Experiment 1

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Subject: Java   **Subject Code:22CSH-359**

Aim: Create an application to save employee information using arrays.

Objective: To develop a functional application that effectively utilizes arrays to store, manage, and retrieve employee information, enabling efficient data organization and manipulation within the application.

Algorithm:

Step 1: Initialize the Program

- Start the program.
- Define an array of structures to store employee information.
- Each structure will include fields such as Employee ID, Name, Age, and Department.

Step 2: Define Functions

1. **Add Employee Information**:
   o Prompt the user to enter details for an employee (ID, Name, Age, Department).
   o Store the entered details in the next available position in the array.
   o Check for array overflow (i.e., maximum number of employees).
2. **Display All Employee Information**:
   o Iterate through the array and print all stored employee details.
   o Handle cases where no employees are stored.
3. **Search for an Employee**:
   o Prompt the user to enter the Employee ID.
   o Search the array for a matching ID.
   o Display the employee's details if found, otherwise print a message indicating the ID is not found.
4. **Exit Application**:
   o Provide an option to exit the program.

Step 3: Display Menu

- Display a menu with options to:
  1. Add Employee
  2. View All Employees
  3. Search for an Employee
  4. Exit

Step 4: Handle User Input

- Use a loop to repeatedly display the menu and prompt the user for a choice.
- Call the appropriate function based on the user's selection.
- Ensure input validation for numeric values and string lengths.

Step 5: Terminate Program

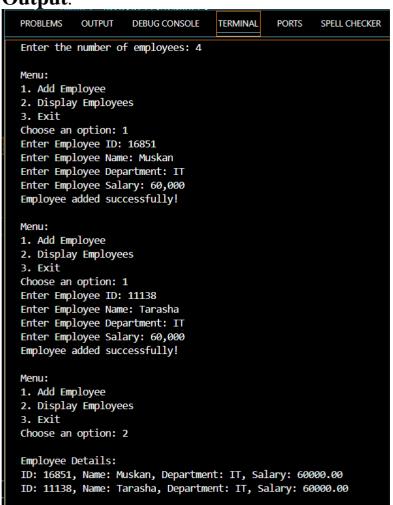- Exit the loop when the user selects the Exit option.

Code:

```java
import java.util.Scanner;

class Employee {
    int id;
    String name;
    String department;
    double salary;

    Employee(int id, String name, String department, double salary) {
        this.id = id;
        this.name = name;
        this.department = department;
        this.salary = salary;
    }

    void displayEmployee() {
        System.out.printf("ID: %d, Name: %s, Department: %s, Salary: %.2f\n", id, name,
department, salary);
    }
}

public class EmployeeManagement {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter the number of employees: ");
        int n = scanner.nextInt();
        scanner.nextLine(); // consume newline

        Employee[] employees = new Employee[n];
        int count = 0;

        while (true) {
            System.out.println("\nMenu:");
            System.out.println("1. Add Employee");
            System.out.println("2. Display Employees");
            System.out.println("3. Exit");
            System.out.print("Choose an option: ");
            int choice = scanner.nextInt();
            scanner.nextLine(); // consume newline

            switch (choice) {
                case 1:
```

```java
            if (count < n) {
                System.out.print("Enter Employee ID: ");
                int id = scanner.nextInt();
                scanner.nextLine(); // consume newline

                System.out.print("Enter Employee Name: ");
                String name = scanner.nextLine();

                System.out.print("Enter Employee Department: ");
                String department = scanner.nextLine();

                System.out.print("Enter Employee Salary: ");
                double salary = scanner.nextDouble();

                employees[count] = new Employee(id, name, department, salary);
                count++;
                System.out.println("Employee added successfully!");
            } else {
                System.out.println("Employee array is full!");
            }
            break;

        case 2:
            if (count == 0) {
                System.out.println("No employees to display.");
            } else {
                System.out.println("\nEmployee Details:");
                for (int i = 0; i < count; i++) {
                    employees[i].displayEmployee();
                }
            }
            break;

        case 3:
            System.out.println("Exiting program. Goodbye!");
            scanner.close();
            return;

        default:
            System.out.println("Invalid choice. Please try again.");
        }
      }
    }
}
```

Output:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS    SPELL CHECKER

Enter the number of employees: 4

Menu:
1. Add Employee
2. Display Employees
3. Exit
Choose an option: 1
Enter Employee ID: 16851
Enter Employee Name: Muskan
Enter Employee Department: IT
Enter Employee Salary: 60,000
Employee added successfully!

Menu:
1. Add Employee
2. Display Employees
3. Exit
Choose an option: 1
Enter Employee ID: 11138
Enter Employee Name: Tarasha
Enter Employee Department: IT
Enter Employee Salary: 60,000
Employee added successfully!

Menu:
1. Add Employee
2. Display Employees
3. Exit
Choose an option: 2

Employee Details:
ID: 16851, Name: Muskan, Department: IT, Salary: 60000.00
ID: 11138, Name: Tarasha, Department: IT, Salary: 60000.00
```

Learning Outcomes:

1. Demonstrate: Apply key concepts to real-world scenarios to showcase understanding.
2. Analyze: Critically evaluate information, identify patterns, and draw meaningful conclusions.
3. Create: Develop original work, including presentations, reports, or projects, to exhibit comprehension and skills.
4. Communicate: Convey ideas and findings effectively through oral and written communication.
5. Collaborate: Contribute to group projects and exhibit strong teamwork capabilities in a collaborative environment.