Searching_Demo

October 14, 2019

Linear Search

```
In [3]: arr = [10, 20, 80, 30, 60, 50, 110, 100, 130, 170]
        x = 110;
```

```
In [ ]: def search(arr, x):

            for i in range(len(arr)):

                if arr[i] == x:
                    return i

            return -1
```

```
In [5]: if x in arr:
            print(arr.index(x))
```

```
6
```

```
In [6]: search(arr,x)
```

```
Out[6]: 6
```

```
In [11]: def binarySearch (arr, l, r, x):

             # Check base case
             if r >= l:

                 mid = int(l + (r - l)/2)

                 # If element is present at the middle itself
                 if arr[mid] == x:
                     return mid

                 # If element is smaller than mid, then it can only
                 # be present in left subarray
                 elif arr[mid] > x:
```

```
            return binarySearch(arr, l, mid-1, x)

        # Else the element can only be present in right subarray
        else:
            return binarySearch(arr, mid+1, r, x)

    else:
        # Element is not present in the array
        return -1
```

In [12]:
```
arr = [ 2, 3, 4, 10, 40 ]
x = 10
```

In [13]:
```
# Function call
result = binarySearch(arr, 0, len(arr)-1, x)

if result != -1:
    print("Element is present at index %d" % result)
else:
    print("Element is not present in array")
```

```
Element is present at index 3
```