AC Patil
College of Engineering

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Course Name: C.S.E. (IoT CS BC)

Course code: CSL405

Year: S.E.

Semester: IV

Roll No.:

Experiment Evaluation Sheet

Experiment No.:

Experiment Name:
To implement Quick Sort algorithm

Sr No.	Evaluation Criteria	Marks (Out of 9)	Performance Date	Correction Date and Signature of Instructor
1	Experiment Performance			
2	Journal Performance			
3	Punctuality			
Total				

Code 2.a : Quick Sort

```
#include <stdio.h>

// Function to swap two elements
void swap(int *a, int *b) {
    int temp = *a;
    *a = *b;
    *b = temp;
}

// Partition function
int partition(int arr[], int low, int high) {
    int pivot = arr[high]; // Pivot element
    int i = low - 1;       // Index of smaller element

    for (int j = low; j < high; j++) {
        // If current element is smaller than or equal to the pivot
        if (arr[j] <= pivot) {
            i++;
            swap(&arr[i], &arr[j]);
        }
    }
    swap(&arr[i + 1], &arr[high]); // Place pivot at the right position
    return i + 1;
}

// QuickSort function
void quickSort(int arr[], int low, int high) {
    if (low < high) {
        // Partition the array
        int pi = partition(arr, low, high);

        // Recursively sort the two halves
        quickSort(arr, low, pi - 1);
        quickSort(arr, pi + 1, high);
    }
}

int main() {
    int n;

    // Input the size of the array
    printf("Enter the number of elements: ");
    scanf("%d", &n);
```

```
    int arr[n];

    // Input the elements of the array
    printf("Enter %d elements:\n", n);
    for (int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }
// Perform quick sort
    quickSort(arr, 0, n - 1);


    // Output the sorted array
    printf("Sorted array: ");
    for (int i = 0; i < n; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");


    return 0;
}
```

Output:-

```
PS C:\Users\MANISH\OneDrive\Desktop\learnc> gcc -o quick_sort quick_sort.c
PS C:\Users\MANISH\OneDrive\Desktop\learnc> ./quick_sort
Enter the number of elements: 5
Enter 5 elements:
29 10 14 37 14
Sorted array: 10 14 14 29 37
```