3/06/2021

```
#include<stdio.h>
#include <time.h>
#include <stdlib.h>
void swap (int *a, int *b)
{
int t = *a;
*a = *b;
*b = t;
}
int partition (int arr[], int low, int high)
{
int pivot = arr[high];
int i = (low-1);
for (int j= low ; j<=high ; j++)
{
if (arr[j] < pivot)
{
i++;
swap(&arr[i], &arr[j]);
}
swap [&arr[i+1], &arr[high]);
return (i+1);
}
Void quickSort (int arr[], int low, int high)
{
if (low < high)
{
int pi = partition(arr, low, high);
quickSort (arr, low, pi-1);
```

```
void printArray (int arr[], int
    {
    int i;
    for (i=0; i< size; i++)
    printf ("%d", arr[i]);
    printf ("\n");
    }
int main()
{
int arr[15000], size, i, j, ch, temp;
 clock_t start, end;
 while(1)
{
printf("\n 1: for manual entry :");
printf ("\n 2: to display time taken for N elements ranging
                from 500 to 14500.");
printf ("3 exit.");
printf ("\nEnter your choice:");
scanf ("%d", ch);
switch(ch)
{
case 1: printf ("enter size of array:\n");
        scanf ("%d", &size);
        printf ("enter the elements to sort in the
                array:\n");
```

```
for(i=0; i<size; i++)
scanf("%d", &arr[i]);
start = clock();
quicksort(arr, 0, size-1);
end = clock();
quicksort(arr, 0, size-1);
end = clock();
printf("sorted array:");
printArray(arr, size);
printf("\n Time taken to sort %d number is %f secs.\n",
        size, ((double)(end-start))/clocks_per_sec);
        break;
case 2: size = 500;
        while(size<=4500)
        {
        for(i=0; i<size; i++)
        {
        arr[i] = size-i;
        }
        start = clock();
        quicksort(arr, 0, size-1);
        for(j=0; j<500000; j++)
        {
        temp = 38/600;
        }
        break;
case 3: exit(0);
        break;
}}
return 0;
```