

Name – Sanika Samadhan Baviskar

Reg_no – 2020BIT037

Assignment No – 3

1 Searching Algorithm

Linear Search

```
// program for linear search

#include<iostream>
using namespace std;

int linearSearch(int arr[],int n,int k)
{
    for(int i=0;i<n;i++)
    {
        if(arr[i]==k)
        {
            cout<<"found at index->"<<i;

        }
    }
}

int main()
{
    int arr[] = {4,5,7,8,9};
    int n = sizeof(arr)/sizeof(arr[0]);
    int k=7;
```

```
    linearSearch(arr, n, k);  
  
}
```

```
PS C:\Users\Sanika\Desktop\DAA> cd "c:\Users\Sanika\Desktop\DAA\" ; if ($?) { g++ linear.cpp -o linear } ; if ($?)  
.\linear }  
found at index->2  
PS C:\Users\Sanika\Desktop\DAA> █
```

Binary Search

```
// program for binary search  
  
#include<iostream>  
using namespace std;  
  
int binarySearch(int arr[],int size,int key)  
{  
    int start = 0;  
    int end = size-1;  
    int mid = start+(end-start)/2;  
    while(start<=end)  
    {  
        if(arr[mid]==key)  
        {  
            return mid;  
        }  
        if(key>arr[mid])  
        {  
            start = mid+1;  
        }  
    }  
}
```

```

        }
        else
        {
            end = mid-1;
        }
        mid = start+(end-start)/2;
    }
    return -1;
}
int main()
{
    int even[6] = {2,4,6,8,12,18};
    int evenindex = binarySearch(even,6,12);
    cout<<"index of 12 is -> "<<evenindex<<endl;
    return 0;
}

```

```

ound at index 4
PS C:\Users\Sanika\Desktop\DAA> cd "c:\Users\Sanika\Desktop\DAA"
runnerFile } ; if ($?) { .\tempCodeRunnerFile }
index of 12 is -> 4
PS C:\Users\Sanika\Desktop\DAA> 

```

Ternary Search

```
#include<bits/stdc++.h>
using namespace std;

int ternarySearch(int l,int r,int key,int ar[])
{
    if(r>=1)
    {
        int mid1 = l+(r-l)/3;
        int mid2 = r-(r-l)/3;

        if(ar[mid1]==key)
        {
            return mid1;
        }
        if(ar[mid2]==key)
        {
            return mid2;
        }
        if(key<ar[mid1])
        {
            return ternarySearch(l,mid1-1,key,ar);
        }
        else
        if(key>ar[mid2])
        {
            return ternarySearch(mid2+1,r,key,ar);
        }
        else
        {
            return ternarySearch(mid1+1,mid2-1,key,ar);
        }
    }
}
```

```

    }
    return -1;
}
int main()
{
    int l,r,p,key;
    int ar[] = {1,2,3,4,5,6,7,8,9,10};
    l=0;
    r=9;
    key=5;
    p = ternarySearch(l,r,key,ar);
    cout<<"index of"<< key <<"is -> "<<p<<endl;
}

```

```

index of 5 is -> 4
PS C:\Users\Sanika\Desktop\DAA> cd "c:\Users\Sanika\Desktop\DAA"
{ .\ternary }
index of 5 is -> 4
PS C:\Users\Sanika\Desktop\DAA> 

```