CSE 160 Section

Welcome :)

PAUL G. ALLEN SCHOOL
OF COMPUTER SCIENCE & ENGINEERING

Logistics

Due Wednesday 10/12: Practice Problems Check-In #1

Due Friday 10/14: Practice Problems Check-in #2

Due Monday 10/17: HW2 (DNA Analysis)

- Parsing data, loops, data analysis

Lecture Key Points Review

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Conditionals: structure review

- Checks that a condition is True/False, and executing code based on that condition

```
is_raining = True
is_sprinkling = False

if is_raining:
    print(“Bring an umbrella”)
elif is_sprinkling:
    print(“Bring a raincoat”)
else:
    print(“Bring sunglasses”)
```

Conditionals: “Boolean Zen”

- Minimize the use of if statements where possible
  - More readable
  - Easier to debug

Without boolean zen:

```
num = 0
def is_num_2(num):
    if num == 2:
        return True
    else:
        return False
```

With boolean zen:

```
num = 0

def is_num_2(num):
    return (num == 2)
```

Functions: an overview

- A function is a block of code which only runs when it is called.
- You can pass data, known as **parameters**, into a function.
- A function *can* return data as a result (but it doesn’t have to)

Why do we use functions?

- **D**on't **R**epeat **Y**ourself (**DRY**)
  - If you're doing the same thing over and over again, it might be easier to make it into a function
- Abstractions
  - It's easier to call a function (like `sqrt()` or `sum()`) than writing all the code
  - It's easier to reason about your program when you break it down into smaller chunks

Function Syntax

```
# Writing a function
def func_name(parameter1,...):
    function body
    return value

# To call that function:
func_name(parameter1,...)
```

`def`	word needed to define a function
`func_name`	a name you give the function
`parameter1,`	a list of parameters you pass in a function. (Optional)
`function body`	the code inside the function
`return`	tells the function to return `value` back to the caller. (Optional)

Functions run only when called

- What would be the output of this program?

```
def winter():
    x = “Happy Winter!”
    print(x)

winter()
```

Output:

```
Happy Winter!
```

Functions run only when called

- What would be the output of this program?

```
def winter():
    x = “Happy Winter!”
    print(x)

winter()
```

Include parentheses in function call

Output:

```
Happy Winter!
```

Parameters

- We can pass a function a value to work with, called a “parameter”

```
def print_twice(x):
    print(x)
    print(x)

print_twice(“Hi!”)
```

Output:

```
Hi!
Hi!
```

Return Value

This function does have a return value, what will this print?

```
def two_times_seven():
    x = 2 * 7
    return x

print(two_times_seven())
```

Output:

```
14
```

Return Value

This function does have a return value, what will this print?

```python
def two_times_seven():
    x = 2 * 7
    return x

print(two_times_seven())
```

You must have a **return** statement if you want your function call to have access to x in two_times_seven()! Otherwise, it will return None

Docstrings

- You should comment your functions so others (and yourself) can understand what they do without having to read through the code. You should include:
    - What are the inputs? What types should they be?
    - What does it do (does it print something?)
    - What does it return?

```
def abs(x):
‘’’Takes in a number (x), and returns
it’s absolute value’’’
     if x < 0:
          return x * -1
     else:
          return x
```

Section Handout Problems

- We won’t get through all problems, but solutions will be posted!
- Great practice - go to OH if you have questions!

Problem 1

Write a function `odd(num)` that returns `True` if a number is odd and `False` if a number is even. Your function should take in an integer num and return a boolean.

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Problem 3

Given a function `get_height(student)` that computes the height of the student passed in, write a new function `max_height(student_lst)` that finds the maximum height of all the people in the class. Your function should take in a list of student names and return the maximum height. You can assume height is in inches. For example, `get_height('nicholas')` will return 75.

a. What is the return type of `max_height(student_lst)`?

b. Suppose you modified your function to print the max height instead of return the max height, what would be the return type of `max_height(students)`?

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Problem 3 Solutions

a. int

b. None

Problem 5

Write a function called `budget_saver(cost, budget)` that takes the `price` of a product and a `budget`. The function should return "`too expensive`" if the price is more than the budget, "`great deal`" if the price is less than the budget, and "`okay`" if the cost and budget are equal.

For example, `budget_saver(250, 100)` returns "`too expensive`".

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Problem 6

Write a function called `among_us(crewmates, imposter)`, where given a list of crewmates and the names of an `imposter`, returns `True` if the name of that imposter is in the list of `crewmates`. Do not use the Python keyword “in”. For example, `among_us([“cyan”, “yellow”, “pink”], “pink”)` returns `True`.

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Thank you!

- Start HW 2 right away!
- Submit Practice Problems!