

/\*Implement quick sort to sort the elements of any user entered array in ascending order\*/

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#include <stdio.h>
void quicksort(int a[], int p, int r);
int partition(int a[], int p, int r);

int main()
{
    int a[30], n, i;
    printf("Enter no of elements:");
    scanf("%d", &n);
    printf("Enter array elements:");

    for (i = 0; i < n; i++)
        scanf("%d", &a[i]);

    quicksort(a, 0, n - 1);

    printf("\nSorted array is :");
    for (i = 0; i < n; i++)
        printf("%d ", a[i]);

    return 0;
}

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

int partition(int a[], int p, int r)
{
    int pivot, i, j, temp;
    pivot = a[p];
    i = p - 1;
    j = r + 1;
    while (1)
    {
        do
        {
            j = j - 1;
        } while (a[j] > pivot);
        do
        {
            i = i + 1;
        } while (a[i] < pivot);
```

```
    if (i < j)
    {
        temp = a[i];
        a[i] = a[j];
        a[j] = temp;
    }
    else
        return (j);
}
```

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