Tema 3 - SI

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I. INTRODUCTION

Acest document include tema 3.

II. EXERCITIUL 2

Am adaugat inca 2 functii de sortare
Fisierul **SORT.H:**

```
#ifndef SORT_H
#define SORT_H

#include <vector>

using IntArray = std::vector<int>;

IntArray bubbleSort(const IntArray &sir);

IntArray selectionSort(const IntArray &sir);

IntArray insertionSort(const IntArray &sir);

IntArray quicksort(const IntArray &sir);
#endif
```

Fisierul **SORT.CPP:**

```
IntArray insertionSort(const IntArray &sir){

IntArray sir_sortat = sir;
int n = sir_sortat.size();

for(int i = 1; i < n; i++){

int key = sir_sortat[i];
int j = i-1;

while(j >= 0 && sir_sortat[j]> key){

sir_sortat[j+1] = sir_sortat[j];
j--;
}
```

```
sir_sortat[j+1] = key;
}

return sir_sortat;



}


int partition(IntArray &arr, int low, int high){
int pivot = arr[high];
int i = (low - 1);

    for (int j = low; j <= high - 1; j++) {
```

III. ANALIZA TIMPULUI DE EXECUTIE:

TABLE I
COMPARATIE A ALGORITMILOR DE SORTARE

Dimensiune	bubblesort	selectionsort	insertionsort	quicksort	std::sort
1000	2ms	0 ms	0ms	0 ms	0ma
4000	34ms	3ms	1ms	0ms	0ms
7000	98ms	12ms	4ms	0ms	0ms
10.000	228ms	24ms	11ms	0ms	0ms
14.000	467ms	43ms	17ms	1ms	0ms
17.000	744ms	74ms	27ms	1 ms	0ms
20.000	710ms	94ms	37ms	1ms	0ms
25.000	1653ms	140 ms	51ms	2ms	1ms
30.000	2461ms	195ms	77ms	3ms	1ms
40.000	4461ms	348ms	140ms	5ms	1ms

IV. EXEMPLU DE RULARE

Fig. 1. Dimensiune:7000