

CSC 280 Introduction to Computer Science:
Programming with Python

Lecture 6 : Nested Loops, Random Number, Break

Prof. Bei Xiao
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American University

Recap of last week

- Branching: if elif else
- While loops needs an accumulator variable
- For loops use range() function
- Print formatted string and numbers

Plan of this week

- Nested Loops
- More exercises on nested loops (while, for), and IfElse statements.
- Random numbers.
- Math functions and simple equations.
- Definition of functions
- Functions with return values
- Functions and Scoping

Nested loops

```
for iterating_var in sequence:
```

```
    for iterating_var in sequence:
```

```
        statements(s)
```

```
statements(s)
```

Exercise:

- Using a nested For loop, output the following:

1 1 1 1

2 2 2 2

3 3 3 3

4 4 4 4

Exercise: finding prime number

- Find prime number from 2 to 100 such as 2, 3, 5, 7, 11, etc.
- Prime number is not divisible **except** by itself. That means it will not be divided by all other numbers.
- E.g. 7 is a prime number because it can't be divided by 2,3,4,5,6.
- However, 8 is **NOT** a prime number because it can be divided by 2, 4.

While loop recap

- Remember the nice use of For loop:

```
name = "Michelle"
```

```
for letter in name:
```

```
    print "for loop 2:", letter
```

Can you do this with a while loop?

Random function

- Random number generator

```
import random
```

```
number = random.randint(1, 10)
```

Generates random integers between 1 and 10.

Exercise: Guessing Number

- The computer initialize a number.
- Ask the user to guess the number until.
- If it is too low, tell them “too low” and ask again.
- If it is too high, tell them “ too high” and ask again.
- Repeat the above until maximum number of guesses (e.g. 6) is reached.
- If the user guessed the number, print it out and congratulate them.
- If the user didn't guess right, print the right answer.

Break out of the loop

```
for letter in 'Python':  
    if letter == 'h':  
        break  
    print 'Current Letter :', letter
```

Break out of the loop

Predict the outcome of the following code:

```
var = 10
while var > 0:
    print 'Current variable value :', var
    var = var -1
    if var == 5:
        break
print "Good bye!"
```

Exercise: Break

- Find a cube root of a perfect cube using two kinds of methods:
 - 1. While loop
 - 2. For loop with Break statement.

Take home reading

Chapter 4, Chapter 5