Searching Algorithm – Sequential (Linear) Search

The sequential searching algorithm finds a target within a list by sequentially checks each element in the list until a match is found or the entire list is searched. This searching algorithm does not require any ordering of the list, i.e., the list does not have to be sorted.

The following pseudo code searches for an item x in the list L. If the item is found, the algorithm returns the index of the item in the array, otherwise, it returns -1

```
sequentialSearch(list L, item x)
     set i to -1
     for each item y in the list
          if (y matches x)
               set i to the index of y
     return i
```

The efficiency of the algorithm can be improved by terminating the searching as soon as the item is found. This can be achieved by using a boolean flag to indicate if the search should end.

```
sequentialSearch(list L, item x)
     set found to false
     set i to -1
     for each item y in the list and found is false
          if (y matches x)
               set i to the index of y
               set found to true
     return i
```

The boolean flag can be eliminated to create a very efficient sequential search.

```
sequentialSearch(list L, item x)
     for each item y in the list
          if (y matches x)
               return index of y
     return -1
```