have a constructor and methods to set and get data fields defined above. Draw the class diagram using UML and then write the class definition using Java language?

The UML digram for Student:

Student
- id : int
- firstName : String
- lastName : String
- gpa : double
- email : String
+ Student(id : int, firsName : String, lastName : String, gpa : double, email : String)
+ getId() : int
+ setId(id : int)
+ getFirstName() : String
+ setFirstName(firstName : String)
+ getLastName() : String
+ setLastName(lastName : String)
+ getGpa() : double
+ setGpa(gpa : double)
+ getEmail() : String
+ setEmail(email : String)

Class definition for Student:

Listing 1: Defining the student class

```java
public class Student {
  private int id;
  private String firstName;
  private String lastName;
  private double gpa;
  private String email;

  public Student(int id, String firstName, String lastName, double gpa, String email) {
    this.id = id;
    this.firstName = firstName;
    this.lastName = lastName;
    this.gpa=gpa;
    this.email=email;
  }
  public int getId(){
    return this.id;
  }
  public setId(int id){
    this.id=id;
  }
  public String getFirstName(){
    return this.firstName;
  }
  public setFirstName(String firstName){
    this.firstName = firstName;
  }
  public String getLastName(){
    return this.getLastName;
  }
  public setLastName(String lastName){
    this.getLastName = lastName;
  }
  public double getGpa(){
    return this.gpa;
  }
  public setGpa(double gpa){
    this.gpa = gpa;
  }
  public String getEmail(){
    return this.email;
  }
  public setEmail(String email){
    this.email = email;
  }
}
```
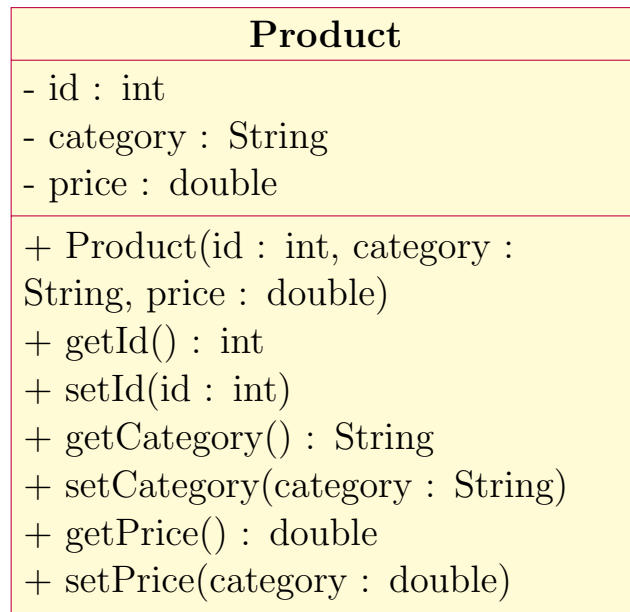
Problem 2

A market wants to create a database regarding its products. The information to store include category of the product, id, and price.
Create a class called **Product** that has fields for product's category, id, and price. The class should have a constructor and methods to set and get data fields defined above?

The class digram for Product:

Product
- id : int
- category : String
- price : double
+ Product(id : int, category : String, price : double)
+ getId() : int
+ setId(id : int)
+ getCategory() : String
+ setCategory(category : String)
+ getPrice() : double
+ setPrice(category : double)

Class definition for Product:

Listing 2: Defining the product class

```java
public class Product {
  private int id;
  private String category;
  private double price;

  public Product(int id, String category, double price) {
    this.id = id;
    this.category = category;
    this.price=price;
  }
  public int getId(){
    return this.id;
  }
  public setId(int id){
    this.id=id;
  }
  public String getCategory(){
    return this.category;
  }
  public setCategory(String category){
    this.category = category;
  }
  public String getPrice(){
    return this.price;
  }
  public setPrice(double price){
    this.price = price;
  }
}
```