**Exercise 4: Employee Management System**

Arrays are stored in contiguous memory locations. Each element is accessed using an index, starting from 0. The address of any element can be calculated using the base address and index, which makes arrays fast for access operations.

**Advantages of Arrays:**

* **Fast access**: Direct access to elements using index (O(1) time).
* **Simple structure**: Easy to declare and use.
* **Efficient for fixed-size data**: Useful when the size of data is known in advance.

**Time Complexity Analysis**

* **Add**: O(1) - Insertion at the end (next index)
* **Search**: O(n) - Linear search through the array
* **Traverse**: O(n) - Visit each element once
* **Delete**: O(n) - Search and shift elements after deletion

**Limitations of Arrays**

* **Fixed size**: Once declared, the size of an array cannot be changed.
* **Inefficient deletions**: Deleting an element requires shifting others, which takes time.
* **No dynamic resizing**: May waste memory or run out of space if size isn’t chosen correctly.

**When to Use Arrays**

* When the number of records is fixed or predictable
* When you need fast access using an index
* When memory can be pre-allocated without frequent resizing