DS2000

9/10 - Tues.

Agenda

1. variables + data types
2. arithmetic operations
3. Python

1. variables and data types

Data Science code, in general:

1. gather data
2. computations
3. communication

```
'''
    DS2000
    Fall 2024
    Sample code from class - lecture 1
    9/6/24
'''

def main():
    name = input("What is your name?")
    print("Hello world!")
    print("Hello", name)

main()
```

→ header comment (not seen by user)

→ main: where code begins

→ gather data: from the user input

→ communicate: to the user print

variable → save information

label ↔ descriptive

value ↔ might change

Tom → 415-559-2760

label value

gather data ~ what data do we want?

save data in variables

computation ~ analysis

math

taking dogs to the vet:
- weight - breed - body fat %
- age - temp - # vaccinations
- gender - medical history - height
- diet - allergies - length
- test results - blood pressure - fixed?

in Python (ex) age = 3
label value
(might change)

(ex) age = input("Age?")
(* not perfect yet!)

every variable has: label, value, data type

(ex) LBS_PER_KILO = 2.2
constant value
(doesn't change)

data type	Python ex
int	age = 3
float	weight = 30.4
string	breed = "cattle dog?"
boolean	fixed = True

2. arithmetic operations

computation step! Data types: int, float

label = computation
↳ first!
then, value is assigned

(ex) age = 3
age = age + 1
4 3
~ age is 4 now
3 is gone!

(ex) avg_ht = (ht1 + ht2) / 2
↳ compute first
then, assign to variable

operators

+ plus
/ divide
- minus
* multiply

fun ones

** exponent

// int divide

% modulo

2**5 2^5

2**.5 $\sqrt{2}$

x // y
how many times does y go into x?

x % y
remainder when x divided by y

(ex)

10/3	3.3333		
10//3	3	10%3	1
10//4	2	10%4	2
10//10	1	10%10	0
10//15	0	10%15	10

3. Python

var␣=␣value spaces around operators

comment ignores code below

today's code:

- gather data: dog's weight in kg
- computation: convert to pounds
- communicate: tell user wt in pounds