CSCE 110 — Programming I
Basics of Python: Decision-Making and Repetition

Dr. Tiffani L. Williams

Department of Computer Science and Engineering
Texas A&M University

Fall 2011
if Statement

- The standard if conditional statement follows this syntax:
  
  ```python
  if expression:
      if_suite
  ```

- If the expression is non-zero or True, the if_suite is executed. Then, execution continues on the first statement after the if block.

- Suite is the term used in Python to refer to a sub-block of code and can consist of single or multiple statements.

- Parentheses are not required in if statements as they are in other languages.
if/else Statement

if expression:
    if_suite
else:
    else_suite
# Determine whether the user entered an even or odd number.

user_input = raw_input('Please enter a number: ')  #1
number = int(user_input)  #2

if (number % 2 == 0):  #3
    print number, 'is an even number.'  #4
else:  #5
    print number, 'is an odd number.'  #6
if-elif-else Statement

For the if/elif/else statement, you can have an unlimited number of elif expressions.

```python
if expression:
    if_suite
elif expression:
    elif_suite
else:
    else_suite
```
Determining letter grade from a score

Listing 2: if-elif-else.py

```python
# An example of how to use the if-elif-else construct.

score = int(raw_input("Please enter your score: "))  #1

if score >= 90:
    letter = 'A'  #2
    print "You obviously studied!"  #3
elif score >= 80:
    letter = 'B'  #4
elif score >= 70:
    letter = 'C'  #5
elif score >= 60:
    letter = 'D'  #6
else:
    letter = 'F'  #7
    print "Success??!!"  #8

print "Here's your letter grade:", letter  #9
```

Determining letter grade from a score (bad example with use of if-else)

Listing 3: if-else-bad-example.py

```python
# Using if-else constructs to display a letter grade.
# In this case, if-elif-else construct would be better.

score = int(input("Please enter your score: ")) #1
if score >= 90:
    letter = 'A' #2
else:
    if score >= 80:
        letter = 'B' #3
    else:
        if score >= 70:
            letter = 'C' #4
        else:
            if score >= 60:
                letter = 'D' #5
            else:
                letter = 'F' #6
print "Here’s your letter grade: ", letter #7
```

while Loop

```python
while expression:
    while_suite
```
Counting with while loops

Listing 4: counting-with-while-loop.py

```python
count = 5  #1
while count == 5:  #2
    print "the value of count is", count  #3
    #count += 1  #4
print "Done with while loop!!"  #5
```
# A game where the user guesses a secret number between 1 and 100.

```python
import random

solution = random.randint(1, 100)
guess = 0
attempts = 0

while guess != solution:
    attempts = attempts + 1
    user_input = raw_input('Enter a number between 1 and 100: ')
    guess = int(user_input)
    if guess == solution:
        print 'Congratulations! It took you %d guesses.' % (attempts)
    elif guess < solution:
        print 'HIGHER'
    else:
        print 'LOWER'
```

Listing 5: guessing-game.py

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# A game where the user guesses a secret number between 1 and 100.

```python
import random

solution = random.randint(1, 100)
guess = 0
attempts = 0

while guess != solution:
    attempts = attempts + 1
    user_input = raw_input('Enter a number between 1 and 100: ')
    guess = int(user_input)
    if guess == solution:
        print 'Congratulations! It took you %d guesses.' % (attempts)
    elif guess < solution:
        print 'HIGHER'
    else:
        print 'LOWER'
```
# The computer attempts to guess a number selected by the user.

```python
import random

response = 'whatever'
attempts = 0
min = 1
max = 100

print 'My name is Alice.'
print 'I will try to guess a secret number between 1 and 100.'
while response != 'c':
    attempts = attempts + 1
    guess = ((max - min) / 2) + min
    print 'Alice’s guess: ', guess
    response = raw_input('(c)orrect (h)igher (l)ower: ')
    if response == 'h':
        print 'HIGHER'
        min = guess + 1
    else:
        print 'LOWER'
        max = guess - 1
print 'CORRECT! It took %d attempts.' % (attempts)
```