

/* 11. Design and implement C Program to sort a given set of n integer elements using Selection Sort method and compute its time complexity. Run the program for varied values of $n > 5000$, and record the time taken to sort. Plot a graph of the time taken versus n.

The elements can be read from a file or can be generated using the random number generator. */

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#include<stdio.h>
#include<stdlib.h>
#include<time.h>
#include<omp.h>

void selectionSort(int a[], int n) {
    int i, j, min, temp;
    for(i = 0; i < n-1; i++) {
        min = i;
        for(j = i+1; j < n; j++) {
            if(a[j] < a[min]) {
                min = j;
            }
        }
        if(min != i) {
            temp = a[i];
            a[i] = a[min];
            a[min] = temp;
        }
    }
}

void main() {
    int a[1000], n, i;
    clock_t start, end;

    printf("Enter the number of elements:\n");
    scanf("%d", &n);

    printf("Generating random array elements...\n");
    for(i = 0; i < n; i++) {
        a[i] = rand() % 100;
    }

    printf("The elements before sorting are:\n");
    for(i = 0; i < n; i++) {
        printf("%d\t", a[i]);
    }

    start = clock();
    selectionSort(a, n);
    end = clock();

    printf("\nThe sorted elements are:\n");
    for(i = 0; i < n; i++) {
```

```
        printf("%d\t", a[i]);  
    }  
  
    printf("\nThe time taken is %f", (double)(end - start) / (CLK_TCK));  
}
```