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## WEEK-4

### 1. Quick Sort

CODE:

```
quick.c
1 #include <stdio.h>
2
3 void quickSort(int arr[], int first, int last) {
4     int i, j, pivot, temp;
5
6     if (first < last) {
7         pivot = arr[first];
8         i = first;
9         j = last;
10
11    while (i < j) {
12        while (arr[i] <= pivot && i < last)
13            i++;
14        while (arr[j] > pivot)
15            j--;
16
17        if (i < j) {
18            temp = arr[i];
19            arr[i] = arr[j];
20            arr[j] = temp;
21        }
22    }
23
24    temp = arr[first];
25    arr[first] = arr[j];
26    arr[j] = temp;
27
28    quickSort(arr, first, j - 1);
29    quickSort(arr, j + 1, last);
30}
31}
```

```
32
33 int main() {
34     int arr[12] = {157,110,147,122,111,149,151,141,123,112,117,133};
35
36     quickSort(arr, 0, 11);
37
38     printf("Sorted array: ");
39     int i;
40     for ( i = 0; i < 12; i++) {
41         printf("%d ", arr[i]);
42     }
43
44     return 0;
45 }
```

## OUTPUT:

```
C:\Users\PREETHI JASMINE\D x + v
Sorted array: 110 111 112 117 122 123 133 141 147 149 151 157
-----
Process exited after 1.929 seconds with return value 0
Press any key to continue . . .
```

## 2. Merge Sort

### CODE:

```
1 #include <stdio.h>
2
3 void merge(int arr[], int left, int mid, int right) {
4     int i = left;
5     int j = mid + 1;
6     int k = 0;
7     int temp[100];
8
9     while (i <= mid && j <= right) {
10        if (arr[i] <= arr[j])
11            temp[k++] = arr[i++];
12        else
13            temp[k++] = arr[j++];
14    }
15
16    while (i <= mid)
17        temp[k++] = arr[i++];
18
19    while (j <= right)
20        temp[k++] = arr[j++];
21
22    for (i = left, k = 0; i <= right; i++, k++)
23        arr[i] = temp[k];
24 }
```

```
25
26 void mergeSort(int arr[], int left, int right) {
27     if (left < right) {
28         int mid = (left + right) / 2;
29
30         mergeSort(arr, left, mid);
31         mergeSort(arr, mid + 1, right);
32
33         merge(arr, left, mid, right);
34     }
35 }
36
37 int main() {
38     int arr[12] = {157, 110, 147, 122, 111, 149, 151, 141, 123, 112, 117, 133};
39
40     mergeSort(arr, 0, 11);
41
42     printf("Sorted array: ");
43     int i;
44     for (i = 0; i < 12; i++) {
45         printf("%d ", arr[i]);
46     }
47
48     return 0;
49 }
```

## OUTPUT:

```
C:\Users\PREETHI JASMINE\D X + ▾
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 . . .
```