



## Lab 1

1. Write a java program that reads a positive integer and print the sum of digits in the number.

### **Example:**

Enter a number: -424

You should enter a positive integer number.

Enter a number: 123

The sum of digits is 6 digits.

2. Write a java class Employee with **attributes** like id, name, salary, and department and **methods** like calculateEmpSalary, assignDepartment, and printEmployeeDetails.

### **Sample Employee Data:**

"ADAMS", "E7876", 50000, "ACCOUNTING"

"JONES", "E7499", 45000, "RESEARCH"

"MARTIN", "E7900", 50000, "SALES"

"SMITH", "E7698", 55000, "OPERATIONS"

Use ' assignDepartment method to change the department of an employee.

Use printEmployeeDetails details method to print the details of an employee.

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**Dr. Layla Abou-Hadeed**

Eng. Ahmed ElSayed

Eng. Ali Hassan

Eng. Ahmed Ashraf

Eng. Seif Eldin Mahmoud

Eng. Miar Mamdouh

Eng. Ahmed AboEleid

Eng. Ahmed Essam

Eng. Menna Tullah Ihab

Eng. Abdelaziz Mohamed

Eng. Mahoud Ramzy

Eng. AbdElrahman ElSayed



Use ' calculateEmpSalary ' method takes two arguments: salary and hoursWorked, which is the number of hours worked by the employee. If the number of hours worked is more than 50, the method computes overtime and adds it to the salary. Overtime is calculated as following formula:

$\text{overtime} = \text{hoursWorked} - 50$

$\text{Overtime amount} = (\text{overtime} * (\text{salary} / 50))$

3. Develop a Java program that prompts the user for a string, which may include spaces. It is better to use scanner.nextLine() as it reads the entire input line but scanner.next() stops reading as soon as it detects a white space. The program should take the string ,remove any spaces then reverse the String.

**Example:**

Enter statement: ab cg cb a

Reversed String is: abcgcba.



4. Write a Java program that simulates bank capital management. The system will track the bank's total capital, deposits, loans issued, and interest earned. It will also keep count of all transactions.

**Class Structure:**

- The Bank class contains static variables and methods to manage bank operations.
- The Main class contains the main() method, which interacts with the Bank class.

**Static Variables in Bank Class:**

- double bankCapital: Tracks the bank's current capital.
- int transactionCount: Tracks the total number of transactions (deposits and loans).
- double totalDeposits: Tracks total deposits made.
- double totalLoans: Tracks total loans issued.
- double totalInterestEarned: Tracks total interest earned from loans.

**Static Methods in Bank Class:**

- deposit(double amount): Adds amount to bankCapital, updates totalDeposits, and increments transactionCount.
- issueLoan(double amount, double interestRate): Subtracts amount from bankCapital (if sufficient), updates totalLoans, calculates interest, and increments transactionCount. If insufficient capital, prints an error.
- printCapitalSummary(): Prints the current bank capital, total deposits, total loans, total interest earned, and transaction count.



5. Write a program in Java that counts the number of vowels and consonants in a given string. The program should ignore any non-letter characters (e.g., spaces, punctuation).

**Example:**

Enter a string: Hello World!

Vowels: 3

Consonants: 7

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