Lesson 11:

1. Introduction

Unit 3 – Structured data for web crawler.

String is a kind of structured data.

Lists are more powerful than strings, more than just characters.

1. Quiz: Stooges

stooges = ['Moe', 'Larry', 'Curly']

1. Quiz: Days in a Month

def how\_many\_days(month\_number):

return days\_in\_month[month\_number - 1]

1. Nested Lists

mixed\_up = [‘apple’, 3, ‘oranges’, 27, [1, 2, [‘alpha, ‘beta’]]]

1. Quiz: Countries

print(countries[1][1])

1. Quiz: Relative Size

print(countries[0][2] / countries[2][2])

1. Mutation

You may modify the existing object.

1. A List of Strings

This can happen.

1. Quiz: Different Stooges

stooges[2] = 'Shemp'

1. Yello Mutation

Aliasing p, q = object, changing p’s object also changes q’s

1. Aliasing

James Bond, 007

1. Quiz: Secret Agent Man

008

1. Quiz: Replace Spy

def replace\_spy(spy\_list):

spy\_list[2] = spy\_list[2] + 1

1. List Operations

<list>.append(<element>)

stooges.append(‘Shemp’) adds Shemp to the list, increasing the element size

1. List Addition and Length

<list> + <list>

len(<list>)

1. Quiz: Len Quiz

5

1. Quiz: Append Quiz

len(p) == 3 because it is appending the list q as a single element

1. How Computers Store Data
2. DRAM
3. Quiz: Memory Hierarchy

300000

.12

3.6

1. Quiz: Hard Drives

n$0.01, 2098km

1. Quiz: Loops on Lists

i < len(p)

1. For Loops

for each in list:

do something

1. Quiz: Sum List

# probably wanted a for loop but this is better

def sum\_list(list\_of\_numbers):

return sum(list\_of\_numbers)

1. Quiz: Measure Udacity

def measure\_udacity(list\_of\_strings):

count = 0

for string in list\_of\_strings:

if string[0] == 'U':

count += 1

return count

1. Quiz: Find Element

def find\_element(elements\_list, value):

index = 0

for element in elements\_list:

if element == value:

return index

index += 1

return -1

1. Quiz: Index
2. Guest Speaker
3. Quiz: Union
4. Pop
5. Quiz: Pop Quiz
6. Collecting Links
7. Get All Links
8. Links
9. Quiz: Starting Get All Links
10. Quiz: Updating Links
11. Quiz: Finishing Get All Links
12. Finishing the Web Crawler
13. Quiz: Crawling Process
14. Quiz: Crawl Web
15. Quiz: Crawl Web Loop
16. Quiz: Crawl If
17. Quiz: Finishing Crawl Web
18. Conclusion