**Employee Management System**Array Representation

Arrays are a fundamental data structure used to store a collection of elements. Here’s how arrays are represented and their advantages:

* Memory Representation: Arrays are stored in contiguous memory locations. Each element in an array can be accessed directly using its index, which makes array access very efficient (O(1) time complexity for accessing an element).
* Advantages:
  + Fast Access: Direct access to elements via indices allows for quick retrieval and updates.
  + Simple Structure: Arrays are straightforward to implement and use.
  + Memory Efficiency: Arrays do not have the overhead of additional data structures like linked lists.
* Limitations:
  + Fixed Size: The size of an array is fixed upon creation. Resizing an array requires creating a new array and copying elements, which can be inefficient.
  + Insertions/Deletions: Inserting or deleting elements can be costly because it might require shifting elements to maintain contiguous memory allocation.

Implementation

1. Add Employee: Adds an employee to the end of the array if there is space. Time Complexity: O(1) (constant time).
2. Search Employee: Searches through the array to find an employee by ID. Time Complexity: O(n) (linear time), where n is the number of employees.
3. Traverse Employees: Traverses the array and prints each employee. Time Complexity: O(n) (linear time).
4. Delete Employee: Finds the employee by ID, shifts elements to remove the employee, and updates the size. Time Complexity: O(n) (linear time) due to the shifting of elements.

**Add Operation**: Efficient if there is space. Time complexity is O(1), but adding beyond the array's capacity requires creating a new array.

**Search Operation**: Inefficient for large datasets. Time complexity is O(n) due to linear search.

**Traverse Operation**: Time complexity is O(n) as it involves iterating through all employees.

**Delete Operation**: Time complexity is O(n) due to the need to shift elements after deletion.