

NAME: NELLI PREETHI JASMINE

ROLL NO: CH.SC.U4CSE24132

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  ×  +  ∨
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 . . .

```