Task-5:- Implement various Searching and Sorting operations in Python programming.

Aim:- To implement various Searching and sorting operations in python programming.

5) A Company stores employee records in a list of dictionaries, where each dictionary contains id, name and department. write a function find-employee-by-id that takes this list and a target employee ID as arguments and returns the dictionary of the employee with the matching ID, or none if no such employee is found.

Algorithm:-

1. Input Definition
2. Define the function find-employee-by-id that takes two parameters.
   a. A list of dictionaries (employees), where each dictionary represents an employee record with keys, id, name, and department.
   b. An integer (target-id) representing the employee ID to be searched
3. Iterate through the list use a for loop to iterate through each dictionary in the employees list
4. check for matching Record or ID within the loop, check if the id field of the current dictionary matches the target-id
5. Return matching Record. If a matching is found, return the current dictionary.
6. Handle No match.
   If the loop completely without findings an match, return Now.

output:-

{'id': 2, 'name': 'Bob', 'department': 'Engineering'}

Program 5.1

```
def find_employee_by_id(employees, target_id):
    for employee in employees:
        if employee['id'] == target_id
            return employee
    return None
# Test the function
employees = [
    {'id': 1, 'name': 'Alice', 'department': 'HR'},
    {'id': 2, 'name': 'Bob', 'department': 'Engineering'},
    {'id': 3, 'name': 'Charlie', 'department': 'Sales'},
]
print(find_employee_by_id(employees, 2))
```

5.2 You are developing a grade management system for a school. The system maintains a list of student records, where each record is represented as a dictionary containing a student's name and score.

Algorithm:-

1. Initialization
   - Get the length of the students list and store it in n.
2. Outer Loop:-
   - Iterate from i=0 to n-1 (inclusive). This loop represents the number of passes through the list.
3. Track Swaps:-
   - Initialize a boolean variable swapped to false. This variable will track if any swaps are made in the current pass.

4. Inner loop :-
- Iterate from i=0 to n-i-2 (inclusive). This loop compares adjacent elements in the list and performs swaps if necessary.

5. Compare and swap:
- For each pair of adjacent elements.
(i.e., students [j] and students [j+1]):
- Compare their score values.
- If students [j] ['score'] > students [j+1] ['score']
swap the two elements.
- Set swapped to True to indicate that a swap was made

6. Early Termination:
- After each pass of the inner loop, check if swapped is false. If no swaps were made during the pass, the list is already sorted, and you can break out of the outer loop early.

7. Completion
- The function modifies the students list in place, sorting it by score.

Program 5.2 :-

```
def bubble_sort_scores(students):
    n = len(students)
    for i in range(n):
        # Track if any swap is made in this pass
        swapped = False
```

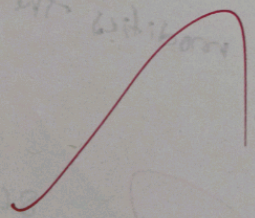
Output:-

Before sorting:-

{'name': 'Alice', 'score': 88}
{'name': 'Bob', 'score': 95}
{'name': 'Charlie', 'score': 75}
{'name': 'Diana', 'score': 81}

after sorting.

{'name': 'Charlie', 'score': 75}
{'name': 'Diana', 'score': 81}
{'name': 'Alice', 'score': 88}
{'name': 'Bob', 'score': 95}



```
for j in range (0, n-i-1):
    if students [j] ['score'] > students [j+1] ['score']:
# Swap if the score of the current student is
greater than the next students [j], students [j+1]
= students [j+1], students [j]
        swapped = True
# If no two elements were swapped, the list
is already sorted.
    if not swapped:
        break
# Example usage
students = [
{'name': 'Alice', 'score': 88},
{'name': 'Bob', 'score': 95},
{'name': 'charlie', 'score': 75},
{'name': 'Diana', 'score': 85}
]
print ("Before Sorting:")
for student in students:
        print (student)
bubble_sort_scores (students)
print ("\n"After sorting:")
for student in students:
        print (student)
```

VEL TECH	
EX No.	5
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	
VIVA VOCE (5)	4
RECORD (5)	4
TOTAL (20)	18
SIGN WITH DATE	24

Result: Thus, the program from various searching and operations is executed and verified successfully.