

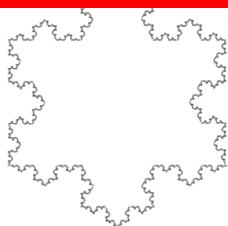
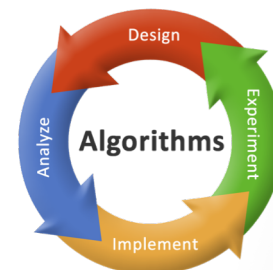
Turtle Graphics



Welcome to CS 8!

Introduction to Computer Science!

Enrollment: 113/105



Instructor

- Diba Mirza (dimirza@cs.ucsb.edu)
 - Faculty, Computer Science
 - PhD (Computer Engineering, UCSD)
- Office: HFH 1155
- Best way to reach me:
 - Piazza, Office Hours
 - Include [CS8] in the subject line of an emails
 - Office hours
 - Thursdays 3:30pm – 5:00pm,
 - Fridays 2pm – 3pm, Or by appointment



Course staff



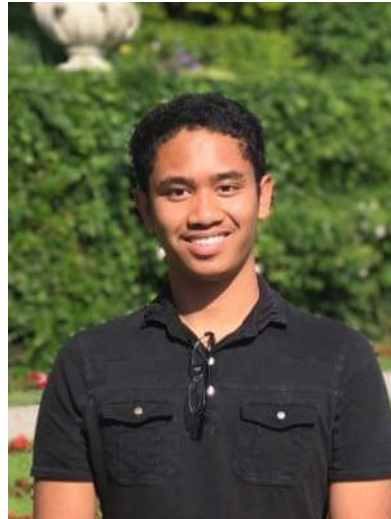
Anacaren



Mohith



Taylor



Jared



Madhu

**Schedule for all lab
and office hours:**

https://ucsb-cs8.github.io/w19-mirza/info/lab_office_hours/

About you ...

What is your major?

- A. Computer Science or Computer Engineering
- B. Engineering (Chemical, Mechanical, Electrical...)
- C. Math, Stats or Actuarial Science
- D. Other

About you ...

What is your familiarity/confidence with programming in Python?

- A. Know nothing or almost nothing about it.
- B. Used it a little, beginner level.
- C. Some expertise, lots of gaps though.
- D. Lots of expertise, a few gaps.
- E. Know too much; I have no life.

This course: Intro to CS!

What does the term Computer Science mean to you?

CS != programming

programming : CS ::

"not equal to"



CS != programming

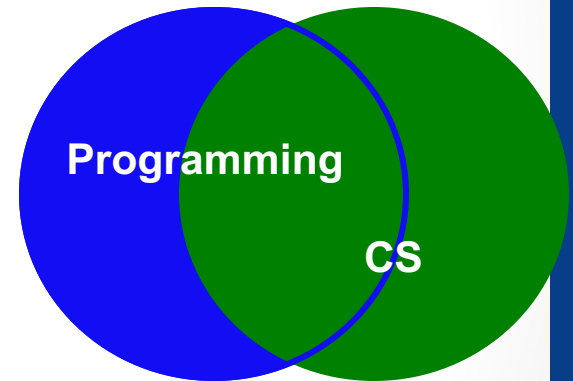
programming : CS ::

surfing : Santa Barbara

machining : engineering

grammar : literature

equations : mathematics



a vehicle, not a destination

CS == *computing* science

Computer Science is...

The science of solving problems
using abstractions & algorithms
(and computers)!

"equal to"



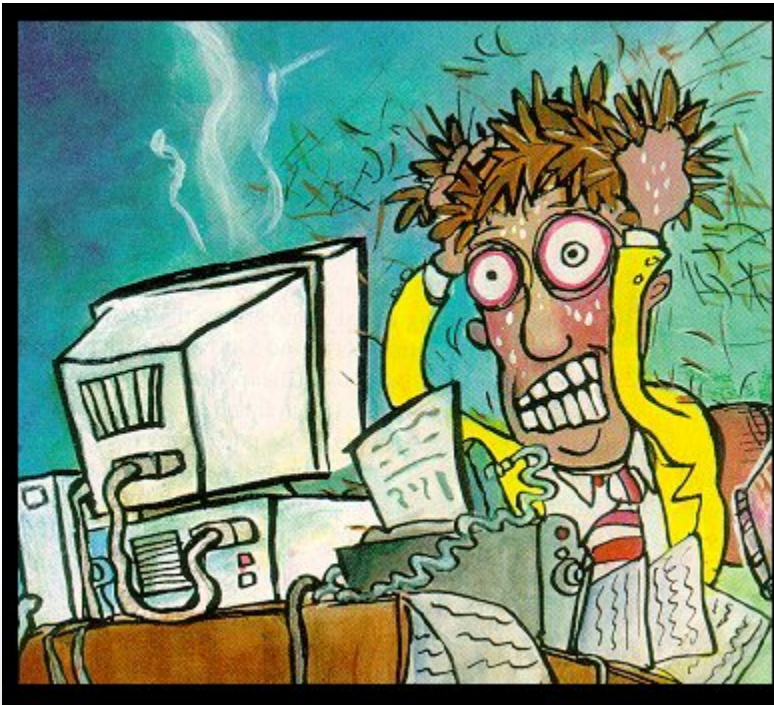
Expect it to be...

Thrilling!
And..



Expect it to be...

Thrilling!
And...



The most frustrating thing
you've ever done...
.... computers just follow
instructions

But, there is no magic



- You can understand everything. Really.
- NEVER guess.

How relevant do you think this class is to you?

- A. Not at all
- B. Somewhat
- C. Very relevant
- D. I don't really know, I am taking it because my major requires it

Other points of view:

https://www.youtube.com/watch?v=Zwwzrynqv_o

Course Logistics

Graded Components

- Midterm (2): 30%
- Final : 30 %
- Home works : 10%
- Labs : 30%
- Project(1): 2% EC

Refer to the course calendar for all due dates:

<https://ucsb-cs8.github.io/w19-mirza/info/calendar/>

Resources



- **Course Web Site:**
<https://ucsb-cs8.github.io/w19-mirza/>
- **Textbook:** “Introduction to Computing Using Python” by Ljubomir Perkovic, 2nd edition
- **Iclickers:** Purchase at the bookstore
- **Piazza** (online discussion forum)
- **Gradescope:** Site for graded assignments (labs, homeworks, exams)
- **Open labs and office hours:** This is the best place to get help

Tomorrow's lab

YOU HAVE A LAB TOMORROW in Phelps 3525!

- Complete ic00
- Bring the finished hard-copy with you to lab TOMORROW!
- Read the lab assignment (lab00) before you go into your lab:
BE PREPARED
- Remember to log out of the lab computers after you are done, otherwise you won't be able to log back in.

Hello Unix!

- Unix is an operating system (just like Windows/Mac)
- The Lab (CSIL) computers use a flavor of Unix
- Today:
 - Learn to work with some basic applications:
terminal, IDLE
 - Unix file system and how to navigate it

Hello Python!

- We'll write a simple program in Python to learn:
 - IDLE: The Python programming environment
 - How to use the Python shell in IDLE
 - How to create and save programs in files in IDLE

Python Objects

- ▶ Every piece of data in Python is an object
- ▶ Think of an object as a generic container to store data on a computer's memory
- ▶ Every object has a type and value
- ▶ e.g. `x = 3` creates an object of type `int` and value 3

Python Data Types

Numeric

Name	Example	What is it?
float	3.14	values with a fractional part
int	42	integers <= 2147483647
str	"Rabbit"	Sequence of characters
bool	True False "Boolean value"	the results from a comparison: ==, !=, <, >, <=, >=

Hey - someone
can't spelle !



George Boole

Finding the type

But you can change its type... implicitly (i.e. last slide) or explicitly through casting

```
>>> type( 4.2 )
```

```
>>> int( 4.2 )
```

```
>>> type( true )
```

```
>>> float( true )
```

```
>>> type(4)
```

```
>>> float(4) / 5
```

```
>>> type("Rabbit")
```

```
>>> str( 42 )
```

```
>>> type ("42")
```

```
>>> int ("42")
```

Python Operators

set equal to

=

divide

/

remainder

%

power

**

is equal to

==

as usual

*

+

>

<

-

()

()

**

-

*

/

%

+

-

>

<

==

=



It's not worth remembering all these %+/* things!
You'll get more familiar with these as we go on

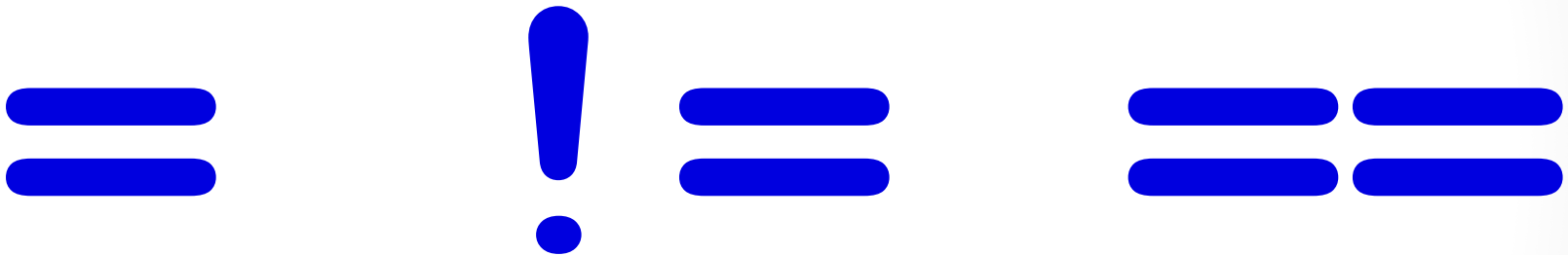
What does this code do?

```
>> x = 41
```

- A. Sets the value of x to 41
- B. Checks if x is equal to 41
- C. What is the different anyway?



the "equals" operators

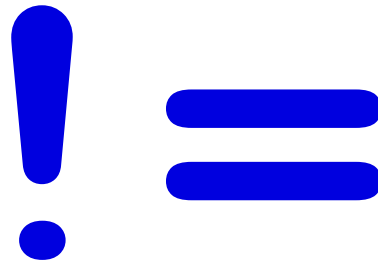


This is true – but what is it saying!?

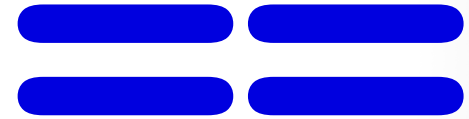
the "equals" operators



SET equals



isn't equal to



IS equals

I want === !



= *names data*

```
>> x = 41
```

```
>> y = x + 1
```



x and y are called “variables”
Don’t confuse them with variables from math
In Python, variables store data



Choosing the right
name is more important
than I thought.

Inside the machine...

What's happening in python:

```
x = 41
```

```
y = x + 1
```

assignment, not equality!

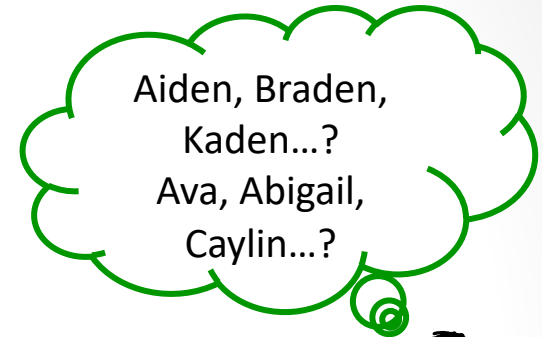
= is an ACTIVE, DIRECTIONAL operator. It means:

“First calculate the value on the right hand side, and then put it into the box labeled with the name from the left hand side (replacing what was there, if necessary).”

It does not test for equality (that's ==).

>> x = 41 “Put 41 into the box labeled x”

>> y = x + 1 “Get the value out of x (41), and add 1 to it (42).
Put that value (42) into the box labeled y”



x **y**

Re-naming...!

```
>> x = 41
```

```
>> y = x + 1
```

```
>> x
```

```
41
```

```
>> y
```

```
42
```

```
>> x = x + y
```

```
>> x
```

```
?? (1)
```

```
>> y
```

```
??
```

x

y

What value is displayed for x at ??(1)?

A. 41

B. 42

C. 83

D. 84

“Find the value in x and add it to the value in y. *Then* place that value back into x, replacing what was there.”

Input and output

- To output data use **print**

```
>>>print("Hello CS8")
```

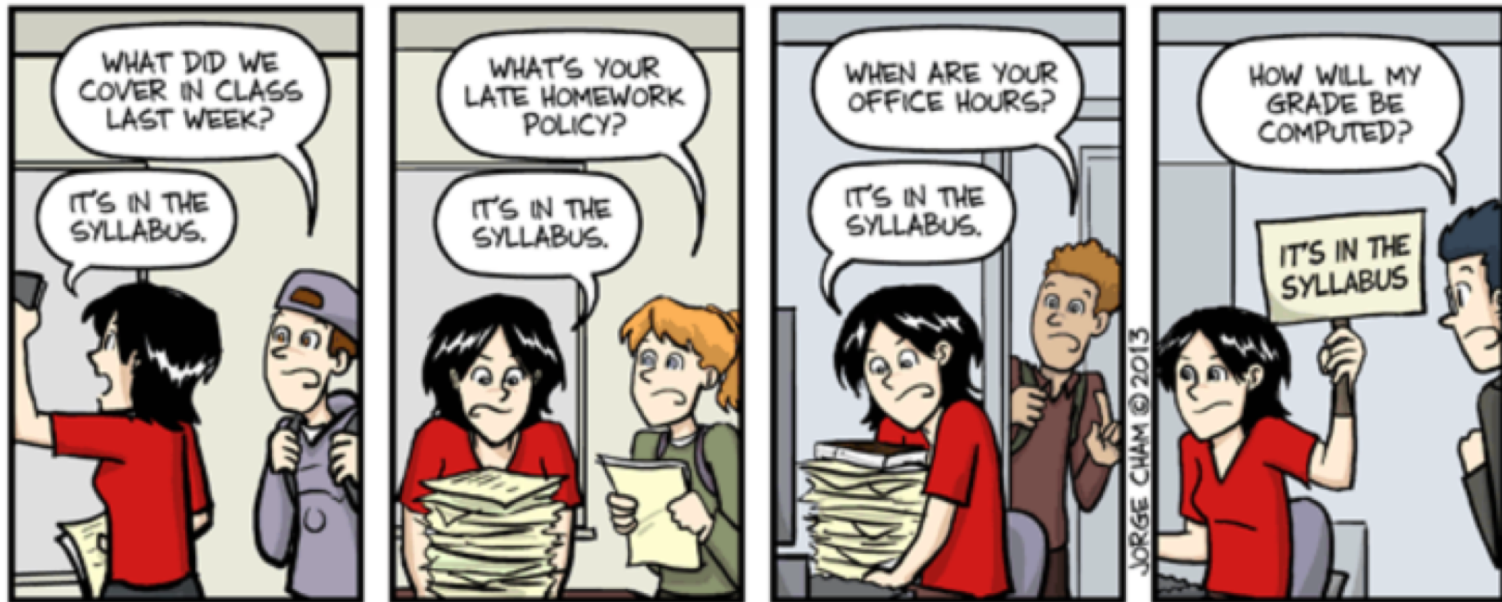
- To get data into your program use **input**

```
>>> name = input()
```

OR

```
>>name = input(" What is your name?")
```

Just in case



IT'S IN THE SYLLABUS

This message brought to you by every instructor that ever lived.

WWW.PHDCOMICS.COM

Your TO DOs

- Visit Piazza after I add you
- Go to the class website
- Complete ic00
- Read Lab00 TODAY
- Do Lab00 TOMORROW (in lab)
- Bring your laptop to open labs (in the evening) if you want help setting it up