Announcements

• Reading and RQ due next time
• APT 4 out today, due in a week
• Do not discuss exam1 with anyone until it is handed back

• Today:
  – Loops – While, While True
  – Problem Solving

Is number a Prime number?
Bit.ly/101sp16-0223-A

def isPrime(number):
    if number<4:
        return True
    for n in range(4,number):
        if number/n * n == number:
            return False
    return True
Lab this week

- Working with While loops
- Demo: one-dimensional Walker

While loops

- Repetition when you stop a loop based on a condition
- while CONDITION:
  BODY

  - As long as condition is true, keep executing loop.
  - Must have an update in the body to get closer to condition being false

Examples for while

- Playing chess
  while (game not over)
    play game
  (game must get closer to ending)

- Finding the 100th prime

Mystery While example

```
def mystery(strng):
    count = 0
    result = ""
    while count < 5:
        result += strng[count] + strng[count]
        count += 1
    result += strng[count:]
    return result

print mystery("September")
```
Problem: Given a number, want the largest list of unique digits from 1 to x whose sum is less than or equal to the number

- Given 5
  Answer is 1 + 2
- Given 6
  Answer is 1+2+3

Looping with while
– not sure when to stop
- Playing chess
- Determining the 100th prime number
- Another way – while True
  – Must have ways to break out of infinite loop
  – Must have update – gets closer to ending

while condition vs while True

```python
def addDigitsTilSum2(total):
    sum = 0
digs = []
for n in range(1,10):
    sum += n
    if sum > total:
        break
digs.append(n)
return digs
```

```python
while condition:
    body
    continue
```

```python
while True:
    body
    if condition:
        break
    continue
```

While condition is true - must update
- must get closer to making condition false
- use break to exit

bit.ly/101sp16-0223-1
While True

initialize
while True:
    if something:
        break
    if something2:
        update
    update
Continue or return

Problem:
Find the first duplicate adjacent words in a phrase

• “Did I make make a mistake in in this?”
• Convert to list
• Answer is 2nd word (start counting at 0)

Revisit addDigitsTilSum
bit.ly/101sp16-0223-2

def addDigitsTilSum(total):
    sum = 0
    num = 1
    digs = []
    while(True):
        sum += num
        if sum > total:
            break
        digs.append(num)
        num += 1
    return digs
def positionDuplicate(phrase):
    words = phrase.split()
    if len(words) < 2:
        return -1
    pos = 0
    while True:
        pos = pos + 1
        return pos

APT solved in a similar way

- NameGroup
- Pikachu