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22/492162/PA/21075

WEEK 10 ASSIGNMENT

1. Source code:

```
#include <iostream>
using namespace std;

void sortData(int id[], string name[], int score[], int n){
    for (int i=0; i<n; i++){
        for (int j=i+1; j<n; j++){
            if (id[j] < id[i]){
                int temp1 = id[i];
                id[i] = id[j];
                id[j] = temp1;

                string temp2 = name[i];
                name[i] = name[j];
                name[j] = temp2;

                int temp3 = score[i];
                score[i] = score[j];
                score[j] = temp3;
            }
        }
    }
}

void binarySearch(int id[], string name[], int score[], int x,
int n){
    int l = 0;
    int r = n;
    bool found = false;
    int index = 0;

    while(!found && l<=r){
        int mid = (l+r)/2;
        if (id[mid] == x){
            index = mid;
            found =  true;
        } else if (id[mid] < x){
            l = mid + 1;
        } else if (id[mid] > x) {
            r = mid - 1;
        }
    }

    if (found) {
        cout << "ID : " << id[index] << endl;
        cout << "Name : " << name[index] << endl;
        cout << "Score : " << score[index] << endl;
    } else {
```

```
        cout << "Data not found";
    }
}



int main(){
    int id[12] = {408599,
            403189,
            405462,
            406703,
            400324,
            404342,
            409504,
            401339,
            405509,
            400522,
            404878,
            403536,
    };

    string name[12] = {
            "Cecilio Schubart",
            "Desiri Chalker",
            "Falkner Carder",
            "Delainey Ruckhard",
            "Colette Abramovic",
            "Irwinn Bussey",
            "Terrie Whitaker",
            "Gary Binestead",
            "Ferris Fulbrook",
            "Diane Bissill",
            "Ricoriki Jiroutka",
            "Reidar Putten"

    };

    int score[12] = {
            93,
            90,
            75,
            89,
            92,
            81,
            83,
            77,
            91,
            77,
            93,
            89,

    };

    int arraySize  = sizeof(id)/sizeof(id[0]);

    sortData(id, name, score, arraySize);
```

```
    int x;
    cout << "Input the Student ID!";
    cin >> x;

    binarySearch(id, name, score, x, arraySize);

}
```

Screenshot:

```
Input the Student ID!404342
ID : 404342
Name : Irwinn Bussey
Score : 81
```

```
Input the Student ID!492162
Data not found
Process finished with exit code 0
```

2. Source code:

```cpp
#include <iostream>
using namespace std;

int greaterThan(int arr[], int x){
    int countr = 0;
    for (int i=0; i<20; i++){
        if (arr[i] > x){
            countr++;
        }
    }
    return countr;
}

int main(){
    int data[20] = {10, 25, 44, 50, 41, 42, 49, 10, 15, 38, 7,
45, 12, 15, 41, 48, 40, 44, 22, 39};

    int x;
    cout << "Input a number!";
    cin >> x;

    int result = greaterThan(data, x);
    cout << "There are " << result << " data which greater than
" << x;
}
```

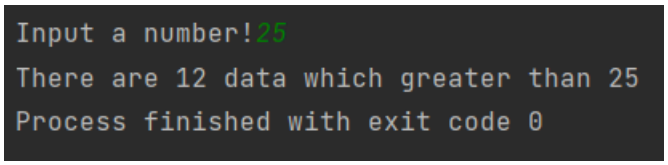
Screenshot:

```
Input a number!25
There are 12 data which greater than 25
Process finished with exit code 0
```

3. Source code:

```
#include <iostream>
using namespace std;

void sortArray(int arr[], int n){
    for (int i=0; i<n; i++){
        for (int j=i+1; j<n; j++){
            if (arr[j] < arr[i]){
                int temp = arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
        }
    }
}


int greaterThan(int arr[], int n, int x){
    bool found = false;
    int countr = 0;
    int L = 0;
    int R = n;
    int mid;

    while(!found && L<=R){
        mid = (L+R)/2;
        if (arr[mid] == x) {
            countr = (n - 1) - mid;
            found = true;
        } else if (arr[mid] > x){
            R = mid - 1;
        } else if (arr[mid] < x){
            L = mid + 1;
        }

    }

    return countr;
}

int main(){
    int data[20] = {10, 25, 44, 50, 41, 42, 49, 10, 15, 38, 7,
45, 12, 15, 41, 48, 40, 44, 22, 39};
    int arraySize = sizeof(data)/sizeof(data[0]);
    sortArray(data, 20);

    int x;
    cout << "Input a number!";
    cin >> x;

    int result = greaterThan(data, arraySize, x);
    cout << "There are " << result << " data which greater than
" << x;
}
```

Screenshot:


Input a number!25
There are 12 data which greater than 25
Process finished with exit code 0