Chapter 8

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More about iterations

- Repeated execution of a sequence of statements is called iteration.
- For and while loops

For revisited:

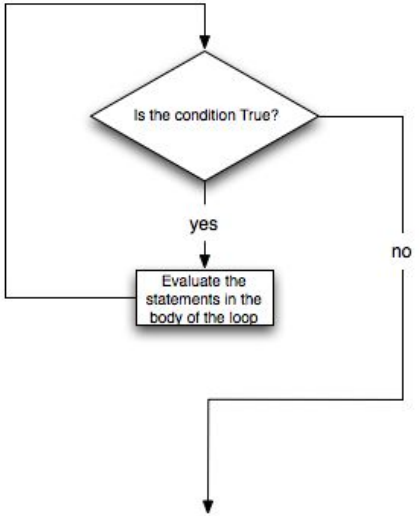
```
for f in ["Joe", "Amy", "Brad", "Angelina", "Zuki", "Thandi", "Paris"]:
    print("Hi", f, "Please come to my party on Saturday")
```

Functions - Loops

```
def sumTo(aBound):
    theSum = 0
    for aNumber in range(1, aBound + 1):
        theSum = theSum + aNumber

    return theSum

print(sumTo(4))

print(sumTo(1000))
```

While loop

The while statement provides a much more general mechanism for iterating. Similar to the if statement, it uses a boolean expression to control the flow of execution. The body of while will be repeated as long as the controlling boolean expression evaluates to True



While loop example

```
def sumTo(aBound):
    """ Return the sum of 1+2+3 ... n """

    theSum  = 0
    aNumber = 1
    while aNumber <= aBound:
        theSum = theSum + aNumber
        aNumber = aNumber + 1
    return theSum

print(sumTo(4))

print(sumTo(1000))
```

Uses of while

```
def checkout():
    total = 0
    count = 0
    moreItems = True
    while moreItems:
        price = float(input('Enter price of item (0 when done): '))
        if price != 0:
            count = count + 1
            total = total + price
            print('Subtotal: $', total)
        else:
            moreItems = False
    average = total / count
    print('Total items:', count)
    print('Total $', total)
    print('Average price per item: $', average)

checkout()
```

Use of NOT, While & String upper() method

```
def get_yes_or_no(message):
    valid_input = False
    answer = input(message)
    while not valid_input:
        answer = answer.upper() # convert to upper case
        if answer == 'Y' or answer == 'N':
            valid_input = True
        else:
            answer = input('Please enter Y for yes or N for no. \n' + message)
    return answer

response = get_yes_or_no('Do you like lima beans? Y)es or N)o: ')
if response == 'Y':
    print('Great! They are very healthy.')
else:
    print('Too bad. If cooked right, they are quite tasty.')
```

Loops are good for generating tabular data

```
print("n", '\t', "2**n")     #table column headings
print("---", '\t', "-----")

for x in range(13):         # generate values for columns
    print(x, '\t', 2 ** x)
```

Slides & Material

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