NAME: NELLI PREETHI JASMINE

ROLL NO: CH.SC.U4CSE24132

WEEK-4

1. Quick Sort

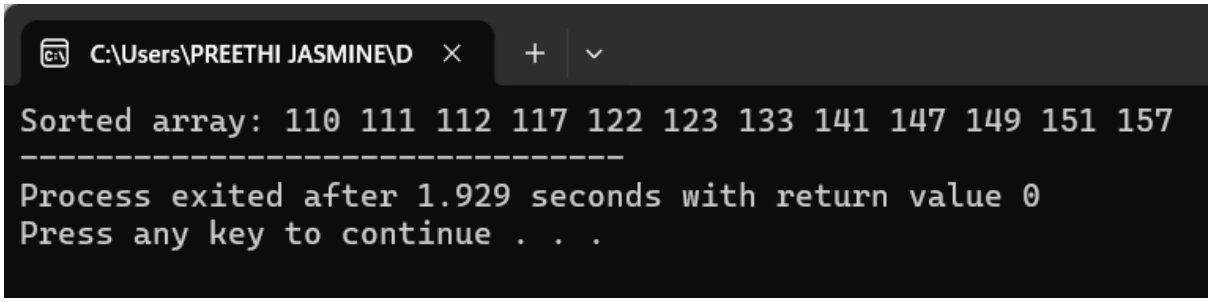
CODE:

quick.c

```c
#include <stdio.h>

void quickSort(int arr[], int first, int last) {
    int i, j, pivot, temp;

    if (first < last) {
        pivot = arr[first];
        i = first;
        j = last;

        while (i < j) {
            while (arr[i] <= pivot && i < last)
                i++;
            while (arr[j] > pivot)
                j--;

            if (i < j) {
                temp = arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }

        temp = arr[first];
        arr[first] = arr[j];
        arr[j] = temp;

        quickSort(arr, first, j - 1);
        quickSort(arr, j + 1, last);
    }
}
```

```c

int main() {
    int arr[12] = {157,110,147,122,111,149,151,141,123,112,117,133};

    quickSort(arr, 0, 11);

    printf("Sorted array: ");
    int i;
    for ( i = 0; i < 12; i++) {
        printf("%d ", arr[i]);
    }

    return 0;
}
```

OUTPUT:



2. Merge Sort

CODE:

```c
#include <stdio.h>

void merge(int arr[], int left, int mid, int right) {
    int i = left;
    int j = mid + 1;
    int k = 0;
    int temp[100];

    while (i <= mid && j <= right) {
        if (arr[i] <= arr[j])
            temp[k++] = arr[i++];
        else
            temp[k++] = arr[j++];
    }

    while (i <= mid)
        temp[k++] = arr[i++];

    while (j <= right)
        temp[k++] = arr[j++];

    for (i = left, k = 0; i <= right; i++, k++)
        arr[i] = temp[k];
}
```

```c

void mergeSort(int arr[], int left, int right) {
    if (left < right) {
        int mid = (left + right) / 2;

        mergeSort(arr, left, mid);
        mergeSort(arr, mid + 1, right);

        merge(arr, left, mid, right);
    }
}

int main() {
    int arr[12] = {157,110,147,122,111,149,151,141,123,112,117,133};

    mergeSort(arr, 0, 11);

    printf("Sorted array: ");
    int i;
    for (i = 0; i < 12; i++) {
        printf("%d ", arr[i]);
    }

    return 0;
}
```

OUTPUT:

```
C:\Users\PREETHI JASMINE\D
Sorted array: 110 111 112 117 122 123 133 141 147 149 151 157
--------------------------------
Process exited after 1.235 seconds with return value 0
Press any key to continue . . .
```