

ARRAYS-CONSTRUCTOR-STATIC-THIS

1. A utility company is developing a **Java-based electricity billing system**. Each customer has a name, customer ID, and monthly units consumed. The **tariff rate is the same for all customers** and is stored as a static variable. The company also maintains a static counter to **track the number of customers** created in the system.

Your task is to design a class Customer that meets the following requirements:

Requirements:

1. The class should have:
 - Instance variables: name, customerId, unitsConsumed
 - Static variables: tariffRate (price per unit), customerCount
2. A **constructor** to initialize each customer and increment the static customerCount.
3. A **static method** to update the tariffRate.
4. A method calculateBill() that returns the total bill for the customer using the formula:

$$\text{totalBill} = \text{unitsConsumed} * \text{tariffRate}$$

5. A static method getCustomerCount() that returns the total number of customers created.
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2. A university is developing a **Student Enrollment System** in Java. Each student has a **name, roll number, and course**. Sometimes, the method parameters have the same names as the instance variables. The development team decides to use the this keyword to resolve naming conflicts and improve code clarity.

Requirements:

1. Create a class Student with the following **instance variables**:
 - String name
 - int rollNumber
 - String course
2. Create a **constructor** that takes parameters (name, rollNumber, course) and assigns them to the instance variables using the this keyword.
3. Create a method displayDetails() to print the student's information.
4. Create another method enroll(Student s) that prints:
"Enrolling student: " + s.name
5. Inside the main() method:
 - Create two student objects.
 - Use this to **pass the current object** to the enroll() method.
 - Call displayDetails() for each student.

3. A school is building a system to manage student marks across different subjects. Each student may have a **different number of subjects**, depending on their stream or electives. Therefore, a **ragged (jagged) array** is needed to represent the marks.

You are tasked with developing a program that:

1. Stores marks of n students, where each student has a **different number of subjects**.
2. Calculates and displays the **total and average marks** for each student.

Requirements:

1. Accept the number of students.
2. For each student:
 - Ask for the number of subjects.
 - Input marks for each subject.
3. Use a **ragged array** (int[][] marks) to store the data.
4. Calculate and display:
 - All subject marks for each student
 - Total marks
 - Average marks (rounded to 2 decimal places)