1. **Array Representation in Memory:**

* **Contiguous Memory Allocation:** Arrays are stored in contiguous memory locations. This means that all elements of the array are stored next to each other in memory.
* **Fixed Size:** The size of the array is fixed at the time of creation. You cannot increase or decrease the size of an array once it is created.
* **Indexing:** Arrays provide constant-time access (O(1)) to elements using indices. This makes arrays very efficient for read operations.
* **Homogeneous Data Type:** Arrays store elements of the same data type.

**Advantages of Arrays:**

* **Constant-time Access:** You can access any element in the array in constant time using its index.
* **Memory Efficiency:** Arrays are memory efficient because they do not have additional pointers or metadata (unlike linked lists).
* **Predictable Performance:** Due to their contiguous memory allocation, arrays offer predictable performance for accessing elements.

**4. Explanation:**

1. **Employee Class: This class contains the attributes and methods to manage employee details.**
2. **EmployeeManagementSystem Class:**
   * **Attributes: An ArrayList to store Employee objects and an integer to track the number of employees.**
   * **Methods: Methods to add, search, traverse, and delete employees.**
3. **Main Method:**
   * **Uses a Scanner for user input.**
   * **Implements a menu-driven interface with a do-while loop and a switch statement to handle different operations:**
     + **Add Employee: Prompts the user to enter employee details and adds the employee to the list.**
     + **Search Employee: Prompts the user to enter an employee ID and searches for the employee.**
     + **Traverse Employees: Displays all employees.**
     + **Delete Employee: Prompts the user to enter an employee ID and deletes the employee if found.**
     + **Exit: Exits the program.**