Lab 1 (Searching Techniques)

**Linear Search**

int[]arr={2,4,6,8,1,5,7};

boolean chk=false;

int key=61;

for(int i=0;i<arr.length;i++)

{

if(arr[i]==key)

{

chk=true;

System.out.println("Value found");

break;

}

}

if(chk==false)

{

System.out.println("Value not found");

}

**Two Way Linear Search**

int[]arr={2,4,6,8,1,5,7};

boolean chk=false;

int key=1;

int s=0;

int e=arr.length-1;

while(s<=e)

{

if(arr[s]==key)

{

chk=true;

System.out.println("Value found at index :"+s);

break;

}

else if(arr[e]==key)

{

chk=true;

System.out.println("Value found at index :"+e);

break;

}

s++;

e--;

}

if(chk==false)

{

System.out.println("Value not found");

}

**Sentinel Linear Search**

int[]arr={2,4,6,8,1,5,7};

int key=10;

int n=arr.length;

int temp=arr[n-1];

arr[n-1]=key;

int i=0;

while(arr[i]!=key)

{

i++;

}

arr[n-1]=temp;

if(i<n-1||arr[n-1]==key)

{

System.out.println("Value found");

}

else{

System.out.println("Value not found");

}

**Probabilistic Search**

int[]arr={2,4,6,8,1,5,7};

boolean chk=false;

int key=1;

for(int i=0;i<arr.length;i++)

{

if(arr[i]==key)

{

chk=true;

System.out.println("Value found");

int temp=arr[i-1];

arr[i-1]=arr[i];

arr[i]=temp;

break;

}

}

if(chk==false)

{

System.out.println("Value not found");

}

for(int n:arr)

{

System.out.print(n+" ");

}

**Binary Search**

int[]arr={1,3,5,7,9};

boolean chk=false;

int key=5;

int s=0;

int e=arr.length-1;

while(s<=e)

{

int m=(s+e)/2;

if(arr[s]==key)

{

chk=true;

System.out.println("Value found at index :"+s);

break;

}

else if(arr[e]==key)

{

chk=true;

System.out.println("Value found at index :"+e);

break;

}

else if(arr[m]==key)

{

chk=true;

System.out.println("Value found at index :"+m);

break;

}

else if(key>arr[m])

{

s=m+1;

}

else if(key<arr[m])

{

e=m-1;

}

}

if(chk==false)

{

System.out.println("Value not found");

}