CSE 8A: Intro to Programming in Python
Fall 2021

Lecture 9 - More Loops (get stuck for a while)

UC San Diego

Announcement

- Get started with PA3 early please!

- Be confident about your understanding!
  - It is very common that you understand the basics but can't solve a problem
  - Need to slow down and think about your solution step by step!

Review

- ## For loops
  - go through a list
  - go through a string
  - go through a list via index (with the help of range)
- ## How range works
  - range(start, end [, step])

Review: For loops and Range

What will be printed?

```python
def find_emotion(feeling, emotions):
    for idx in range(len(emotions)):
        if emotions[idx] == feeling:
            return True
        else:
            return False

emotions = ['joy', 'sadness', 'anger', 'fear', 'disgust']
print(find_emotion('fear', emotions))
```


A) fear   B) True   C) False   D) Error

Is there an easier way to do this?

Topics for Today: While loops and Modules

- While loops
  - Basics of a while loop
- Importing Modules
  - Math
  - Random
- Guessing Game
- Infinite Loops

Topic: While Loop Basics

while loop is used to repeat until a condition is met

```
while condition:
    #statements to repeat
```

Example

```
val = input()
while val != '5':
    val = input()
print("Done!")
```

Which is equivalent?

```
print(1)
print(3)
print(5)
print(7)
print(9)
```

A.
```
i = 1
while i<9:
  print(i)
  i += 2
```

B.
```
i = 1
while i != 9:
  print(i)
  i += 2
```

C.
```
i = 0
while i<5:
  print(2 * i + 1)
  i += 1
```

D.
```
i = 1
while i!= 10:
  print(i)
  i += 2
```

E. More than one is correct

Exercise: While Loop Basics

What will be printed?

```
num = 3
while num > 0:
    num -= 1 #This is the same as: num = num - 1
print(num)
```

A)	B)	C)	D)
3 2 1	2 1	1	0

Exercise: While Loops with Variable Updates

What will happen when you run this program?

Assume if the program asks for input from the user, then user will enter the following numbers:

1
2
3
-1

```python
total = 0
while num != -1:
    num = int(input("Enter a number: "))
    total += num
print("total is " + str(total))
```

A) Program will print 6
B) Program will print 5
C) Program will throw an error: name 'num' is not defined
D) Program will throw an error: name 'total' is not defined

Exercise: While Loops with Variable Updates

What will should be put in the _____?

```
total = 0
num = _____
while num != -1:
    num = int(input("Enter a number: "))
    total += num
print("total is " + str(total))
```

Assume if the program asks for input from the user, then user will enter the following numbers:

1
2
3
-1

A) 0
B) 1
C) -1
D) More than 1 choices are correct

Exercise: While Loops with Variable Updates

What will happen when you run this program?

```
total = 0
num = 0
while num != -1:
    num = int(input("Enter a number: "))
    total += num
print("total is " + str(total))
```

Assume if the program asks for input from the user, then user will enter the following numbers:

1
2
3
-1

A) Program will print 6
B) Program will print 5
C) Program will print 6 multiple times
D) Program will print 5 multiple times

Import modules

- Modules in python are like library books
  - You can borrow them and use them
  - import statement will allow you to do it
- A few modules that are useful
  - random
  - math

Exercise: Importing Modules

What will happen when we run the following lines of code?

```
>>> import random
>>> words = ["live", "love", "laugh"]
>>> words[random.randint(0, len(words))]
```

A) Any of the three words `"live", "love", and "laugh"` will be printed always without any error

B) Any of the three words `"live", "love", and "laugh"` will be printed but sometimes an error may be thrown

C) Any of the two words `"live" and "love"` will be printed always without any error

D) Always the word `"live"` will be printed always without any error