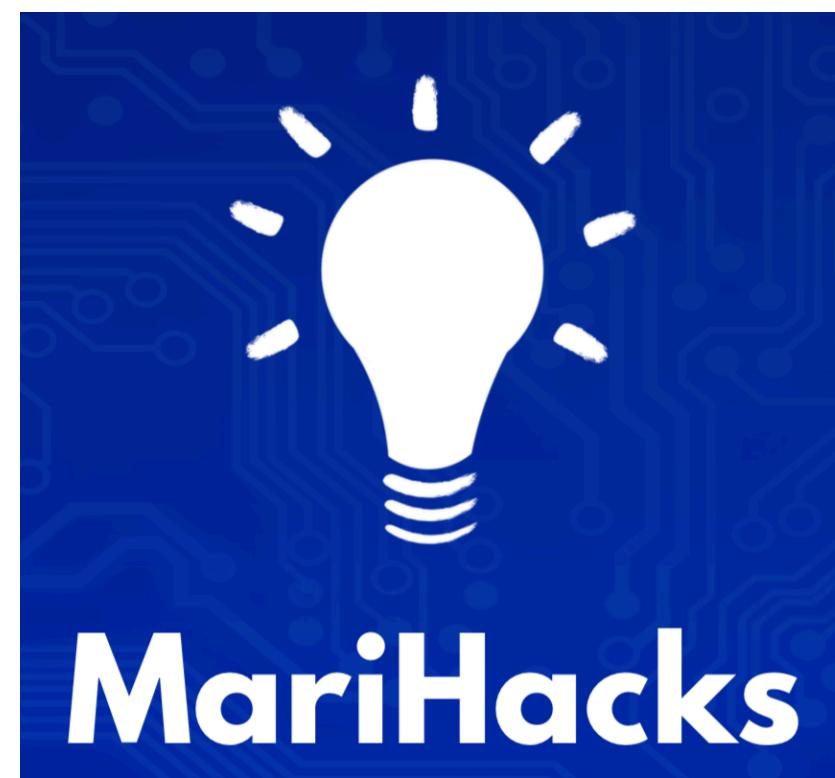


Intro to Programming with Python

Wilfred Mason and Raffi Hotter

Stuff we made

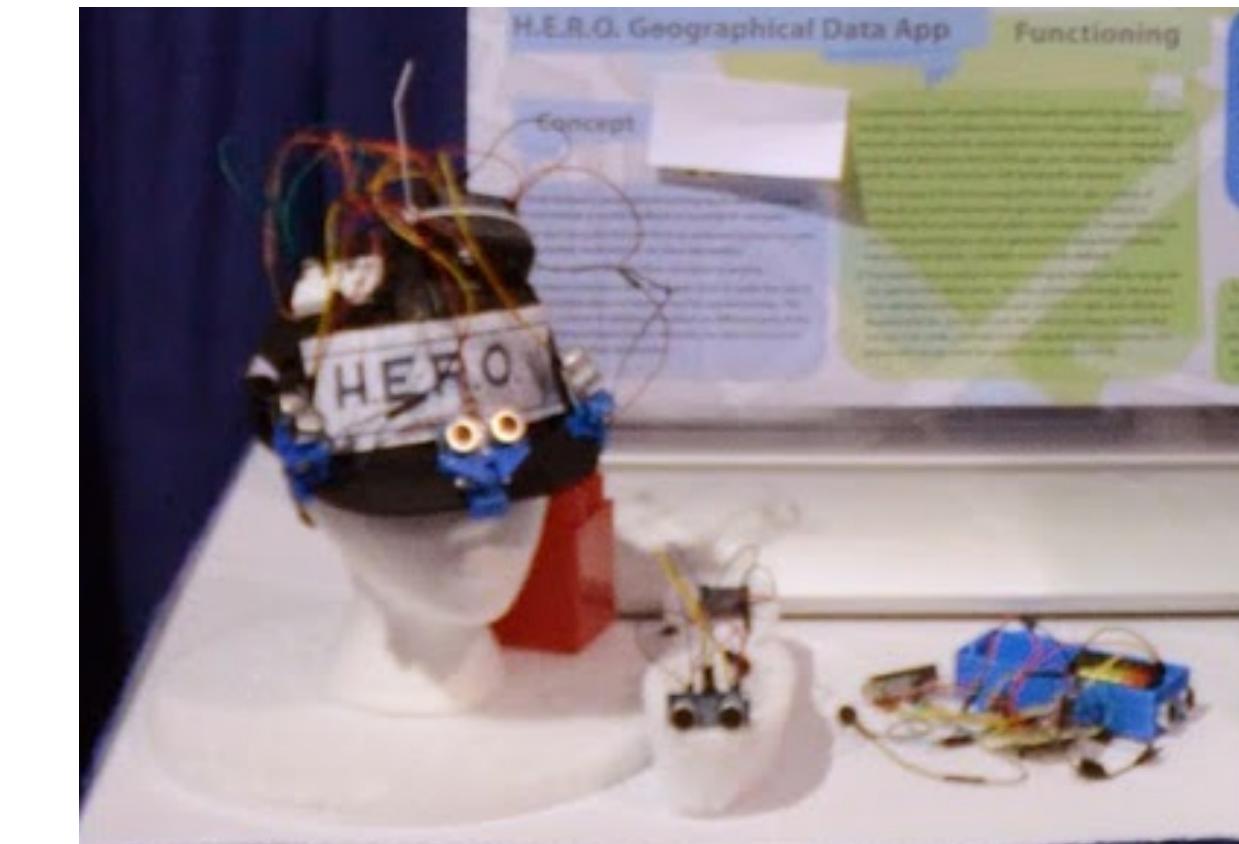
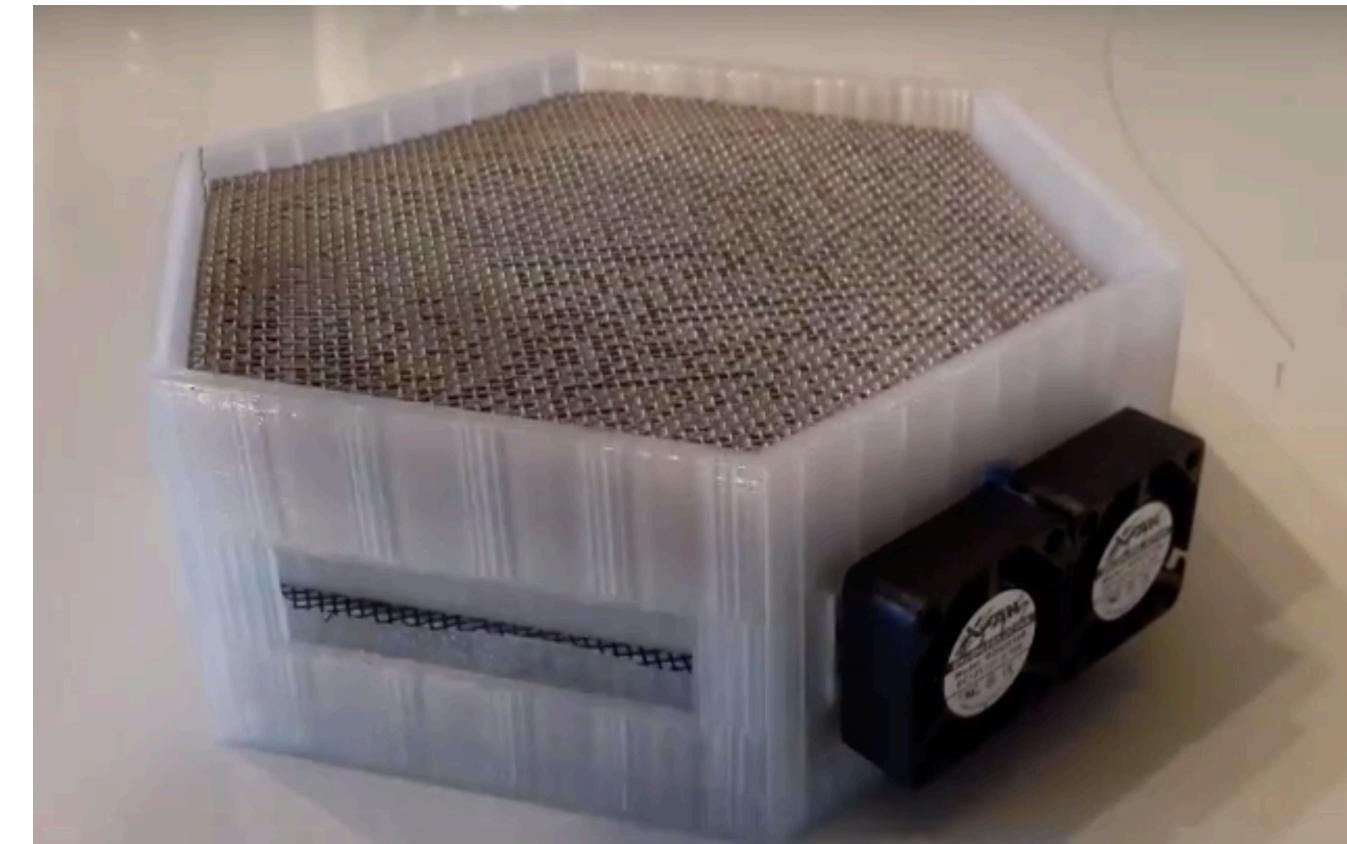


Marinotes

Free notes.
For everyone.

Enter a class

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Let's play tic-tac-toe!

Print board

[0] | [1] | [2]

[3] | [4] | [5]

[6] | [7] | [8]

Print board

```
[0] | [1] | [2] →  
[3] | [4] | [5]  
[6] | [7] | [8]
```

Print board

[0] | [1] | [2]
[3] | [4] | [5]
[6] | [7] | [8]



Person X enters position

X, Chose your
position from 0-8

Print board

[0] | [1] | [2]
[3] | [4] | [5]
[6] | [7] | [8]



Person X enters position

?

X, Chose your
position from 0-8

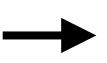
Person Y enters position



Y, Chose your
position from 0-8

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```



**Person X enters
position**

X, Chose your
position from 0-8

→ **Add X to board**

Print board

[0] | [1] | [2]
[3] | [4] | [5]
[6] | [7] | [8]



**Person X enters
position**

X, Choose your
position from 0-8

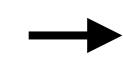
→ **Add X to board** →

Print board

[0] | [1] | [2]
[3] | X | [5]
[6] | [7] | [8]

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```



Person X enters position

X, Chose your position from 0-8

Assumption: X gives valid position



→ Add X to board →

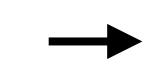
Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
[6] | [7] | [8]
```

Print board

[0] | [1] | [2]
[3] | [4] | [5]
[6] | [7] | [8]

**Person X enters
position**



X, Chose your
position from 0-8

→ **Add X to board** →

Print board

[0] | [1] | [2]
[3] | X | [5]
[6] | [7] | [8]

→ **Check if X won**

Print board

[0] | [1] | [2]
[3] | [4] | [5]
[6] | [7] | [8]

Person X enters position

X, Chose your
position from 0-8

Add X to board

Print board

[0] | [1] | [2]
[3] | X | [5]
[6] | [7] | [8]

→ **Check if X won**

YES →

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

Person X enters position

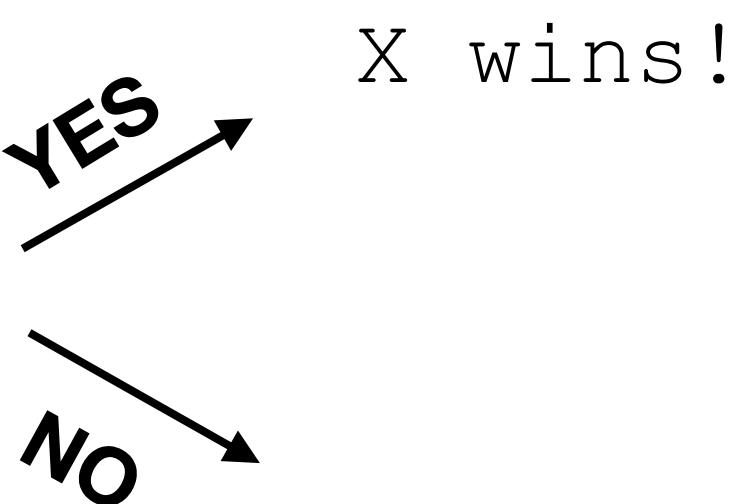
X, Chose your position from 0-8

Add X to board

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
[6] | [7] | [8]
```

→ Check if X won



Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

Person X enters position

X, Chose your position from 0-8

Add X to board

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
[6] | [7] | [8]
```

→ **Check if X won**

X wins!

YES
NO

Person Y enters position

Y, Chose your position from 0-8

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

Person X enters position

X, Chose your position from 0-8

Add X to board

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
[6] | [7] | [8]
```

→ **Check if X won**

X wins!

YES
NO

Person Y enters position

Y, Chose your position from 0-8

Add Y to board

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

Person X enters position



X, Chose your
position from 0-8

→ **Add X to board** →

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
[6] | [7] | [8]
```

→ **Check if X won**

YES
X wins!
NO

Person Y enters position

→ **Add Y to board**

Y, Chose your
position from 0-8

Print board



```
[0] | [1] | [2]  
[3] | X | [5]  
Y | [7] | [8]
```

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

Person X enters position

X, Chose your position from 0-8

Add X to board

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
[6] | [7] | [8]
```

→ **Check if X won**

X wins!

YES
NO

Person Y enters position

Y, Chose your position from 0-8

Add Y to board

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
Y | [7] | [8]
```

→ **Check if Y won**

YES
Y wins!

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

Person X enters position

X, Chose your position from 0-8

Add X to board

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
[6] | [7] | [8]
```

→ **Check if X won**

X wins!

YES
NO

Person Y enters position

Y, Chose your position from 0-8

Add Y to board

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
Y | [7] | [8]
```

→ **Check if Y won**

Y wins!

YES
NO

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

Person X enters position

X, Choose your position from 0-8

→ **Add X to board** →

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
[6] | [7] | [8]
```

→ **Check if X won**

X wins!

YES

NO

Person Y enters position

Y, Choose your position from 0-8

→ **Add Y to board**

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
Y | [7] | [8]
```

→ **Check if Y won**

Y wins!

YES

NO

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

Person X enters position

X, Choose your position from 0-8

→ **Add X to board** →

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
[6] | [7] | [8]
```

→ **Check if X won**

X wins!

YES
NO

Person Y enters position

Y, Choose your position from 0-8

→ **Add Y to board**

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
Y | [7] | [8]
```

→ **Check if Y won**

Y wins!

YES
NO

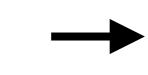
Can we do better?

(i.e. make it simpler)

Simpler:

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```



**Person X enters
position**

X, Choose your
position from 0-8

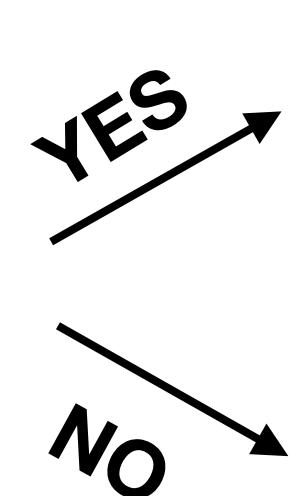
→ **Add X to board** →

Print board

```
[0] | [1] | [2]  
[3] | X | [5]  
[6] | [7] | [8]
```



Check if X won



X wins!

Simpler:

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

Person _ enters position

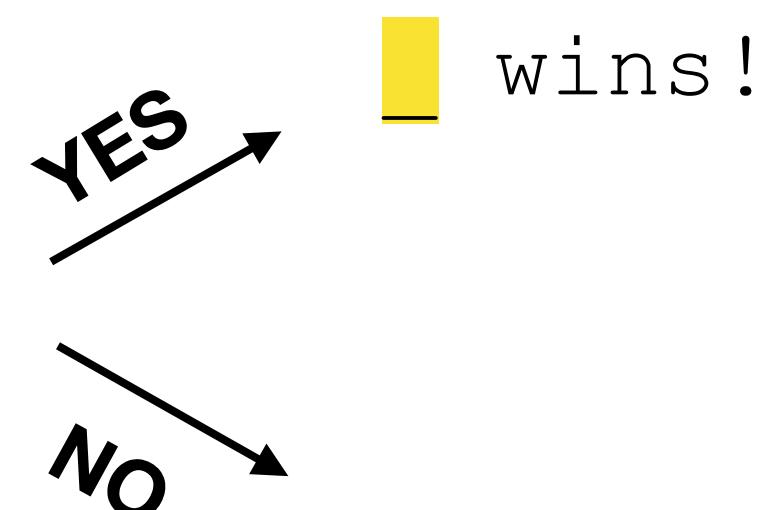
_, Choose your position from 0-8

Add _ to board

Print board

```
[0] | [1] | [2]  
[3] | _ | [5]  
[6] | [7] | [8]
```

→ **Check if _ won**



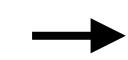
Simpler:

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

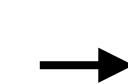


█ = 'X'



Person █ enters position

█, Choose your position from 0-8



Add █ to board

Print board



```
[0] | [1] | [2]  
[3] | █ | [5]  
[6] | [7] | [8]
```



Check if █ won



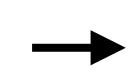
Simpler:

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```



█ = 'X'



Person █ enters position

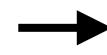
█, Choose your position from 0-8



Add █ to board

Print board

```
[0] | [1] | [2]  
[3] | █ | [5]  
[6] | [7] | [8]
```



Check if █ won



█ wins!

Switch █

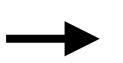
Simpler:

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

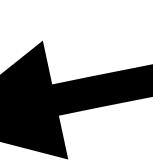


█ = 'X'



Person █ enters position

█, Choose your position from 0-8



→ **Add █ to board**

Print board

```
[0] | [1] | [2]  
[3] | █ | [5]  
[6] | [7] | [8]
```



→ **Check if █ won**

YES

█ wins!

NO

→ **Switch █**

**When does the loop
end?**

When does the loop end?

Need to check for tie

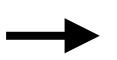
Simpler:

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```

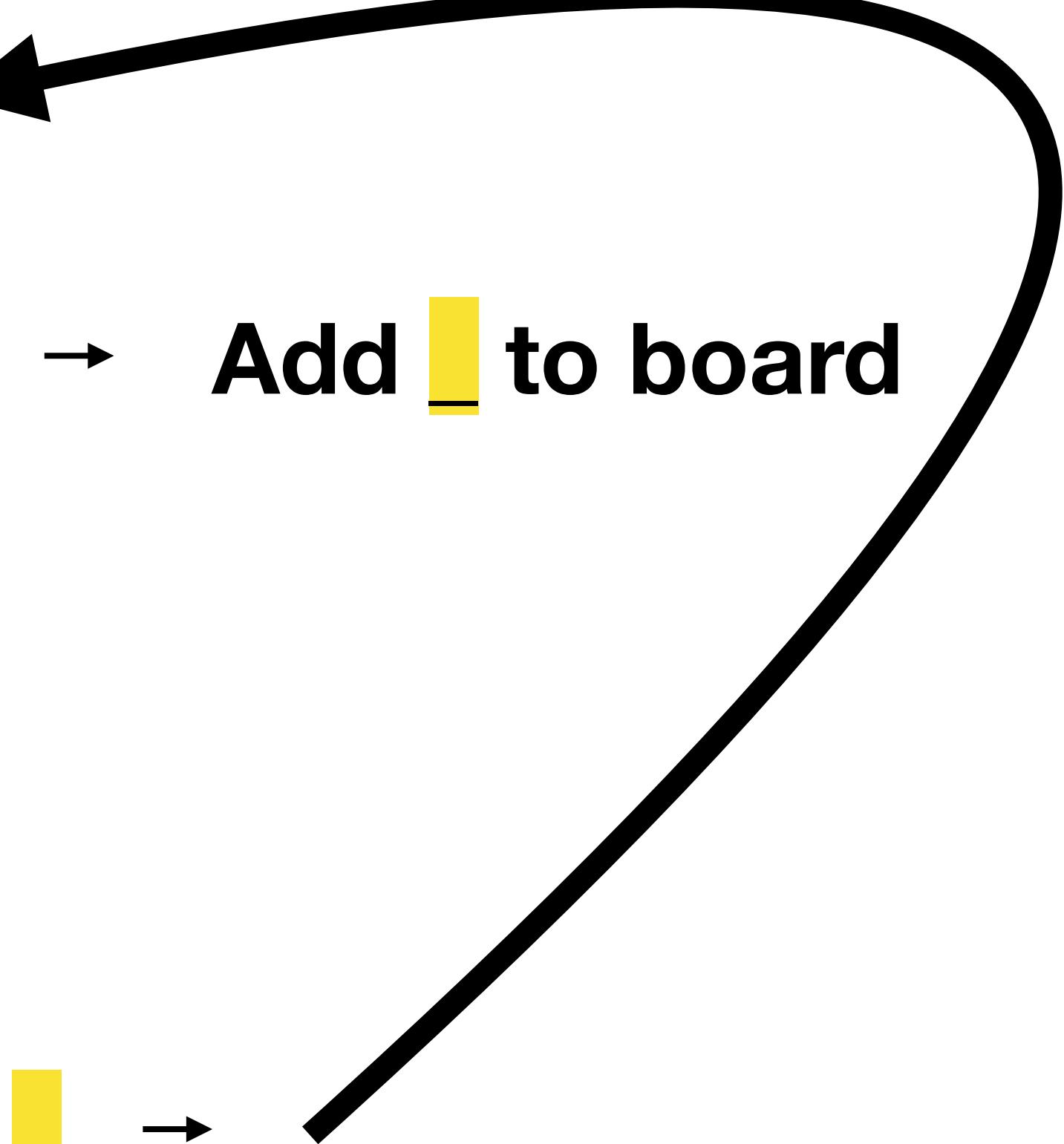


█ = 'X'



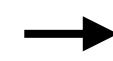
Person █ enters position

█, Choose your position from 0-8

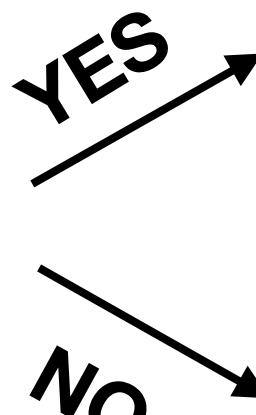


Print board

```
[0] | [1] | [2]  
[3] | █ | [5]  
[6] | [7] | [8]
```



Check if █ won



█ wins!

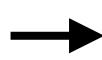
Switch █



Simpler:

Print board

```
[0] | [1] | [2]  
[3] | [4] | [5]  
[6] | [7] | [8]
```



Person _ enters position

_, Choose your position from 0-8



Add _ to board



Print board

```
[0] | [1] | [2]  
[3] | _ | [5]  
[6] | [7] | [8]
```



Check if _ won

YES
No

_ wins!

Check for tie

YES
No

Switch _

Tie.

We learned:

- Wrote our first line of code in Python!
- Printing
- Variables
- If statements
- While loops

To continue to learn:

Amazing free online computer
science course:

<https://www.edx.org/course/cs50s-introduction-computer-science-harvardx-cs50x>