CPS 109 - Lab 8

Agenda

Today you're gonna learn how to write a program *properly*.

Whether you like it or not.

Writing a Program

Why do we bring this up now? You've been writing programs since the beginning of the semester.

Correction: you've been writing bad programs for the majority of the semester.

Writing a Program

Well that’s not very nice :(

A Word On Locality

A lot of you seem to still struggle with the concept of locality.

Recall: locality is the idea that variables themselves are used and destroyed within specific code blocks. You need to pass data around to local variables in order to maintain that data.

A Word On Locality

Passing around data? Understanding how functions use arguments?? Why can’t I just have variables declared in the ether or use *global* to declare global variables?

A Word On Locality

The issue with globals and ether variables (as I call them) is simple:

Say you have a large program, consisting of several files. Troubleshooting issues involving variables like that are now a nightmare and next to impossible.

Bad Programming Example

```
list = input("Enter a bunch of words seperated by spaces.").split()

for i in list:
    print(i)


if __name__ == "__main__":
    pass
```

Good Programming Example

```
def print_list(ls):
    for i in ls:
        print(ls)

if __name__ == "__main__":
    my_list = input("Please enter a series of words seperated by spaces:\n").split()
    print_list(my_list)
```

Bad Programming Example

```
a = input("iunput string:")
b = input("inpoot strung:")

def func():
    def func_two(a):
        print(a)
    def func_three(b):
        print(b)
    func_two()
    func_three()

func_two(a)
func_three(b)
```

Good Programming Example

```
def print_these_strings(str_one, str_two):
    print(str_one)
    print(str_two)

if __name__ == "__main__":
    a = input("Please input your first string:\n")
    b = input("Please input your second string:\n")
    print_these_strings(a, b)
```

Designing A Program

1. What is expected of me?
2. What is the functionality I need?
3. What functions and classes do I need to accomplish this?
4. Create skeleton for your code.
5. Write tests
6. Fill in functions and classes.
7. Write your main.

Designing A Program

Problem: I need a program that keeps track of employees. This should include basic information about them, their jobs, their departments, etc. I need to be able to add and delete employees, look up employees and give employees promotions.