Lab Final Exam-Fall 2022

Course Title: Data Structure Lab

Course Code: SE-132

Submitted To:

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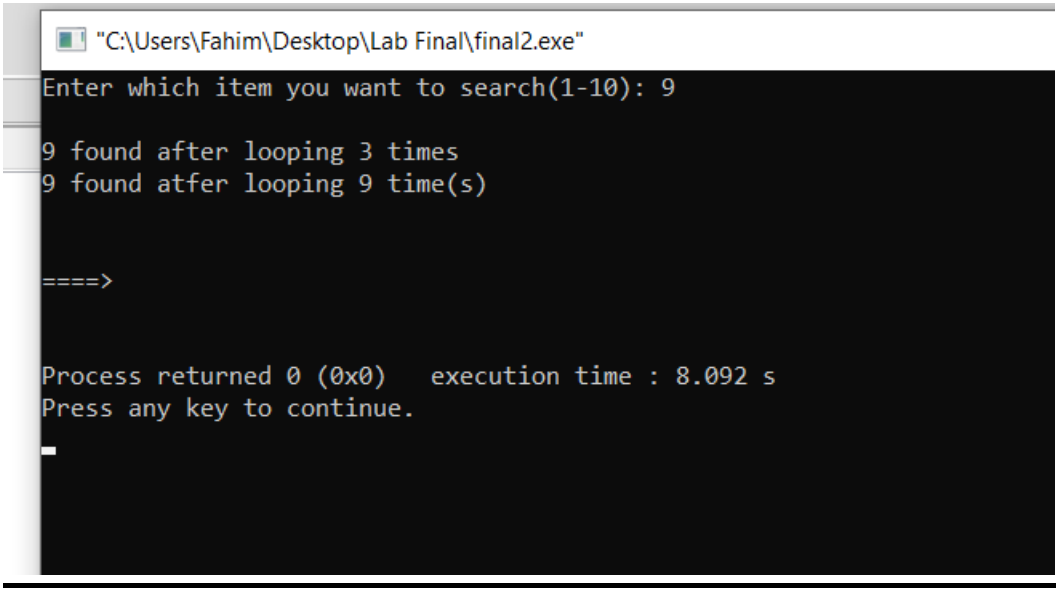
Task 03:

```
//comparing linear and binary serch
#include <stdio.h>
#include <stdbool.h>
int main() {
int arr[10] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};
int max, min, mid, count_binary = 0, count_linear = 0;
int search_item;
bool flag = true;
printf("Enter which item you want to search(1-10): ");
scanf("%d", &search_item);
printf("\n");
//for bianary
min = 0;
max = 9;
while(min <= max) {
count_binary++;
mid = (min + max) / 2;
if(arr[mid] == search_item) {
printf("%d found after looping %d times\n", search_item,
count_binary);
flag = false;
break;
}
else if(search_item < arr[mid]) {
max = mid - 1;
}
else {
min = mid + 1;
}
}
//for linear search
for(int i = 0; i < 10; i++) {
count_linear++;
if(arr[i] == search_item) {
printf("%d found atfer looping %d time(s)\n", search_item,
count_linear);
break;
}
}
if(flag) {
printf("Data is not available\n");
}
```

```
else {
printf("\n\n====>\t\n\n");
}
return 0;
}
```

Output:



Github Link:

https://github.com/fahim1049/Data-Structure-Lab

Discussion :

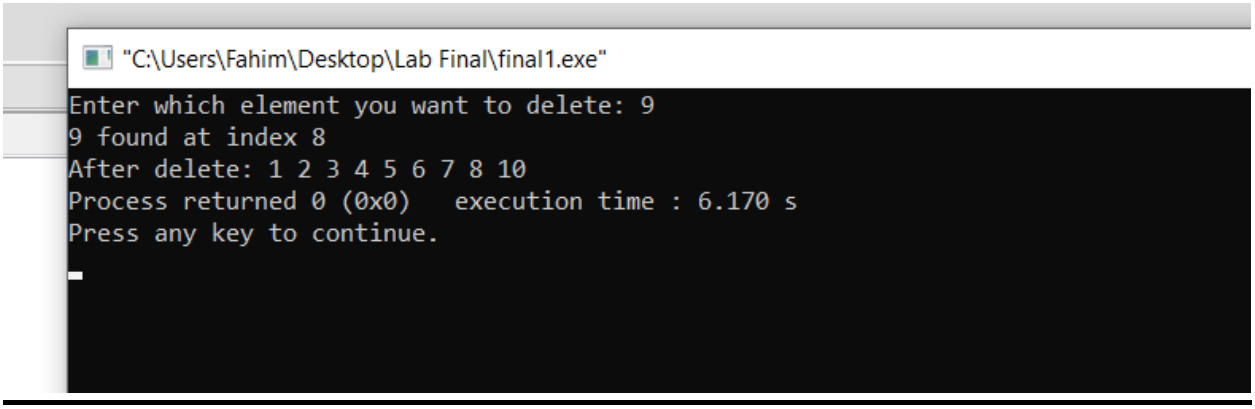
At first, this program want to know about one number 0-10. Then it will start a both search respectively and compare both by counting loop. And so a massage based on the count result.

Task 04:

```c
//applying binary search & delete
#include <stdio.h>
#include <stdbool.h>
#include <stdlib.h>
int main() {
int min = 0, max = 9, mid, del_item, i;
bool flag = true;
int arr[10] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};
printf("Enter which element you want to delete: ");
scanf("%d", &del_item);
while(min <= max) {
mid = (min + max) / 2;
if(del_item == arr[mid]) {
printf("%d found at index %d\n", del_item, mid);
flag = false;
break;
}
else if(arr[mid] < del_item) {
min = mid + 1;
}
else {
max = mid - 1;
}
}
if(flag) {
printf("%d is not available in the data set\n", del_item);
}
else {
for(i = mid; i < 9; i++) {
arr[i] = arr[i+1];
}
printf("After delete: ");
for(i = 0; i < 9; i++) {
printf("%d ", arr[i]);
}
}
return 0;
```

```
}
```

Output:



Github Link:

https://github.com/fahim1049/Data-Structure-Lab

Discussion:

At first, this programme will ask you for a integer value to apply binary search. If it is exist in the array user will see a massage “ ___ found at index ___” and the data will deleted and print all the data which are exist after deletion. Otherwise, it will print another massage “___ is not available in the data set”