6/6/24.

Date
Page

LAB-6

Quick Sort

```
#include <stdio.h>
#include <time.h>
void swap(int *a, int *b){
    int temp = *a;
    *a = *b;
    *b = temp;
}
int partition(int a[], int low, int high){
    int pivot = a[low];
    int i = low+1;
    int j = high;
    while (i<=j){
        while (i<=j && a[i]<=pivot)
            i++;
        while (i<=j && a[j]>pivot)
            j--;
        if (i<j)
            swap(&a[i], &a[j]);
    }
    swap(&a[low], &a[j]);
    return j;
}
void quicksort(int a[], int low, int high){
    int point;
    if (low < high){
        point = partition(a, low, high);
        quicksort(a, low, point-1);
        quicksort(a, point+1, high);
    }
}
```

```
void main(){
    int a[15000],n,i,j,ch,temp;
    clock_t start,end;
    while(1){
        printf("Enter choice");
        scanf("%d",&ch);
        switch(ch){
            case 1:
                printf("\nEnter no. of elements:");
                scanf("%d",&n);
                printf("Enter array elements:");
                for(i=0;i<n;i++){
                    scanf("%d",&a[i]);
                }
                start=clock();
                quicksort(a,0,n-1);
                end=clock();
                printf("\nSorted array is:");
                for(i=0;i<n;i++){
                    printf("%d\t",a[i]);
                }
                printf("\nTime taken to sort %d no.
                    is %f sec",n,((double)(end-start))/clocks_
                    per_sec));
                break;
            case 2:
                n=500;
                while(n<=14500){
                    for(i=0;i<n;i++){
                        a[i]=n-i;
                    start=clock();
                    quicksort(a,0,n-1);
```

```
        for(j=0;j<500000;j++){
            temp = 38/600;
        }
        end = clock();
        printf( );
        n= n+1000;
    }
    break;
case 3:
    exit(0);
}
getchar();
}
}
```

6/6/24

O/P:-

Enter no. of elements: 6

Enter array elements: 1 45 78 25 33 72.

Sorted array is: 1 25 33 45 72 78.