

Exercise 1: Calculator

- **Constructors:**
 1. No-argument constructor → default mode = "Basic".
 2. Constructor with mode name.
- **Method Overloading:**
 - add(int a, int b)
 - add(double a, double b)
 - add(int a, int b, int c)
- **Normal Method:**
 - showMode() → print calculator mode.

◆ **Exercise 2: Student**

- **Constructors:**
 1. Accepts only id.
 2. Accepts id and name.
 3. Accepts id, name, and grade.
- **Method Overloading:**
 - updateGrade(char grade)
 - updateGrade(double marks) (converts marks to grade internally).
- **Normal Method:**
 - showDetails() → print student details.

◆ **Exercise 3: BankAccount**

- **Constructors:**
 1. Default constructor → balance = 0.
 2. Constructor with initial balance.

- **Method Overloading:**
 - deposit(int amount)
 - deposit(double amount)
- **Normal Methods:**
 - withdraw(double amount)
 - showBalance() → print balance.

◆ **Exercise 4: Library**

- **Constructors:**
 1. Default constructor → "Empty Library".
 2. Constructor with library name.
- **Method Overloading:**
 - addBook(String title)
 - addBook(String title, String author)
 - addBook(String title, String author, int year)
- **Normal Methods:**
 - showLibraryDetails() → print library name and books count.
 - totalBooks() → return number of books.

◆ **Exercise 5: Shape**

- **Constructors:**
 1. Default constructor → "Unknown Shape".
 2. Constructor with shape name.
- **Method Overloading:**
 - area(int side) → square.
 - area(int length, int width) → rectangle.

- area(double radius) → circle.
- **Normal Method:**
 - showShape() → print shape type.