DASAR PEMROGRAMAN

Pertemuan XII

Tujuan

- Mahasiswa mampu melakukan pencarian elemen di dalam array dengan algoritma pencarian tertentu.
- Mahasiswa mampu melakukan pencarian nilai dalam suatu array.

Materi

Linear Search

Binary Search

LINEAR SEARCH

Linear Search or Sequential Search sequentially checks each element of the list until a match is found or the whole list has been searched.

```
SEARCH (L)

1  for i = 0 to n - 1
2     if L[i] = x
3        index_found = i
```

i= 0

```
SEARCH (L)

1  for i = 0 to n - 1
2     if L[i] = x
3        index_found = i
```

i= 1

```
SEARCH (L)

1  for i = 0 to n - 1
2     if L[i] = x
3        index_found = i
```

i= 2

```
SEARCH (L)

1  for i = 0 to n - 1
2     if L[i] = x
3        index_found = i
```

i= 3

```
SEARCH (L)

1  for i = 0 to n - 1
2     if L[i] = x
3        index_found = i
```

i= 4

```
SEARCH (L)

1  for i = 0 to n - 1
2     if L[i] = x
3        index_found = i
```

i= 5

index_found = 5

```
SEARCH (L)

1  for i = 0 to n - 1
2     if L[i] = x
3        index_found = i
```

i= 6

index_found = 5

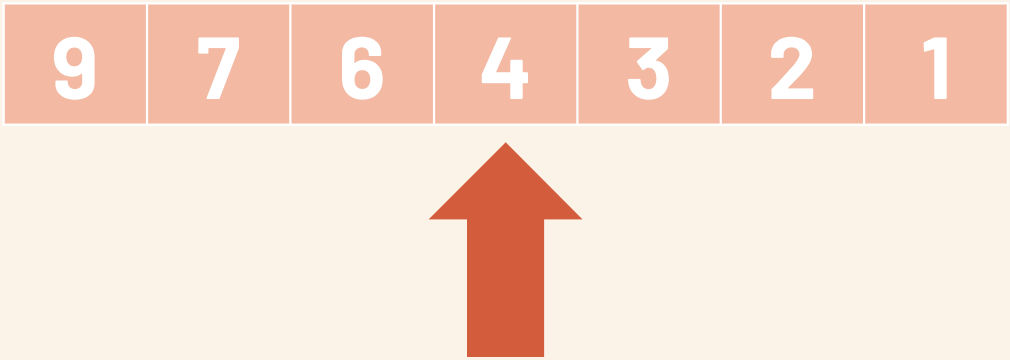
```
SEARCH (L)

1  for i = 0 to n - 1
2     if L[i] = x
3        index_found = i
```

BINARY SEARCH

Binary search is an efficient algorithm for finding an item from a sorted list of items. It works by repeatedly dividing in half the portion of the list that could contain the item, until you've narrowed down the possible locations to just one.

```
BINARY SEARCH ()
1   i = 0
2   j = n
3   found = false
4   while found = false and i <= j
5       k = (i + j) / 2
6       if L[k] = x
7           found = true
8       Else if L[k] < x
9               j = k - 1
10      else
11          i = k + 1
12  if found = true
13      idx = k
14  else
15      idx = -1
```

6



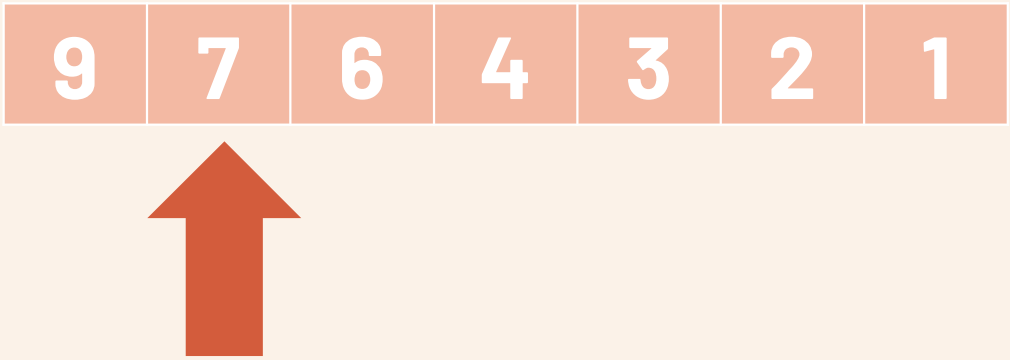
i= 0

j = 7

found = false

```
BINARY SEARCH ()

1   i = 0
2   j = n
3   found = false
4   while found = false and i <= j
5       k = (i + j) / 2
6       if L[k] = x
7           found = true
8       Else if L[k] < x
9               j = k - 1
10      else
11          i = k + 1
12  if found = true
13      idx = k
14  else
15      idx = -1
```

6



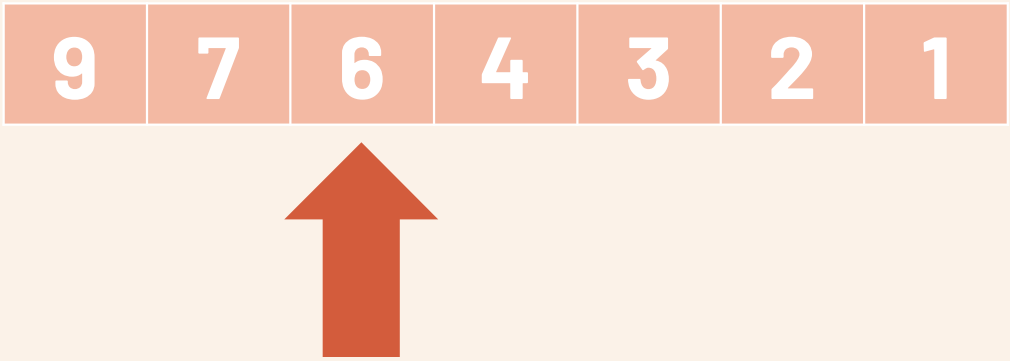
i= 0

j = 2

found = false

```
BINARY SEARCH ()
1   i = 0
2   j = n
3   found = false
4   while found = false and i <= j
5       k = (i + j) / 2
6       if L[k] = x
7           found = true
8       Else if L[k] < x
9               j = k - 1
10      else
11          i = k + 1
12  if found = true
13      idx = k
14  else
15      idx = -1
```

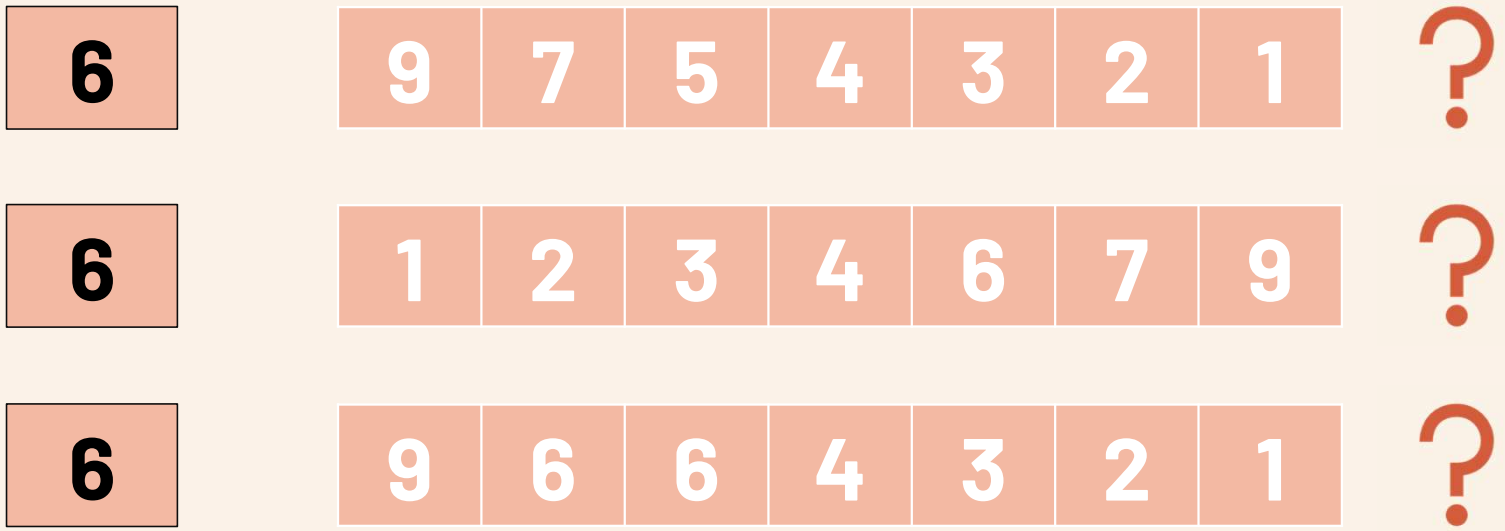
6



i= 2

j = 2

found = ~~false~~ true


6
9 7 5 4 3 2 1
?
6
1 2 3 4 6 7 9
?
6
9 6 6 4 3 2 1
?