

# 10-11 Lecture

qOTD

Word Ladder Games:

- First we are gonna build a work network or a word graph
- A graph is a collection of nodes and links or edges, where each word is represented by a node and nodes are connected by edges if and only if their respective words differ by one letter.
- Second, we will start from the first words node and search the graph until we find the second node
- We will do it twice: once with lists and once with dictionaries
- We start by implementing “neighboring”
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```
#assuming words are same length, in specification we are going to assume they are the same length
```

```
def areNeighbors(w1,w2):  
    count = 0  
    for i in range(len(w1)):  
        if w1[i] != w2[i]:  
            count = count + 1  
    return(count == 1)  
>>> areNeighbors('cat','hat')  
True  
>>> areNeighbors('cat','dog')  
False
```

```
#First Attempt
```

```
#areNeighbors(w1,w2) returns True if the two words given as  
#arguments differ in exactly one letter position. Note that  
#this function assumes w1 and w2 are equal length, a condition  
#that is emt in the context of this assignment  
#
```

2nd attempt:

```
def areNeighbors(w1,w2):
    '''Returns True if w1 and w2 differ in exactly 1 letter'''
    count = 0
    #step through words and count mismatched characters
    for i in range(len(w1)):
        if w1[i] != w2[i]:
            if count == 1:    #too many differences
                return (False)
            count = count + 1
    #return true if only one difference discovered
    return(count == 1)
```

#good programming practice: leading comment describes what the functions are, what it does, and what it returns. It also mentions any explicit assumptions about the context in which the function is to be used

```
''' this is a docstring, used to comment the function within python
session'''
>>>help(areNeighbors)
Help on function areNeighbors in module __main__:

areNeighbors(w1, w2)
    Returns True if w1 and w2 differ in exactly 1 letter
```

- note that the docstring on the previous slide is specified using triple quotes rather than the more usual single or double quote for a long string, one that can span multiple lines
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