Web Application Development using Python

Introduction to Programming using Python

Prepared by George Khoury

Outline

- What are strings?
- Updating strings
- String operations / methods
- String formatting

Strings

W2/S2/strings

- A string is a sequence of characters.
- A character is simply a symbol. For example, the English language has 26 characters.
- This conversion of character to a number is called encoding, and the reverse process is decoding. ASCII and Unicode are some of the popular encodings used.

```
my_string = ‘Hello, world!’
print(my_string)
```

Accessing characters in a string

W2/S2/strings

- We can access individual characters using **indexing** and a range of characters using **slicing**.
- **The index**
  - Integer value starts from 0.
  - Trying to access a character out of index range will raise an **IndexError**.

```
my_string = ‘Hello, world!’
print(my_string)
```

Accessing characters in a string

W2/S2/strings

```
# Accessing string characters in Python
my_string = ‘Hello, world!’
print(‘my_string = ', my_string)

# first character
print('my_string[0] = ', my_string[0])

# last character
print('my_string[-1] = ', my_string[-1])

# slice from 2nd to the 5th character
print('my_string[1:5] = ', my_string[1:5])

# slice from 6th to the 2nd character
print('my_string[5:-2] = ', my_string[5:-2])
```

Updating a string

W2/S2/strings

- Strings are **immutable**.
    - This means that elements of a string cannot be changed once they have been assigned.
    - We can simply reassign different strings to the same name.
    - We can delete the entire string using the **del** keyword.

```
>>> my_string = ‘Hello, world!’
>>> my_string[5] = ‘a'
TypeError: 'str' object does not support item assignment

>>> my_string = 'Python'
>>> my_string
'Python'
```

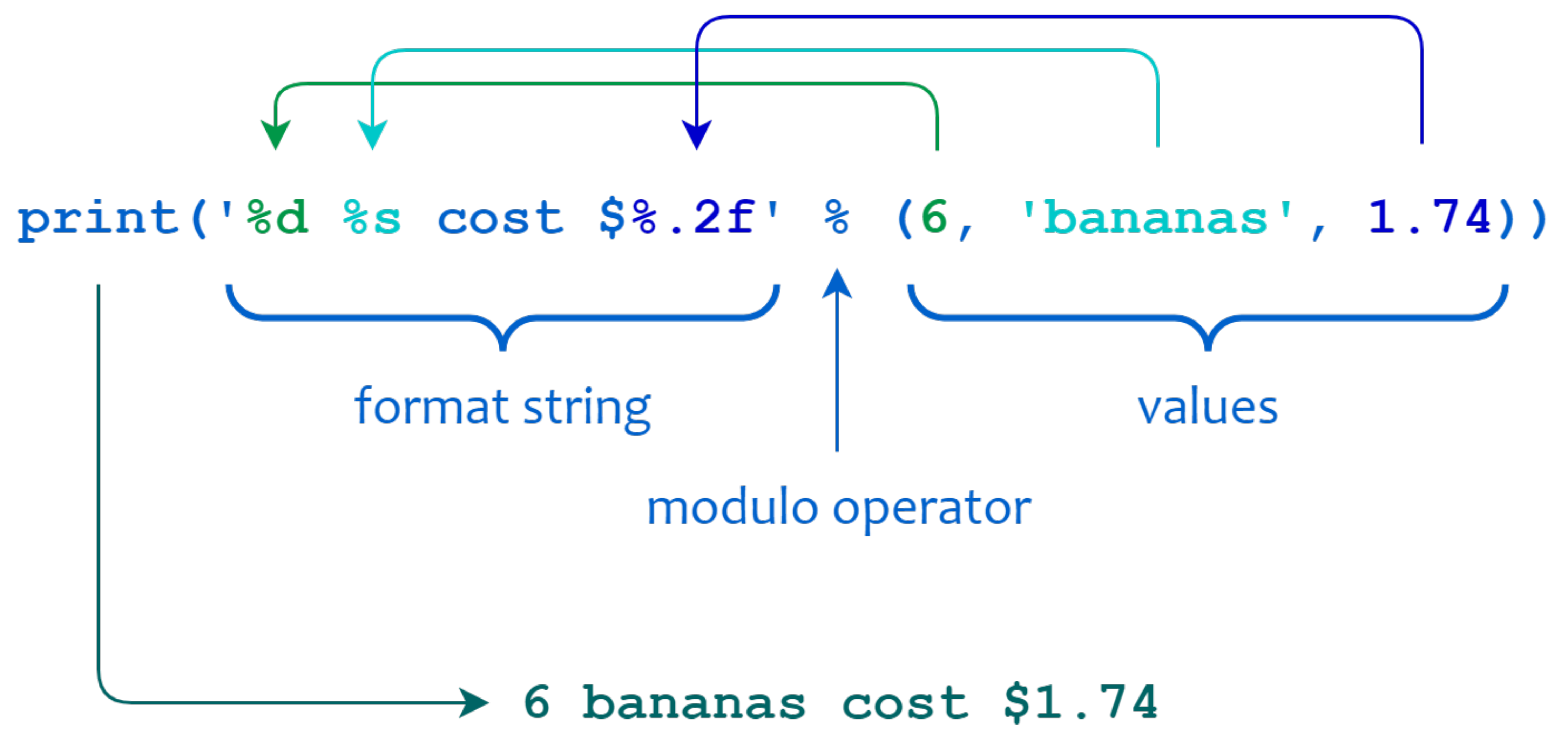
Updating a string
W2/S2/strings

```
# Accessing string characters in Python
my_string = ‘Hello, world!’
print(‘my_string = ', my_string)

# first character
print('my_string[0] = ', my_string[0])

# last character
print('my_string[-1] = ', my_string[-1])

# slice from 2nd to the 5th character
print('my_string[1:5] = ', my_string[1:5])

# slice from 6th to the 2nd character
print('my_string[5:-2] = ', my_string[5:-2])
```

String operations

W2/S2/strings/string_basics.py

- There are many operations that can be performed with strings which makes it one of the most used data types in Python.
  - String length
  - String concatenation
  - String repetition
  - Iterating through a string
  - Membership test
  - Other built-in functions



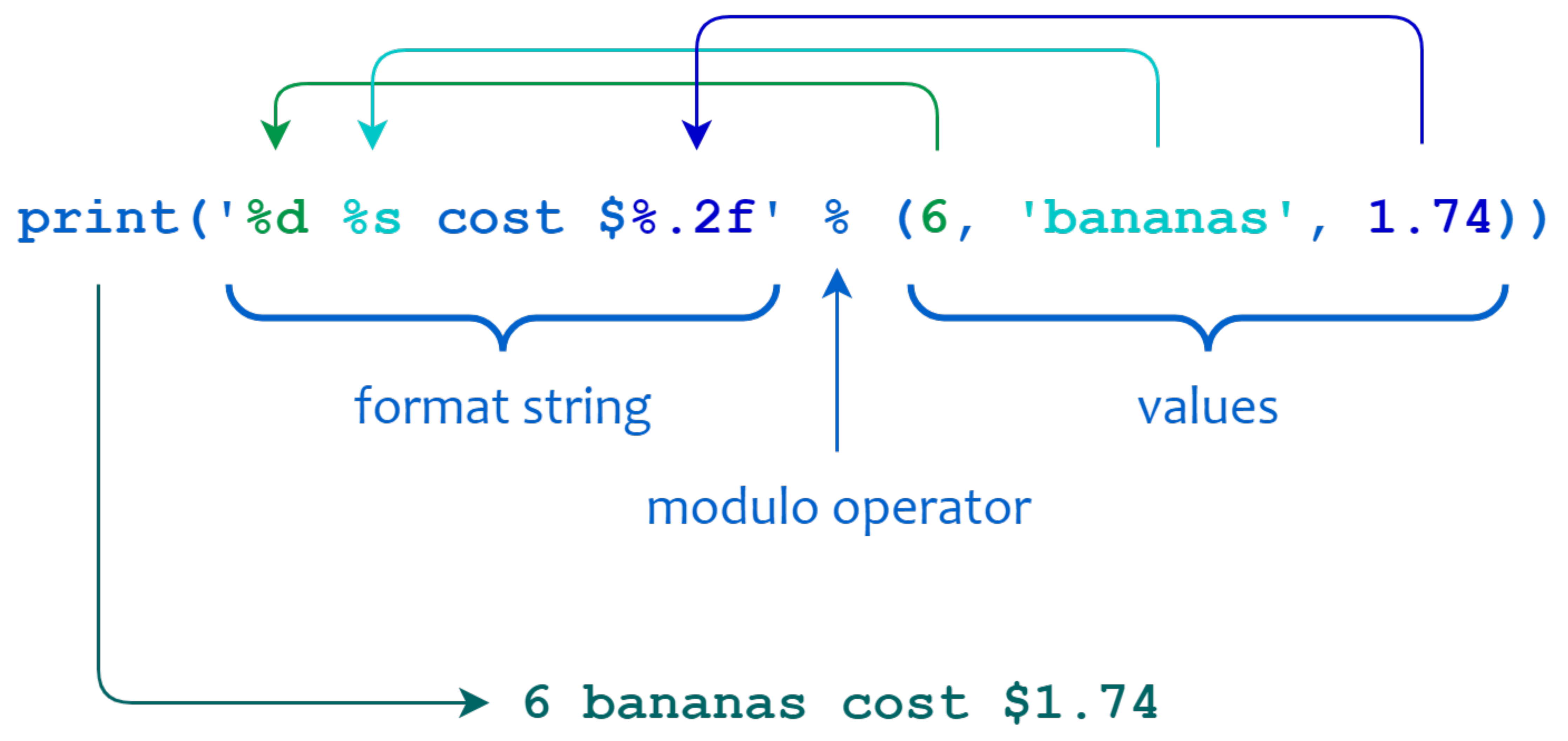
```
print('%d %s cost $%.2f' % (6, 'bananas', 1.74))
```

```
6 bananas cost $1.74
```

String methods

W2/S2/strings/string_methods.py

- There are numerous methods available with the string object.
- The **format()** method is one of them.
- Some of the commonly used methods are
  - lower(), upper(), capitalize()
  - join(), split()
  - find(), replace()
- Additional methods can be found here.
  - https://docs.python.org/3/library/stdtypes.html#string-methods



```
print('%d %s cost $%.2f' % (6, 'bananas', 1.74))
```

```
6 bananas cost $1.74
```

String formatting

W2/S2/strings

- You can read the following resources to learn more about formatting.
- https://docs.python.org/3/library/string.html#formatstrings

Learning Resources

- https://docs.python.org/3/tutorial/introduction.html#lists
- https://docs.python.org/3/tutorial/datastructures.html#more-on-lists
- https://docs.python.org/3/tutorial/datastructures.html#tuples-and-sequences
- https://docs.python.org/3/tutorial/datastructures.html#sets
- https://docs.python.org/3/tutorial/datastructures.html#dictionaries