

NPTEL MOOC

PROGRAMMING, DATA STRUCTURES AND ALGORITHMS IN PYTHON

Week 3, Lecture 3

Madhavan Mukund, Chennai Mathematical Institute

<http://www.cmi.ac.in/~madhavan>

Loops revisited

- * `for i in l:`

 - `. . .`

 - * Repeat body for each item in list `l`

- * `while condition:`

 - `. . .`

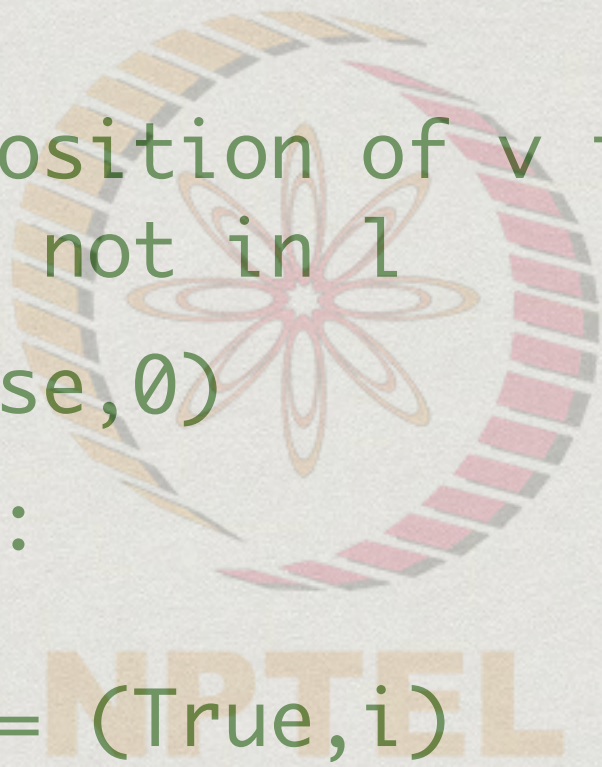
 - * Repeat body till `condition` becomes `False`

- * Sometimes we may want to cut short the loop



Search for value in a list

```
def findpos(l,v):  
    # Return first position of v in l  
    # Return -1 if v not in l  
    (found,i) = (False,0)  
    while i < len(l):  
        if l[i] == v:  
            (found,pos) = (True,i)  
    if not found:  
        pos = -1  
    return(pos)
```

The NPTEL logo is a circular emblem. It features a stylized flower or sunburst in the center, composed of multiple overlapping petals or rays. The logo is rendered in a light, semi-transparent style, allowing the text of the code to remain the primary focus.

Search for value in a list

```
def findpos(l,v):  
    # Return first position of v in l  
    # Return -1 if v not in l  
    (found,i) = (False,0)  
    while i < len(l):  
        if not found and l[i] == v:  
            (found,pos) = (True,i)  
    if not found:  
        pos = -1  
    return(pos)
```


Search for value in a list ...

- * A more natural strategy
 - * Scan list for value
 - * Stop scan as soon as we find the value
 - * If the scan completes without success, report -1

Search for value in a list ...

- * A more natural strategy

```
def findpos(l,v):  
    for x in l:  
        if x == v:  
            # Exit and report position of x  
  
    # Loop over, report -1 if we did not see x
```


The NPTEL logo is a circular emblem. It features a central stylized flower or star shape with eight petals. Surrounding this central motif is a ring composed of many small, rectangular segments, some of which are colored in shades of orange and red. The letters 'NPTEL' are written in a bold, sans-serif font across the bottom of the circular emblem.

Search for value in a list ...

- * A more natural strategy

```
def findpos(l,v)
    (pos,i) = (-1,0)
    for x in l:
        if x == v: # Exit, report position of x
            pos = i
            break
        i = i+1

    # If pos not reset in loop, pos is -1
    return(pos)
```

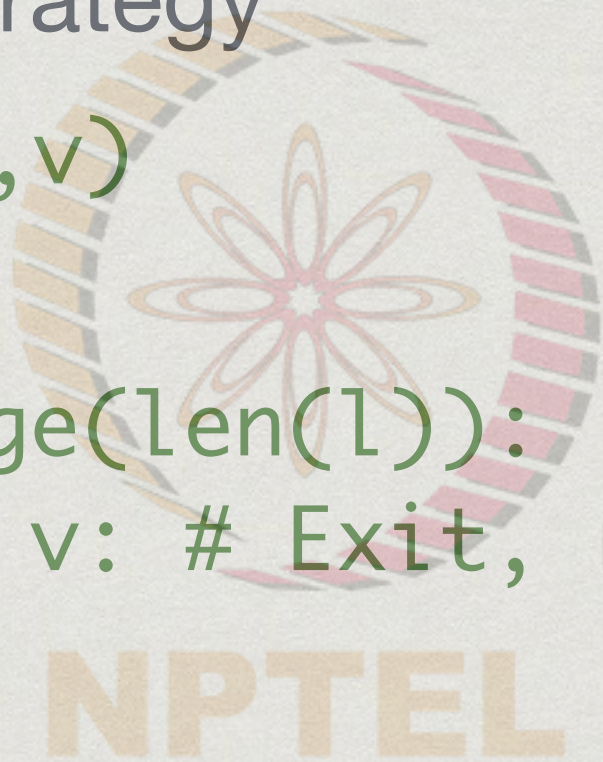
The NPTEL logo is a circular emblem with a stylized flower or star in the center, surrounded by a ring of colored segments. Below the emblem, the word "NPTEL" is written in a bold, orange, sans-serif font.

Search for value in a list ...

- * A more natural strategy

```
def findpos(l,v)
    pos = -1
    for i in range(len(l)):
        if l[i] == v: # Exit, report position
            pos = i
            break

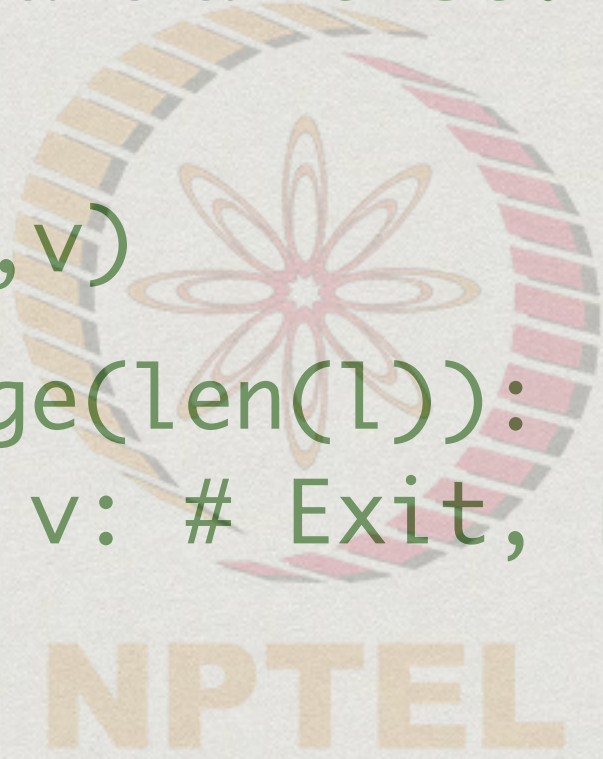
    # If pos not reset in loop, pos is -1
    return(pos)
```

The NPTEL logo is a circular emblem with a stylized flower or star in the center, surrounded by a ring of colored segments. Below the emblem, the word "NPTEL" is written in a bold, orange, sans-serif font.

Search for value in a list ...

- * A loop can also have an `else`: — signals normal termination

```
def findpos(l,v)
    for i in range(len(l)):
        if l[i] == v: # Exit, report position
            pos = i
            break
    else:
        pos = -1 # No break, v not in l
    return(pos)
```

The NPTEL logo is a circular emblem with a stylized flower or star in the center, surrounded by a ring of colored segments. Below the emblem, the word "NPTEL" is written in a bold, orange, sans-serif font.

Summary

- * Can exit prematurely from loop using **break**
 - * Applies to both **for** and **while**
- * Loop also has an **else:** clause
 - * Special action for normal termination