

Using Functions

Department of Computer Sciences
University of Wisconsin-Madison

Readings:

Parts of Chapter 3 of Think Python,
Chapter 5.1 to 5.4 of Python for Everybody

Due: Quiz I

Learning Objectives

How to call functions

- input/output
- terminology: call / invoke, parameter, argument, keyword argument, return value
- control flow

Function usage examples

- input()
- print(), along with keyword arguments “end” and “sep”
- type cast functions: int(), bool(), float(), str()

Using functions from built-in module:

- round(), abs()
- keywords: import, from
- attribute operator: “.”
- help: inspect a module

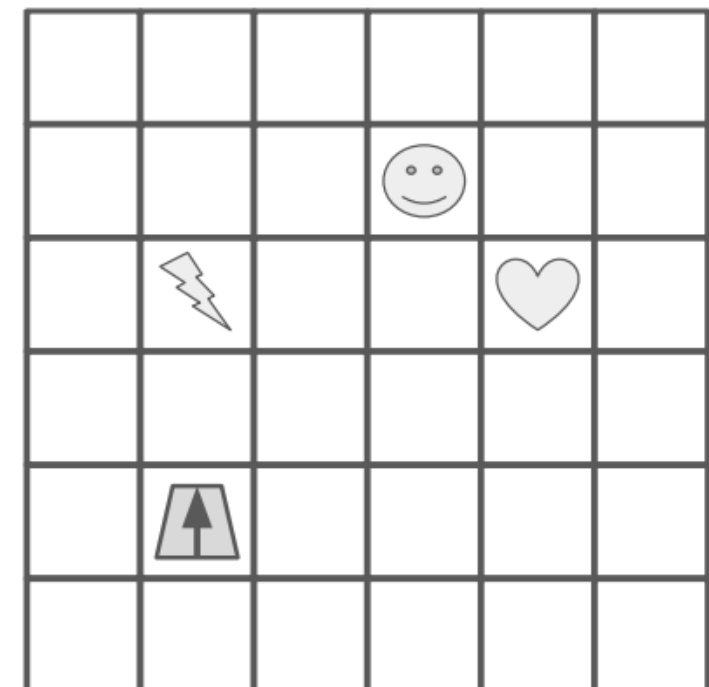
Main Code:

1. Put 2 in the “moves” box
2. Perform the steps under “Move Code”, then continue to step 3
3. Rotate the robot 90 degrees to the right (so arrow points to right)
4. Put 3 in the “moves” box
5. Perform the steps under “Move Code”, then continue to step 6
6. Whatever symbol the robot is sitting on, write that symbol in the “resut” box

Move Code:

- A. If “moves” is 0, stop performing these steps in “Move Code”, and go back to where you last were in “Main Code” to complete more steps
- B. Move the robot forward one square, in the direction the arrow is pointing
- C. Decrease the value in “moves” by one
- D. Go back to step A

**Functions are like “mini programs”,
as in our robot worksheet problem**



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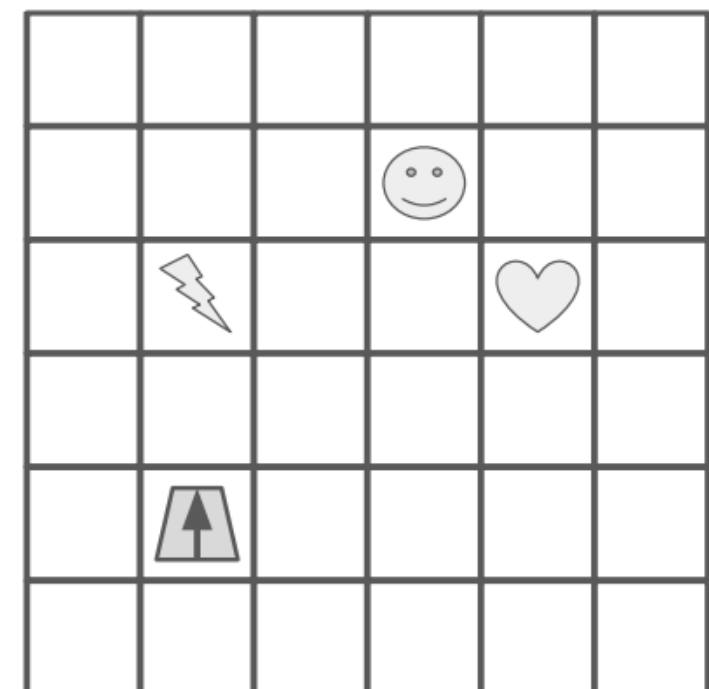
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“Move Code” is a function

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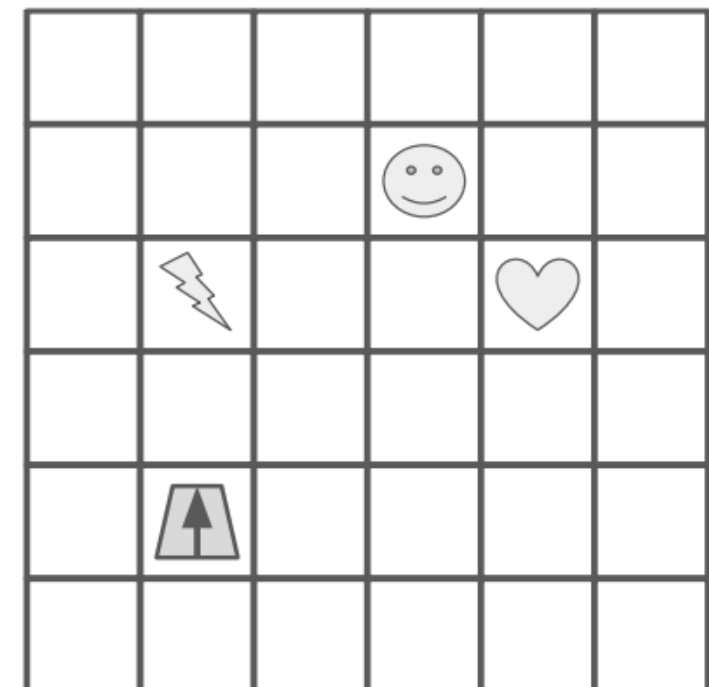
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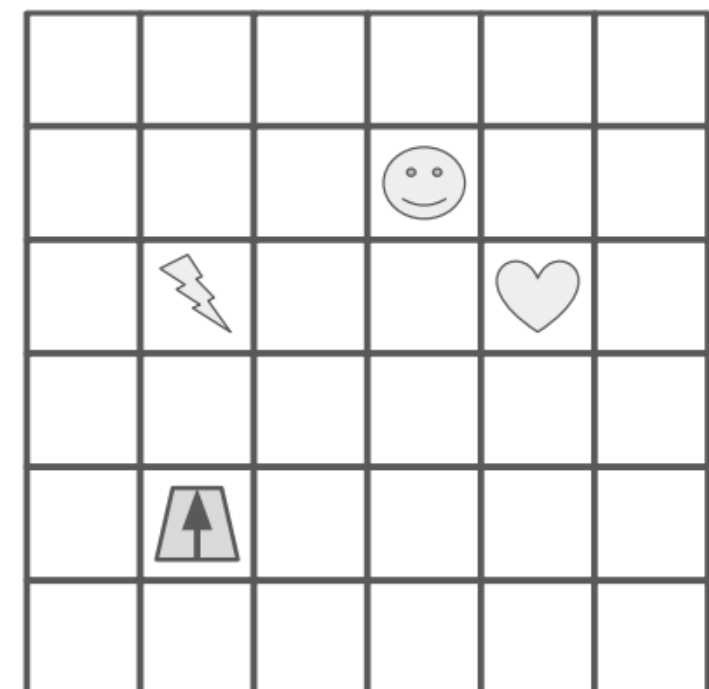
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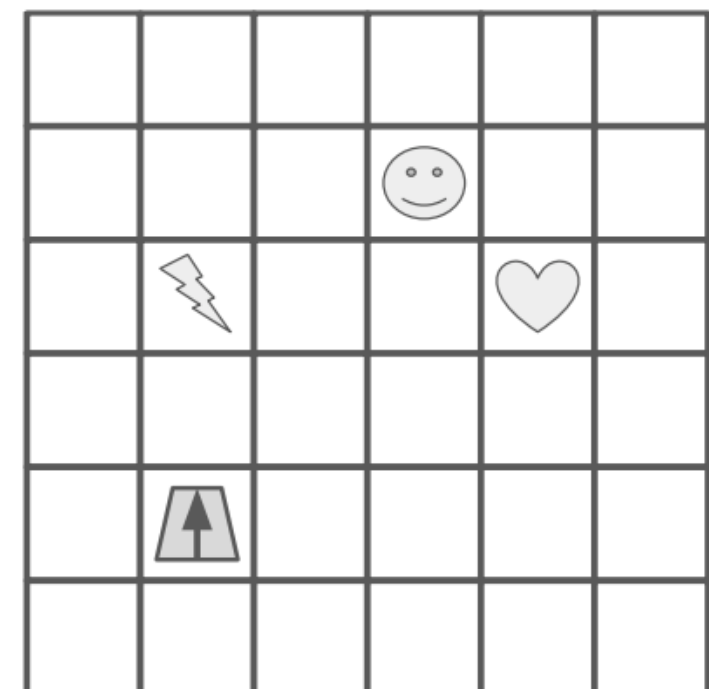
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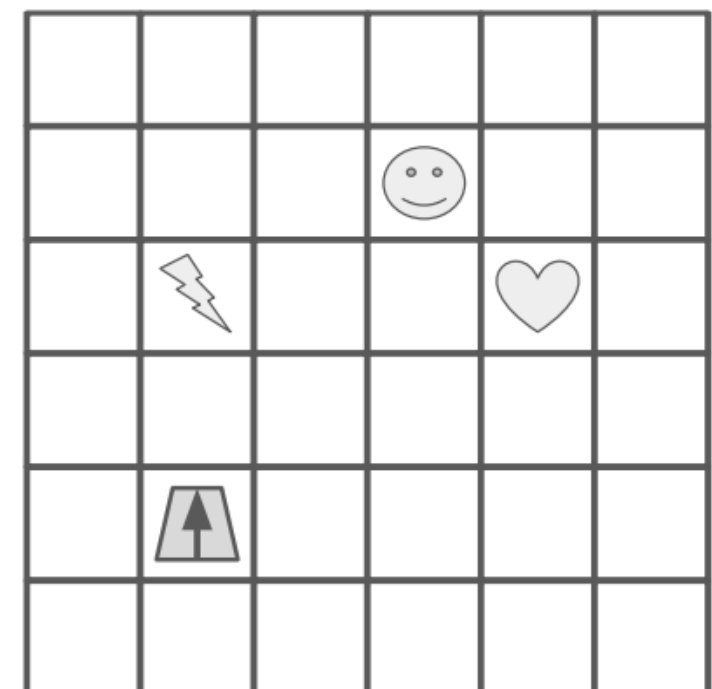
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Terminology / Vocabulary

- **function definition:** a grouping of lines of code; a way for us to tell our program to run that entire group of code
- **call / invoke:** a statement in Python code that instructs the program to run all the lines of code in a function definition, and then come back afterward
- **parameter:** variable that receives input to function
- **argument:** value sent to a function (lines up with parameter)
- **keyword argument:** argument explicitly tied to a parameter
- **return value:** function output sent back to calling code

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Calling/Invoking a Function in Python

```
print("hello")  
result = f(x)
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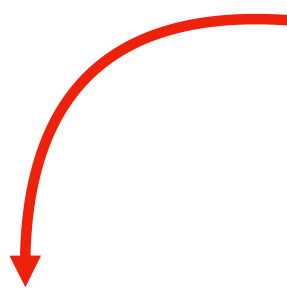
Calling/Invoking a Function in Python

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print("hello")  
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ALWAYS: function's name

ALWAYS: followed by parentheses

Calling/Invoking a Function in Python



arguments

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ALWAYS: followed by parentheses

SOMETIMES: with one or more arguments

Calling/Invoking a Function in Python

```
print("hello")
```

```
result = f(x)
```



return value

ALWAYS: function's name

ALWAYS: followed by parentheses

SOMETIMES: with one or more arguments

SOMETIMES: producing a result

Calling/Invoking a Function in Python

```
print("hello", "world")  
x = input()
```

ALWAYS: function's name

ALWAYS: followed by parentheses

SOMETIMES: with one or more arguments

SOMETIMES: producing a result

Notebook examples