Please pass homeworks to the left (your right) end of all rows.
Introduction to Computer Engineering

CS/ECE 252, Fall 2015
Computer Sciences Department
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Terms & Definitions

• What is programming, high level language, compiler, running a program
• Algorithm – what is it?
  – Edge cases
  – Scalability
Lets write some programs!
Assignment
variable name = expression

Print
print(expression)

Flow-Control
if or while
Line

Assignment
variable name = expression

Print
print(expression)

Flow-Control
if or while

Variable Name
Can contain only:
• Letters
• Numbers
• Underscores:_
But cannot:
• Have spaces
• Begin with a number
• Be a reserved word–if, while, else, etc.

Examples:
• hello2
• i_ILI77
Non-examples:
• 2a
• hi there

Expression
Expression consists of:
• Numbers (including decimals and negatives)
• Strings (any text contained in ““)
• Variable names

Or any valid combination of the above using parentheses and the operators +, -, *, /, %.

Flow-Control
If
if(test):
    indented lines

While
while(test):
    indented lines

Indented Lines
• Lines that are preceded by three spaces. A set of lines that are indented is a set of lines that go together.

Test
expression comparison expression

Comparison
Comparison consists of:
• Two equal signs: ==
• Not equal: !=
• Greater than: >
• Less than: <
• Greater than or equal to: >=
• Lesser than or equal to: <=
Next Class & Announcements

• HW-1 is due
• Read up through 2.4.1
Programming Language - Python

===MONDAY===
Definitions:
- programming
- high level language
- compiler
- running a program

Algorithm: what is it?
- Edge cases
- Scalability

===PROGRAMMING===

Use browser system to submit assignment

Simulator:
http://discovering.cs.wisc.edu/sim/py/python.html

Programs: "legal lines" -> collection of lines that fall within the rules of the language.

Eventually: break these down into machine language instructions

Python:
use keywords in conjunction with preordained syntax
ex: print("Hello world!")

But if you wanted to print a quotation mark You ESCAPE it!!
print(\"Hello world!\"

The > symbol indicates which line of the program will be executed next.

```
x = 2
y = 4
print(x) # result is 2
sum = x + y # an EXPRESSION
print(sum) # result is 6
sum = sum + x # sum = 8
```

x, y, sum are VARIABLES. Placeholders for other things! These must have legal names.
1) Should begin with a letter
2) Avoid special characters (you can have them after the first char, but try not to have them)
3) They can be arbitrarily long

# branching -> an if statement!
```
if(sum < 6):
    print("This sum is less than six") # Python works off indentations, so whatever is indented will run in this if block
    print("look mom, it’s Python!")
else:
    print("this is more than six")
```

# get input
```
input_num(x)
print(x) # x is whatever you input
```

There are also lots of other cool things you could do. Also, no semicolons!!!
Newer languages tend to get closer to "human language"

Abstractions and modularity:
You can nest if-statements (or other branching statements) however deep.
You can also make your conditions more complex statements \( n < (n < y + x)) \)

Another branching statement while statement:

```python
while(x<4):
    # repeatedly execute the block of code until it is no longer true
    print("less than four")
    x = x + 1 # increment x so you're not stuck in this block forever
```

arrays!

```python
l = [1, 20, 30, 40, 50] # create an array
for i in l: # for every element in l
    print(i) # print the element
```