

## Assignment 1: Constructors

### (Q1.1) Create a **Book** class with a parameterized constructor:

- Define a **Book** class with attributes **title**, **author**, and **price**.
- Implement a parameterized constructor to initialize these attributes.
- Write a **display** method to print the book details.

### (Q1.2) Create an overloaded constructor for a **Student** class:

- Define a **Student** class with attributes **name**, **rollNumber**, and **grade**.
- Implement a parameterized constructor to initialize all attributes.
- Implement another constructor that only initializes **name** and **rollNumber** with a default grade of 'A'.
- Write a **display** method to print the student details.

### (Q1.3) Create a **Rectangle** class with default and parameterized constructors:

- Define a **Rectangle** class with attributes **length** and **width**.
- Implement a default constructor that initializes **length** and **width** to 1.
- Implement a parameterized constructor to initialize **length** and **width** with given values.
- Write methods to calculate and return the area and perimeter of the rectangle.
- Write a **display** method to print the rectangle details.

### (Q1.4) Create a **Person** class with a constructor chaining:

- Define a **Person** class with attributes **name**, **age**, and **address**.
- Implement a parameterized constructor to initialize all attributes.
- Implement another constructor that only initializes **name** and **age**, and sets **address** to "Unknown".
- Use constructor chaining to avoid code duplication.
- Write a **display** method to print the person details.

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## Instructions to Students

1. Implement the classes as specified in each sub-problem.
2. Ensure your code is well-commented, explaining each line or block of code.
3. Submit your code along with a brief report explaining the implementation and your testing process

### Solution (1.1)

```
1 class Book {
2     String title;
3     String author;
4     double price;
5
6     // Parameterized constructor
7     Book(String t, String a, double p) {
8         title = t;
9         author = a;
10        price = p;
11    }
12
13    // Method to display book details
14    void display() {
15        System.out.println("Title: " + title);
16        System.out.println("Author: " + author);
17        System.out.println("Price: " + price);
18    }
19
20 }
21
22 class MainClass {
23     public static void main(String[] args) {
24         // Creating a Book object using the parameterized constructor
25         Book book = new Book("Java Programming", "John Doe", 29.99);
26         // Displaying the book details
27         book.display();
28     }
29 }
```