BINARY SEARCH

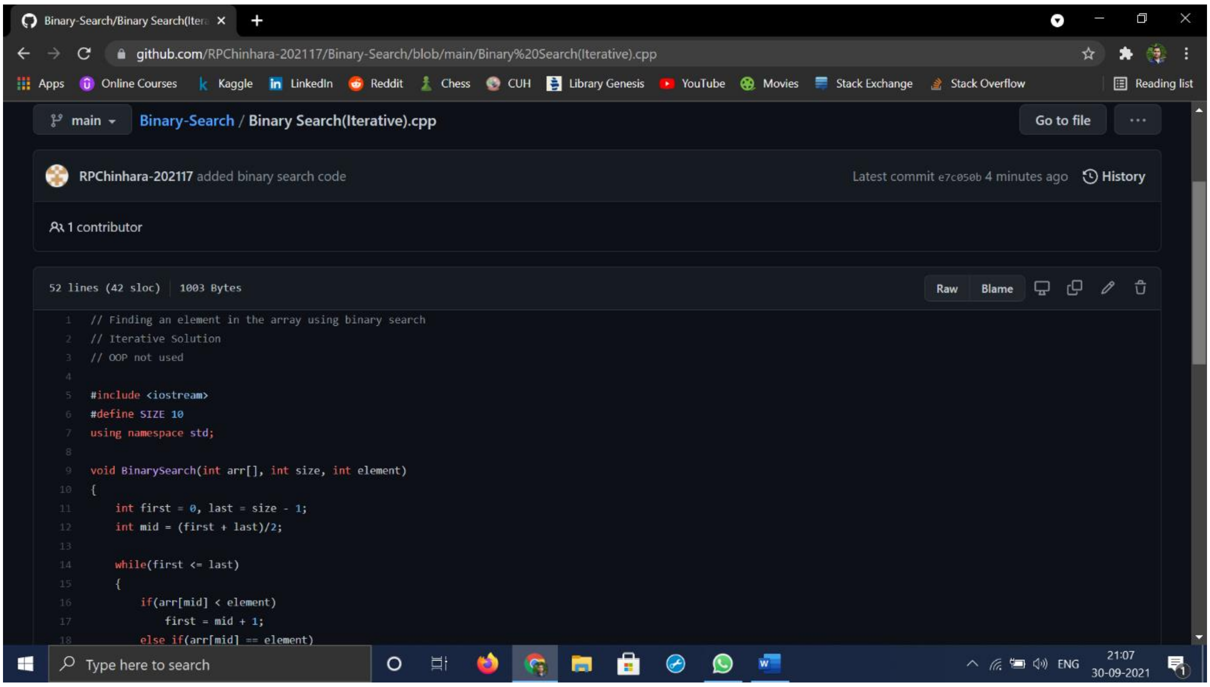
Iterative and Recursive

SEPTEMBER 30, 2021

https://github.com/RPChinhara-202117/Binary-Search.git

Iterative

Code:



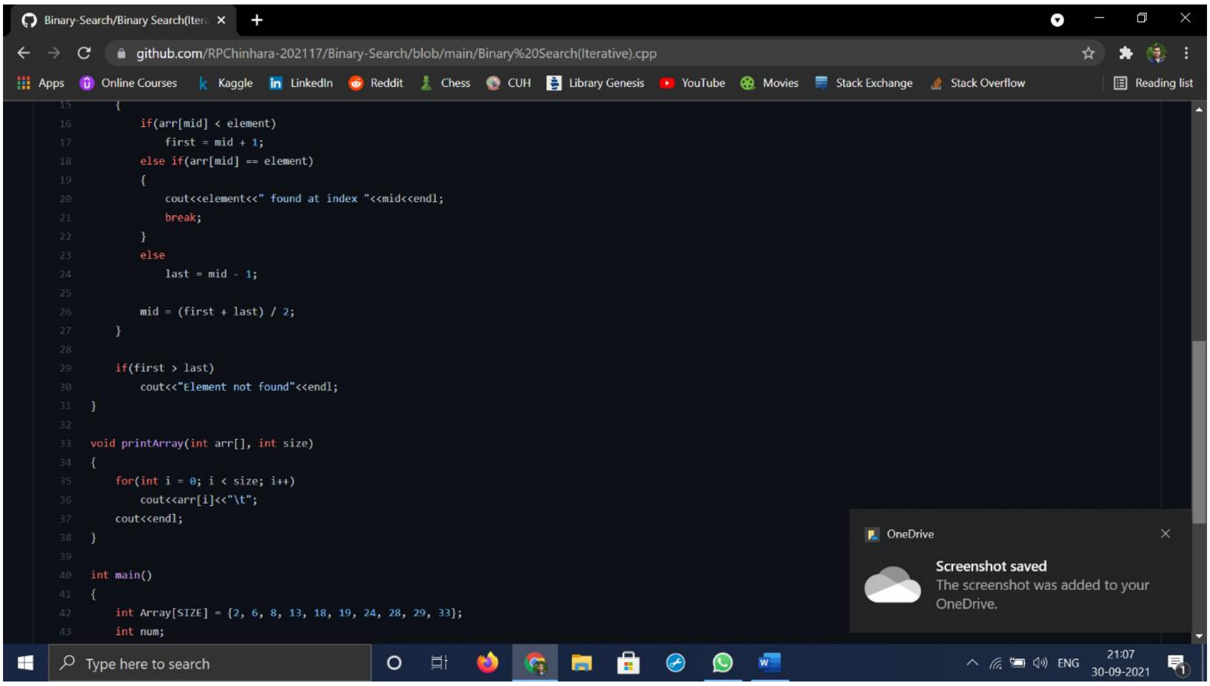
Binary-Search / Binary Search(Iterative).cpp

RPChinhara-202117 added binary search code — Latest commit e7c050b 4 minutes ago

1 contributor

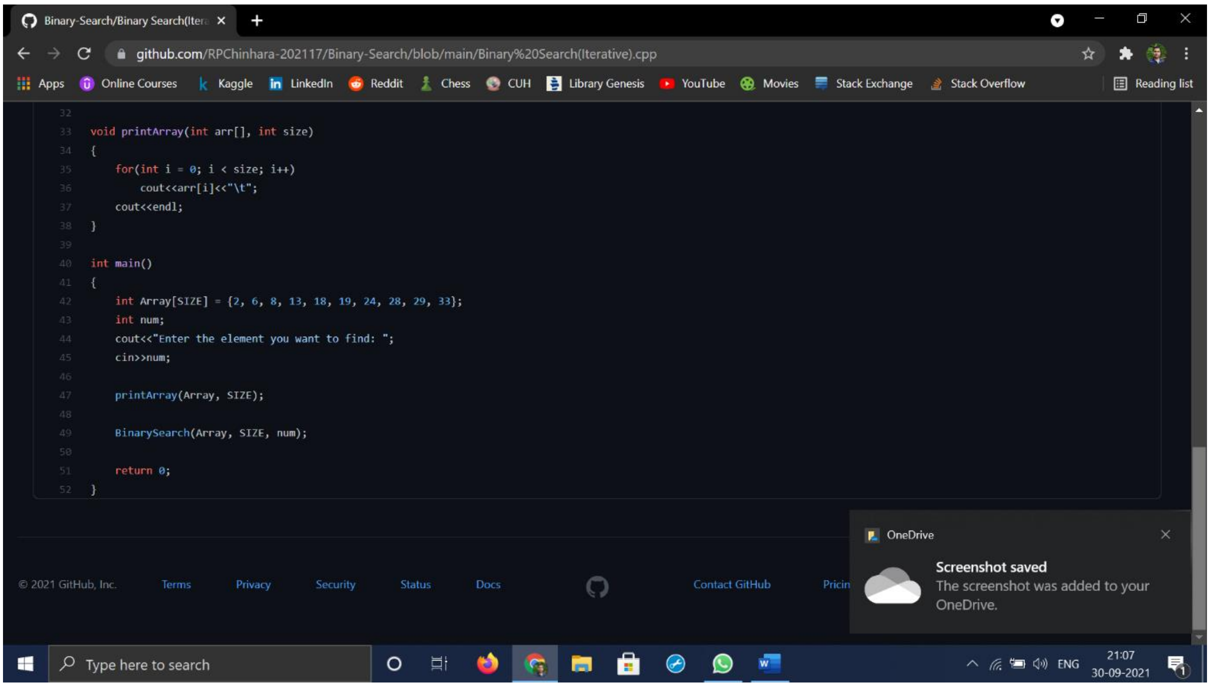
52 lines (42 sloc) | 1003 Bytes

```cpp
// Finding an element in the array using binary search
// Iterative Solution
// OOP not used

#include <iostream>
#define SIZE 10
using namespace std;

void BinarySearch(int arr[], int size, int element)
{
    int first = 0, last = size - 1;
    int mid = (first + last)/2;

    while(first <= last)
    {
        if(arr[mid] < element)
            first = mid + 1;
        else if(arr[mid] == element)
```



```cpp
    {
        if(arr[mid] < element)
            first = mid + 1;
        else if(arr[mid] == element)
        {
            cout<<element<<" found at index "<<mid<<endl;
            break;
        }
        else
            last = mid - 1;

        mid = (first + last) / 2;
    }

    if(first > last)
        cout<<"Element not found"<<endl;
}

void printArray(int arr[], int size)
{
    for(int i = 0; i < size; i++)
        cout<<arr[i]<<"\t";
    cout<<endl;
}

int main()
{
    int Array[SIZE] = {2, 6, 8, 13, 18, 19, 24, 28, 29, 33};
    int num;
```

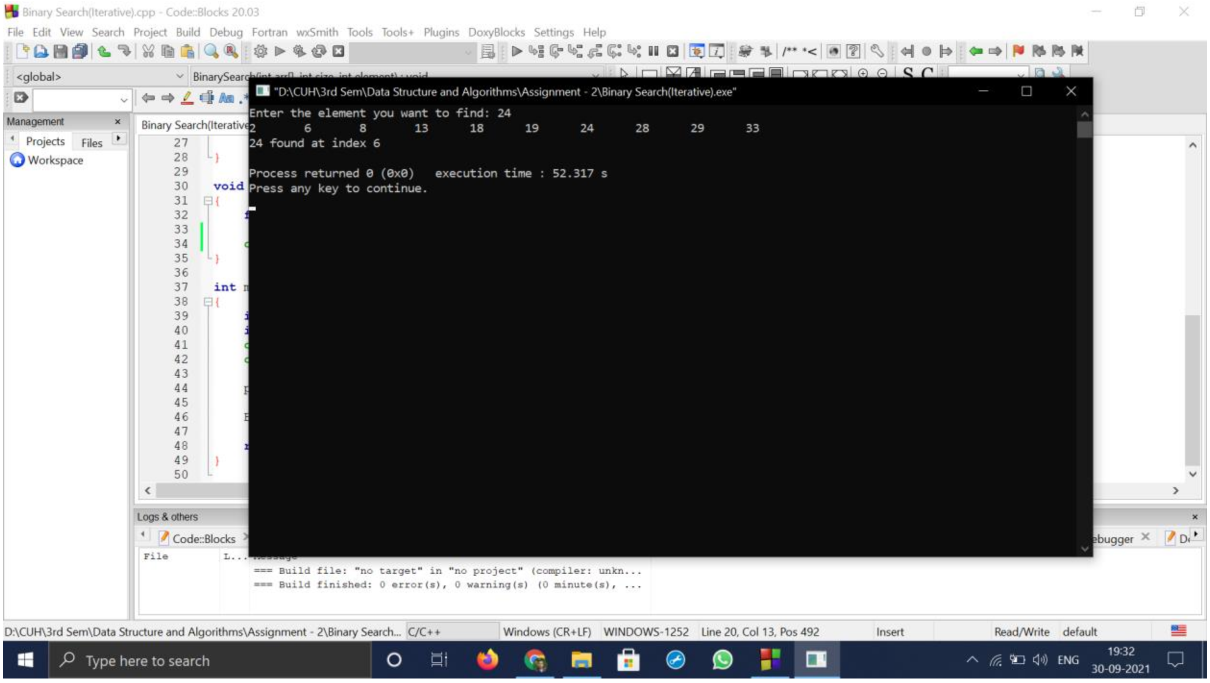
Screenshot saved
The screenshot was added to your OneDrive.



Binary-Search/Binary Search(Itera
github.com/RPChinhara-202117/Binary-Search/blob/main/Binary%20Search(Iterative).cpp
Apps
Online Courses
Kaggle
LinkedIn
Reddit
Chess
CUH
Library Genesis
YouTube
Movies
Stack Exchange
Stack Overflow
Reading list

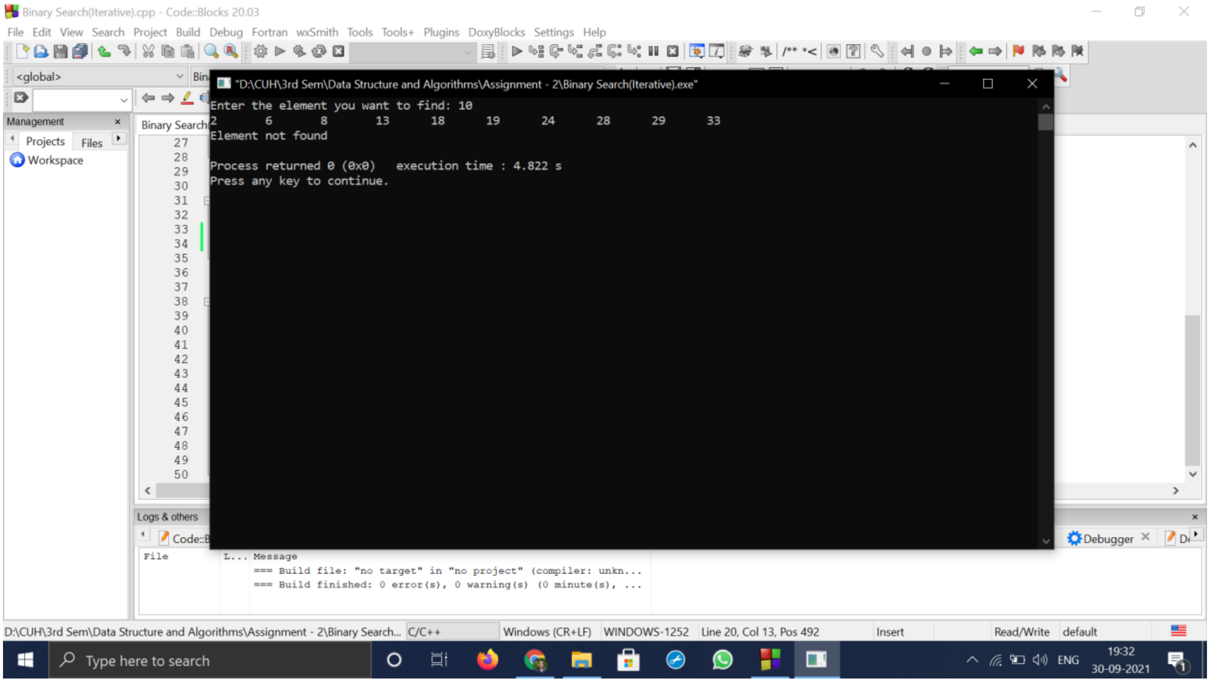
```
void printArray(int arr[], int size)
{
    for(int i = 0; i < size; i++)
        cout<<arr[i]<<"\t";
    cout<<endl;
}

int main()
{
    int Array[SIZE] = {2, 6, 8, 13, 18, 19, 24, 28, 29, 33};
    int num;
    cout<<"Enter the element you want to find: ";
    cin>>num;

    printArray(Array, SIZE);

    BinarySearch(Array, SIZE, num);

    return 0;
}
```

Output Terminal:



```
Enter the element you want to find: 24
2       6       8       13      18      19      24      28      29      33
24 found at index 6

Process returned 0 (0x0)   execution time : 52.317 s
Press any key to continue.
```

```
File          L...
=== Build file: "no target" in "no project" (compiler: unkn...
=== Build finished: 0 error(s), 0 warning(s) (0 minute(s), ...
```


Binary Search(Iterative).cpp - Code::Blocks 20.03
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
<global>
Management
Projects Files
Workspace
Binary Search
Logs & others
Code::B
Debugger
Type here to search
ENG
19:32
30-09-2021

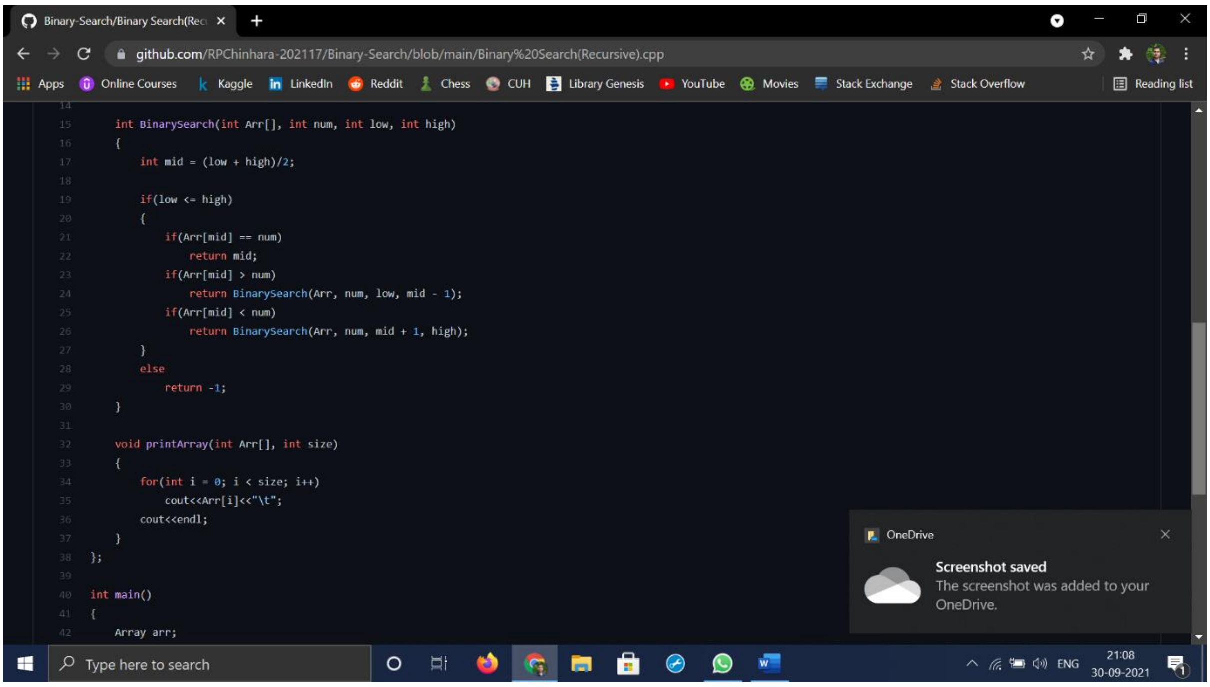
```
"D:\CUH\3rd Sem\Data Structure and Algorithms\Assignment - 2\Binary Search(Iterative).exe"
Enter the element you want to find: 10
2       6       8       13      18      19      24      28      29      33
Element not found

Process returned 0 (0x0)   execution time : 4.822 s
Press any key to continue.
```

```
File       L... Message
                === Build file: "no target" in "no project" (compiler: unkn...
                === Build finished: 0 error(s), 0 warning(s) (0 minute(s), ...
```

D:\CUH\3rd Sem\Data Structure and Algorithms\Assignment - 2\Binary Search... C/C++ Windows (CR+LF) WINDOWS-1252 Line 20, Col 13, Pos 492 Insert Read/Write default

Recursive

Code:

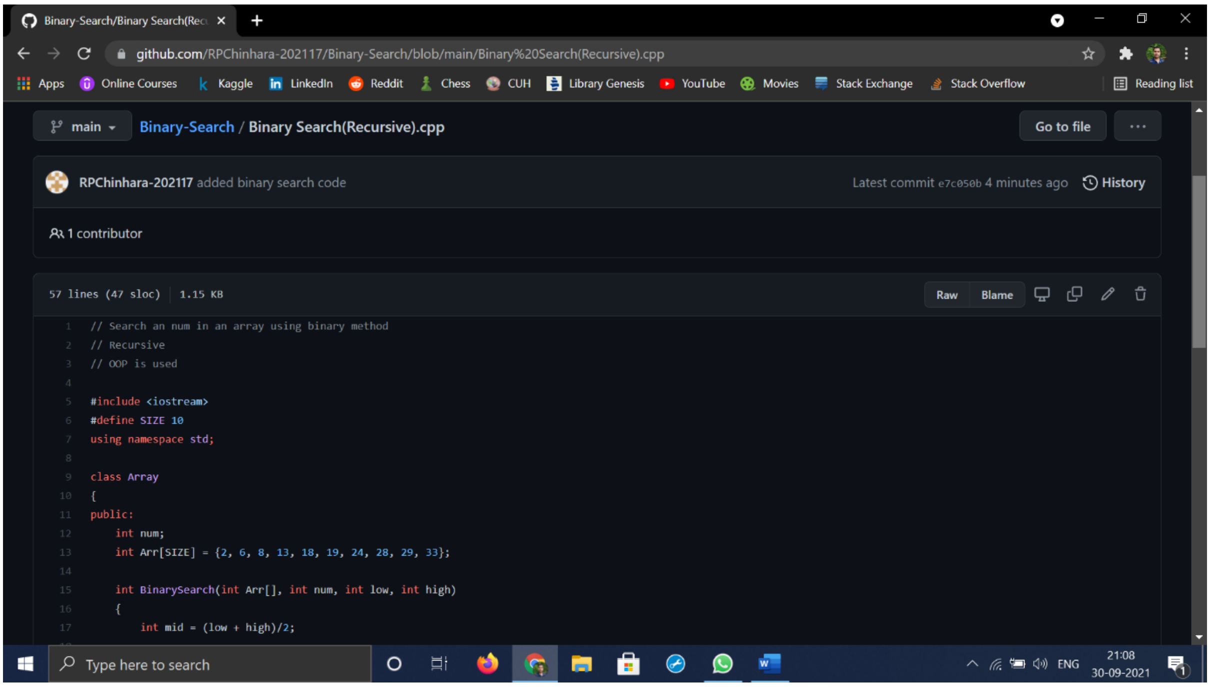


```cpp
    int BinarySearch(int Arr[], int num, int low, int high)
    {
        int mid = (low + high)/2;

        if(low <= high)
        {
            if(Arr[mid] == num)
                return mid;
            if(Arr[mid] > num)
                return BinarySearch(Arr, num, low, mid - 1);
            if(Arr[mid] < num)
                return BinarySearch(Arr, num, mid + 1, high);
        }
        else
            return -1;
    }

    void printArray(int Arr[], int size)
    {
        for(int i = 0; i < size; i++)
            cout<<Arr[i]<<"\t";
        cout<<endl;
    }
};

int main()
{
    Array arr;
```

OneDrive

Screenshot saved

The screenshot was added to your OneDrive.



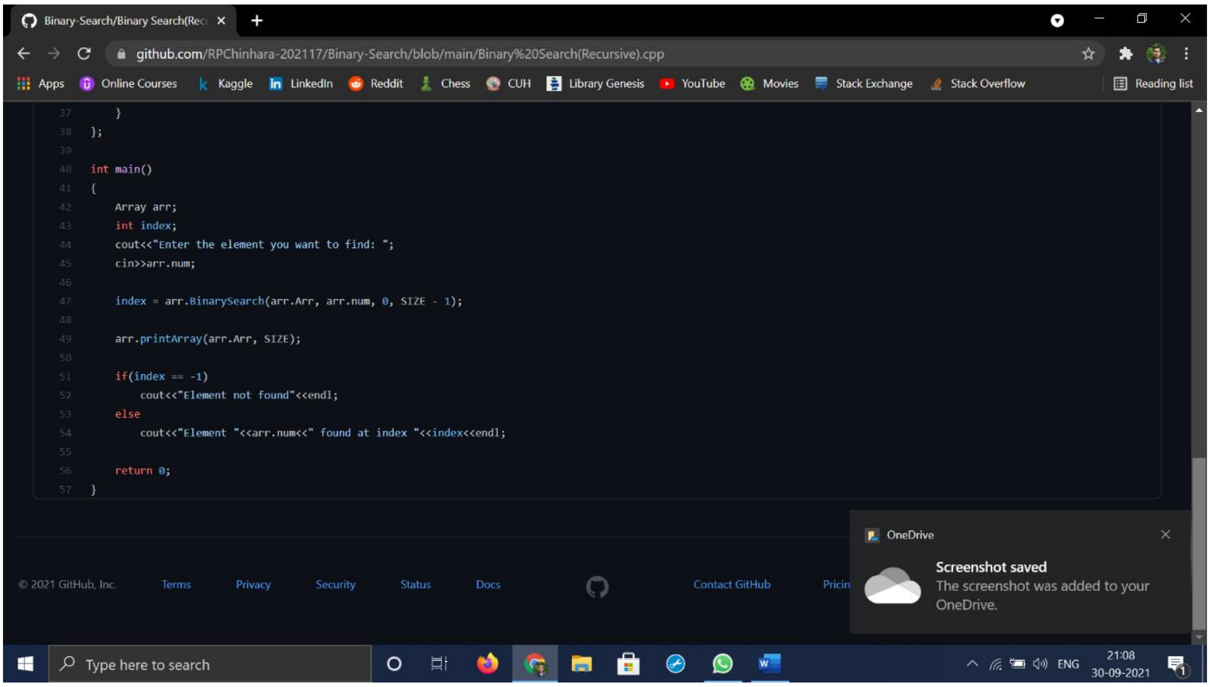
Binary-Search / Binary Search(Recursive).cpp

RPChinhara-202117 added binary search code — Latest commit e7c050b 4 minutes ago

1 contributor

57 lines (47 sloc) | 1.15 KB

```cpp
// Search an num in an array using binary method
// Recursive
// OOP is used

#include <iostream>
#define SIZE 10
using namespace std;

class Array
{
public:
    int num;
    int Arr[SIZE] = {2, 6, 8, 13, 18, 19, 24, 28, 29, 33};

    int BinarySearch(int Arr[], int num, int low, int high)
    {
        int mid = (low + high)/2;
```


Binary-Search/Binary Search(Rec
github.com/RPChinhara-202117/Binary-Search/blob/main/Binary%20Search(Recursive).cpp
OneDrive
Screenshot saved
The screenshot was added to your OneDrive.
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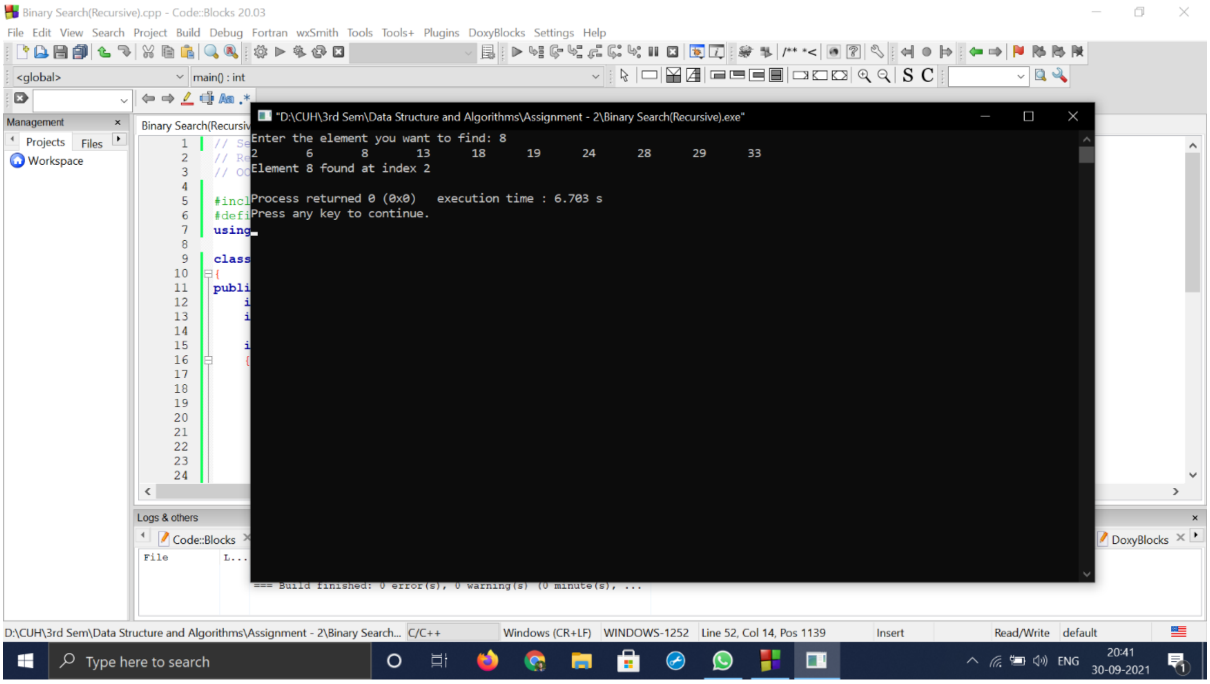
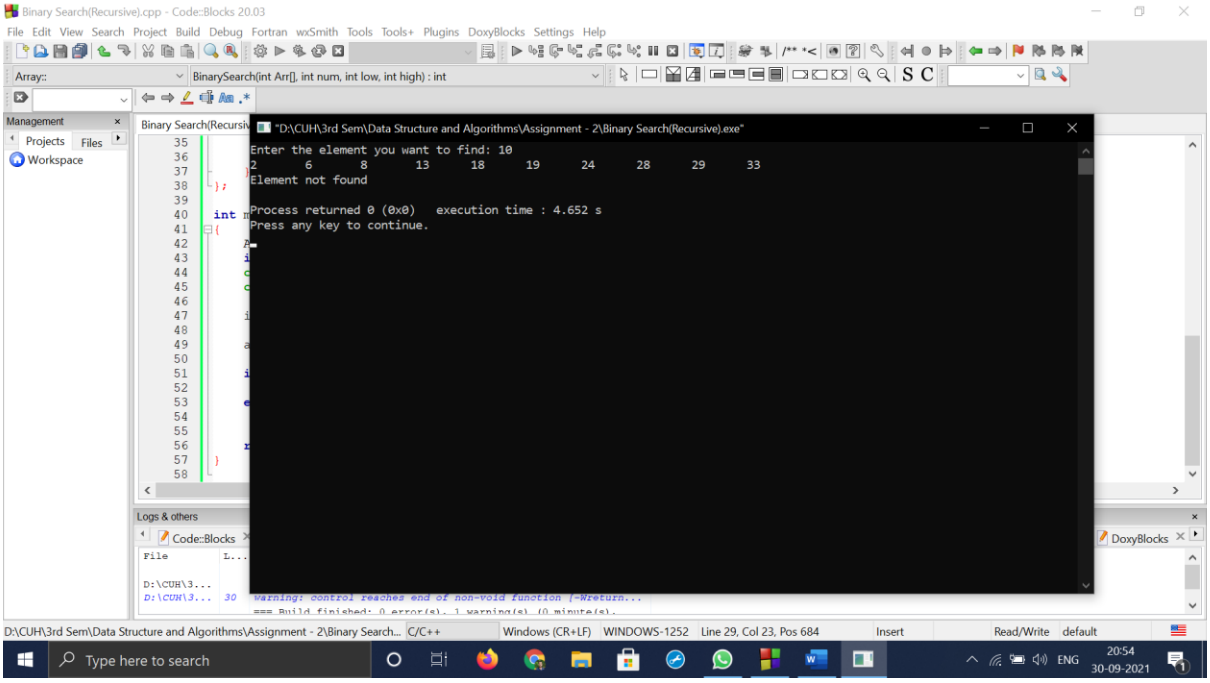
Terms
Privacy
Security
Status
Docs
Contact GitHub
Type here to search
21:08
30-09-2021

```
    }
};

int main()
{
    Array arr;
    int index;
    cout<<"Enter the element you want to find: ";
    cin>>arr.num;

    index = arr.BinarySearch(arr.Arr, arr.num, 0, SIZE - 1);

    arr.printArray(arr.Arr, SIZE);

    if(index == -1)
        cout<<"Element not found"<<endl;
    else
        cout<<"Element "<<arr.num<<" found at index "<<index<<endl;

    return 0;
}
```

Output Terminal:


Binary Search(Recursive).cpp - Code::Blocks 20.03
"D:\CUH\3rd Sem\Data Structure and Algorithms\Assignment - 2\Binary Search(Recursive).exe"
Type here to search
20:41
30-09-2021

```
Enter the element you want to find: 8
2       6       8       13      18      19      24      28      29      33
Element 8 found at index 2

Process returned 0 (0x0)   execution time : 6.703 s
Press any key to continue.
```



Binary Search(Recursive).cpp - Code::Blocks 20.03
File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoxyBlocks Settings Help
Array::
BinarySearch(int Arr[], int num, int low, int high) : int
Management
Projects
Files
Workspace
Binary Search(Recursiv
Logs & others
Code::Blocks
DoxyBlocks

"D:\CUH\3rd Sem\Data Structure and Algorithms\Assignment - 2\Binary Search(Recursive).exe"

```
Enter the element you want to find: 10
2       6       8       13      18      19      24      28      29      33
Element not found

Process returned 0 (0x0)   execution time : 4.652 s
Press any key to continue.
```

```
File          L...
D:\CUH\3...
D:\CUH\3...   30   warning: control reaches end of non-void function [-Wreturn...
                   === Build finished: 0 error(s), 1 warning(s) (0 minute(s),
```

D:\CUH\3rd Sem\Data Structure and Algorithms\Assignment - 2\Binary Search... C/C++ Windows (CR+LF) WINDOWS-1252 Line 29, Col 23, Pos 684 Insert Read/Write default