



# SHREE L. R. TIWARI COLLEGE OF ENGINEERING

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## **Program:**

```
#include <stdio.h>
```

```
void quicksort(int arr[], int p, int r);
```

```
int partition(int arr[], int p, int r);`1
```

```
int main() {
```

```
    int n;
```

```
    printf("Enter the number of elements: ");
```

```
    scanf("%d", &n);
```

```
    int arr[n];
```

```
    printf("\nEnter the elements of the array: ");
```

```
    for (int i = 0; i < n; i++) {
```

```
        scanf("%d", &arr[i]);
```

```
    }
```

```
    printf("\nArray before sorting: ");
```

```
    for (int i = 0; i < n; i++) {
```

```
        printf("%d ", arr[i]);
```

```
    }
```

```
    int p = 0, r = n - 1;
```

```
    quicksort(arr, p, r);
```

```
    printf("\nArray after sorting: ");
```

```
    for (int i = 0; i < n; i++) {
```

```
        printf("%d ", arr[i]);
```

```
    }
```

```
    return 0;
```

```

}

void quicksort(int arr[], int p, int r) {
    if (p < r) {
        int q = partition(arr, p, r);
        quicksort(arr, p, q - 1);
        quicksort(arr, q + 1, r);
    }
}

int partition(int arr[], int p, int r) {
    int x = arr[r];
    int i = p - 1;
    int temp;
    for (int j = p; j < r; j++) {
        if (arr[j] <= x) {
            i++;
            temp = arr[i];
            arr[i] = arr[j];
            arr[j] = temp;
        }
    }
    temp = arr[i + 1];
    arr[i + 1] = arr[r];
    arr[r] = temp;
    return i + 1;
}

```

### **Output:**

Enter the number of elements: 5

Enter the elements of the array: 5 6 8 12 59

Array before sorting: 5 6 8 12 59

Array after sorting: 5 6 8 12 59

