

Ques 18: write a C program to arrange a series of numbers using quick sort.

Aim: To write a C program to arrange a series of numbers using quick sort.

Algorithm:

- * Start.
- * Input the size and elements of the array.
- * Implement quick sort using recursion.
- * Print the sorted array.
- * Stop.

Program:

```
#include <stdio.h>

int partition (int arr[], int low, int high) {
    int pivot = arr[high], i = low - 1;
    for (int j = low; j < high; j++) {
        if (arr[j] < pivot) {
            int t = arr[++i]; arr[i] = arr[j]; arr[j] = t;
        }
    }
    int t = arr[i+1]; arr[i+1] = arr[high]; arr[high] = t;
    return i + 1;
}

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

int main() {
    int arr[] = {4, 1, 3, 2, 5};
    int n = 5;
    quicksort (arr, 0, n - 1);
    for (int i = 0; i < n; i++)
        printf ("%d", arr[i]);
}
```

Output: 1 2 4 5 7 9

Following are the steps followed to run the program:

Step 1: Open the terminal window.

result: thus, the program executed successfully

Step 2: Enter the command "g++ main.cpp" in the terminal window.

Step 3: Enter the command "make" in the terminal window.

Step 4: Enter the command "make run" in the terminal window.

Step 5: Enter the command "make clean" in the terminal window.

Step 6: Enter the command "make" in the terminal window.

Step 7: Enter the command "make run" in the terminal window.

Step 8: Enter the command "make clean" in the terminal window.

Step 9: Enter the command "make" in the terminal window.

Step 10: Enter the command "make run" in the terminal window.

Step 11: Enter the command "make clean" in the terminal window.

Step 12: Enter the command "make" in the terminal window.

Step 13: Enter the command "make run" in the terminal window.

Step 14: Enter the command "make clean" in the terminal window.

Step 15: Enter the command "make" in the terminal window.

Step 16: Enter the command "make run" in the terminal window.

Step 17: Enter the command "make clean" in the terminal window.

Step 18: Enter the command "make" in the terminal window.

Step 19: Enter the command "make run" in the terminal window.

Step 20: Enter the command "make clean" in the terminal window.

Step 21: Enter the command "make" in the terminal window.

Step 22: Enter the command "make run" in the terminal window.

Step 23: Enter the command "make clean" in the terminal window.

Step 24: Enter the command "make" in the terminal window.

Step 25: Enter the command "make run" in the terminal window.

Step 26: Enter the command "make clean" in the terminal window.

Step 27: Enter the command "make" in the terminal window.

Step 28: Enter the command "make run" in the terminal window.

Step 29: Enter the command "make clean" in the terminal window.

Step 30: Enter the command "make" in the terminal window.

Step 31: Enter the command "make run" in the terminal window.

Step 32: Enter the command "make clean" in the terminal window.

Step 33: Enter the command "make" in the terminal window.

Step 34: Enter the command "make run" in the terminal window.

Step 35: Enter the command "make clean" in the terminal window.