

INTRO TO PROGRAMMING

Procedure and Style

DEMO REVIEW

- demonstrate git with dotfiles repo
- configure vim
- setup bootstrap.sh and Vagrantfile

CODING WITH STYLE

- conventions improve readability
 - known style promotes focus on code
 - seemingly arbitrary rules can make a lot of sense

An example of poor readability due to unconventional style.

Entrant in International Obfuscated C Code Contest

PEP STYLE

- Python has formal process for suggesting changes known as Python Enhancement Proposals or PEPs
- PEP-8 defines best style practices for formatting your code
- <https://www.python.org/dev/peps/pep-0008/>

FIX: INDENTATION

```
foo = long_function_name(var_one, var_two,  
                         var_three, var_four)  
  
def long_function_name(  
    var_one, var_two, var_three,  
    var_four):  
    print(var_one)
```

CORRECT: INDENTATION

```
foo = long_function_name(var_one, var_two,  
                         var_three, var_four)
```

```
def long_function_name(  
    var_one, var_two, var_three,  
    var_four):  
    print(var_one)
```

FIX: OPERATOR + LB

```
# operators: prefix or postfix?  
income = (gross_wages +  
          taxable_interest +  
          (dividends - qualified_dividends) -  
          ira_deduction -  
          student_loan_interest)
```

CORRECT: OPERATOR + LB

```
income = (gross_wages  
          + taxable_interest  
          + (dividends - qualified_dividends)  
          - ira_deduction  
          - student_loan_interest)
```

FIX: BLANK LINES

```
def top_level_func():
    print("important processing going on here")

def second_func():

    print("another gravely important function")
```

CORRECT: BLANK LINES

```
def top_level_func():
    print("important processing going on here")

def second_func():
    print("another gravely important function")
```

FIX: NAMING

```
def topLevelFunc():
    print("important processing going on here")
    mixedCaseVariables = True
```

CORRECT: NAMING

```
def top_level_func():
    print("important processing going on here")
    mixed_case_variables = False
```

NUMERICAL EXERCISES

Convert Fahrenheit to Celcius

$$T_f = T_c \cdot 9/5 + 32$$

Convert Fahrenheit to Celcius

$$T_c = (T_f - 32) \cdot 5/9$$

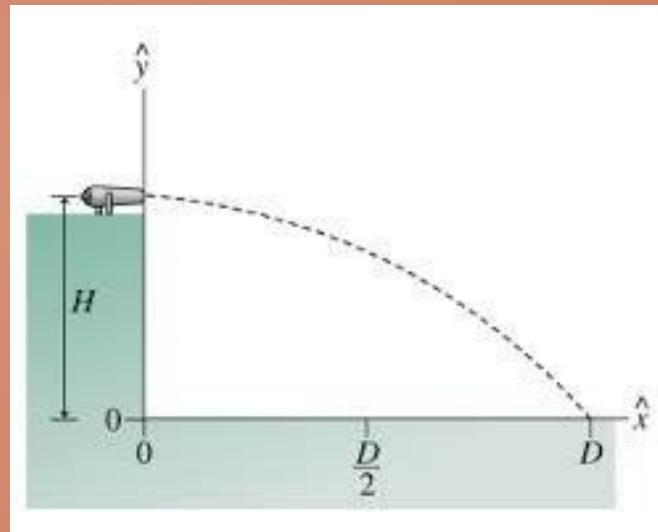
Write functions for each
of these calculations

NUMERICAL EXERCISES

Displacement of
accelerating object:

$$d = v_o t + \frac{1}{2} a t^2$$

$$\sqrt{\frac{2h}{a}} = t$$



Write function to calculate time
in air given the height

NUMERICAL EXERCISES

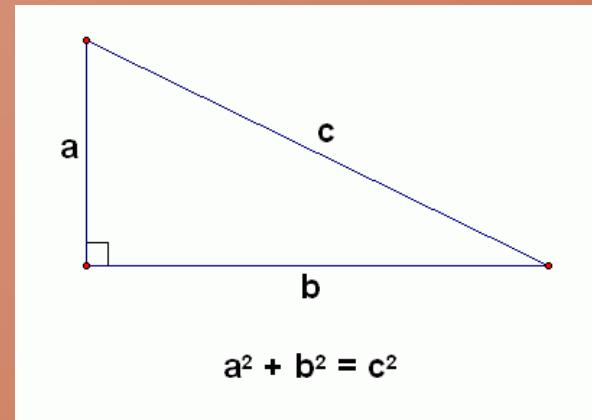
Now you can calculate projectile range

$$d_{range} = v_o \cdot t$$

And use the pythagorean theorem to get distance between two points

$$x_d = x_1 - x_0$$

$$y_d = y_1 - y_0$$



$$d^2 = x_d^2 y_d^2$$

NEXT TIME

Data Structures and more Python

Extra Resources

- <https://docs.python.org/3.4/tutorial/index.html>
- <https://www.python.org/dev/peps/pep-0008/>