INDIAN INSTITUTE OF INFORMATION TECHNOLOGY BHAGALPUR

WEEK 2 – ASSIGNMENT

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BRANCH – ECE

Q 1)

search_rotated_BS.cpp > get_index

```cpp
#include <bits/stdc++.h>
using namespace std;
int get_index(int arr[],int n,int k){
    int s=0,e=n-1;
    while(s<=e){
        int mid=s+(e-s)/2;
        if(arr[mid]==k){
            return mid;
        }
        else if(arr[mid]>k){
            e=mid-1;
        }
        else if(arr[mid]<k && arr[mid-1]>arr[mid]){
            e=mid-1;
        }
        else if(arr[mid]<k){
            s=mid+1;
        }
    }
    return -1;
}
int main (){
    int arr[]={5,6,7,8,9,10,1,2,3};
    cout<<get_index(arr,9,10);
    return 0;
}
```

Q2)

pair_diff.cpp > diff_pair

```cpp
#include <bits/stdc++.h>
using namespace std;
pair<int,int> diff_pair(int arr[],int n,int k){
    unordered_set<int> s;

    for(int i=0; i<n; i++){
        s.insert(arr[i]);
    }

    for(int i=0; i<n; i++){
        if(s.find(abs(arr[i]-k))!=s.end()){
            return {abs(arr[i]-k),arr[i]};
        }
    }

    return {0,0};
}
int main (){
    int arr[]={5,20,3,2,50,80};

int arr1[]={90,70,20,80,50};

pair<int,int> p=diff_pair(arr,6,78);
if(p.first>0 || p.second>0){
    cout<<"Found pair : ("<<p.first<<","<<p.second<<")"<<endl;

}
else {
    cout<<"NO Such Pair"<<endl;
}
```

Q3)

Q4_perfect_square_root.cpp > main

```cpp
#include <bits/stdc++.h>
using namespace std;
float sq_root(int n){
    int s=0;
    int e=n-1;
    int ans=0;
    while(s<=e){
        int mid=s+(e-s)/2;
        if(mid*mid<n){
            ans=mid;
            s=mid+1;
        }
        else if(mid*mid>n){
            e=mid-1;
        }
        else {
            return mid;
        }
    }
    return ans;
}
int main (){
    int n=63;
    cout<<sq_root(n);

    return 0;
}
```

Q4)

fibonacci_series.cpp > get_fibo

```cpp
#include <bits/stdc++.h>
using namespace std;
int get_fibo(int n){
    vector<int> v;
    v.push_back(0);
    v.push_back(1);
    v.push_back(1);
    int p=2;
    for(int i=2; i<=n; i++){
        v.push_back(v[p-1]+v[p-2]);
        p++;
    }
    return v[p];
}
int main (){
    int n=23;
    cout<<get_fibo(n);
    return 0;
}
```

Q5)

search_rotated_BS.cpp 3 | pair_diff.cpp 9+ | Q4_perfect_square_root.cpp 3

row_column_zero.cpp > get_zero

```cpp
#include <bits/stdc++.h>
using namespace std;
int get_zero(int arr[][4],int n,int m){

    for(int i=0; i<n; i++){
        bool flag=false;
        int num=-1;
        for(int j=0; j<m; j++){
            if(arr[i][j]==0){
                num=j;
                flag=true;
                break;
            }
        }
        if(flag==true) {
        for(int j=0; j<m; j++){
            arr[j][num]=0;
        }
        }
    }
}
int main (){
    int arr[4][4]={{3,4,0,9},{3,4,5,6},{8,4,10,15},{16,17,8,8}};
    get_zero(arr,4,5);

    for(int i=0; i<4; i++){
        for(int j=0; j<4; j++){
            cout<<arr[i][j]<<" ";
        }
        cout<<endl;
```