# Java Assignments: Method Overloading & Constructor Overloading

## Assignment 1: Calculator Class

* 📘 Topic: Method Overloading

📝 Task:  
Create a Calculator class with overloaded add(), subtract(), multiply(), and divide() methods that accept:  
- Two integers  
- Two doubles  
- Three integers

🎯 Goal: Understand how methods with same name handle different types and argument counts.

## Assignment 2: Student Details

* 📘 Topic: Constructor Overloading

📝 Task:  
Create a Student class with overloaded constructors:  
- No arguments (default values)  
- One argument (name)  
- Two arguments (name and age)  
- Three arguments (name, age, and department)

🎯 Goal: Learn constructor chaining and flexible object creation.

## Assignment 3: Area Calculator

* 📘 Topic: Method Overloading

📝 Task:  
Create a class Area with methods named calculate() to compute:  
- Area of a circle (radius)  
- Area of a rectangle (length, width)  
- Area of a triangle (base, height)

🎯 Goal: Apply method overloading to real-life formulas.

## Assignment 4: Book Record

* 📘 Topic: Constructor Overloading

📝 Task:  
Design a Book class with constructors to:  
- Initialize with title only  
- Initialize with title and author  
- Initialize with title, author, and price

🎯 Goal: Practice default and parameterized constructor creation.

## Assignment 5: Display Information

* 📘 Topic: Method Overloading

📝 Task:  
Create a class InfoDisplay with a method show() that:  
- Displays an integer  
- Displays a string  
- Displays a string and an integer

🎯 Goal: Understand method resolution and parameter type flexibility.

## Assignment 6: Employee Profile

* 📘 Topic: Constructor Overloading

📝 Task:  
Build an Employee class with constructors for:  
- Employee ID only  
- Employee ID and name  
- Employee ID, name, and salary

🎯 Goal: Understand object instantiation with varying data sets.

## Assignment 7: Temperature Converter

* 📘 Topic: Method Overloading

📝 Task:  
Implement a TemperatureConverter class with overloaded methods to:  
- Convert Celsius to Fahrenheit  
- Convert Fahrenheit to Celsius  
- Convert Kelvin to Celsius

🎯 Goal: Demonstrate overloading with different logic paths.

## Assignment 8: Movie Class

* 📘 Topic: Constructor Overloading

📝 Task:  
Create a Movie class with the following constructors:  
- Title only  
- Title and genre  
- Title, genre, and release year

🎯 Goal: Reinforce constructor overloading for different object creation needs.

## Assignment 9: Bank Account Simulation

* 📘 Topic: Method Overloading + Constructor Overloading

📝 Task:  
Create a BankAccount class that:  
- Has overloaded constructors (account number only, account number and name)  
- Has overloaded deposit() methods (deposit int, double)  
- Has overloaded withdraw() methods

🎯 Goal: Combine method and constructor overloading in a real-life simulation.

## Assignment 10: Shape Drawing

* 📘 Topic: Method Overloading

📝 Task:  
Design a ShapeDrawer class with overloaded draw() methods:  
- draw() – no parameters (prints 'Drawing shape')  
- draw(String shapeName)  
- draw(String shapeName, int size)  
- draw(String shapeName, int width, int height)

🎯 Goal: Reinforce method overloading using varying input descriptions.