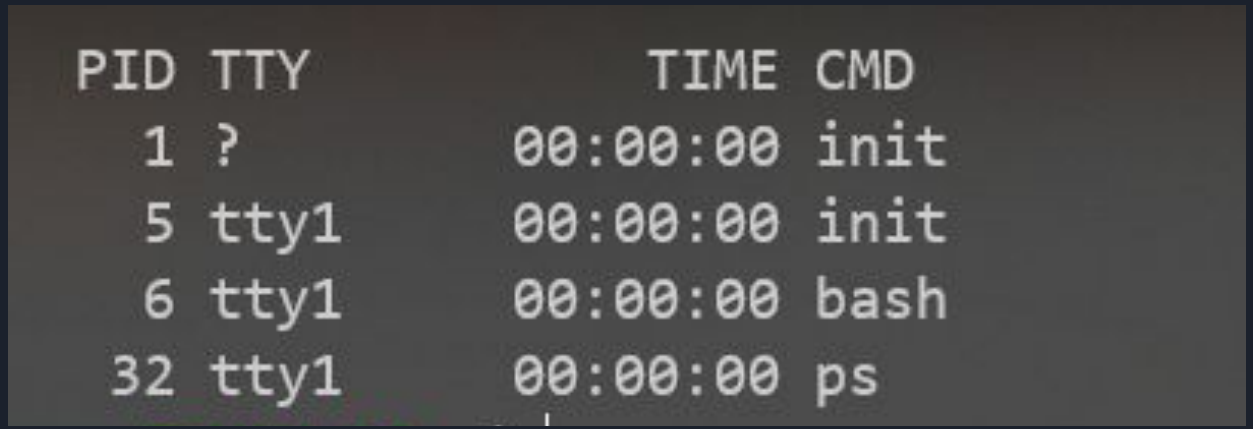
Python String Formatting

What’s String Formatting?

- Standard method of manipulating strings nicely
- Include variables in output
- Useful in any I/O program
- Nice visualization



How to do String Formatting? (Python)

- String Concatenation
- Python String .format() method
- String slicing and indexing

String Concatenation

- Python lets you concatenate strings using ‘+’
- In order to use this operation, each side of the + sign must be a string
- Should be used for basic string formatting only

```
>>> str1 = "Hello "
>>> str2 = "World"
>>> str3 = str1 + str2
>>> print(str3)
Hello World
>>>
```

String Concatenation - including variables

- What if we wanted to include variables?
- Use str() typecasting
- Can use string literals to include spaces

```
>>>
>>> str1 = "Hello "
>>> int1 = 100
>>> str2 = "World"
>>> str3 = str1 + str(int1) + " " + str2
>>> print(str3)
Hello 100 World
>>>
```

Python String format Method

- Easier to use, modify, and read
- Place ‘{}’ in string where you want to include variables
- Then, at the end of the string call .format() and include the variables that you want to include in the order they appeared
- No type casting needed!

```
>>> int1 = 100
>>> int2 = 3
>>> str1 = "{} / {} = {}".format(int1, int2, int1/int2)
>>> print(str1)
100 / 3 = 33.333333333333336
>>>
```

Advanced Python String formatting

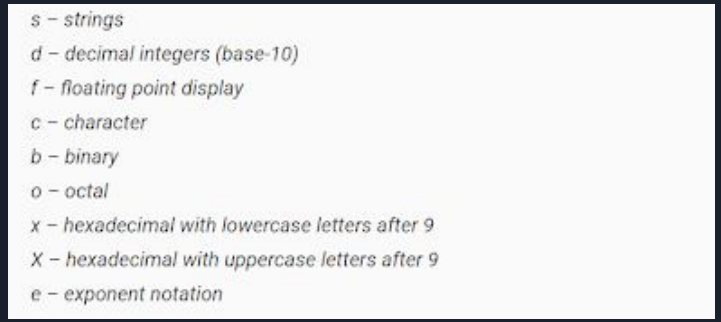
- What if I don't want all of those 3's???
- Try rounding!
- Change the {} with {:***x***.***y***f}
  - ***x*** must be an integer representing the minimum number of characters used to print the string
  - If ***x*** > length of string, then spaces are filled on the left hand side of the string
  - ***y*** must be an integer representing the number of decimals you want
  - f indicates that the variable in the format is a float.

```
>>> int1 = 100
>>> int2 = 3
>>> str1 = "{:.2f} / {:.2f} = {:.2f}".format(int1, int2, int1/int2)
>>> print(str1)
100.00 / 3.00 = 33.33
```

Advanced String Formatting (cont.)

There's so many things you can do with .format(), where do I start?

- Python docs
- Geeks for Geeks
- W3 Schools

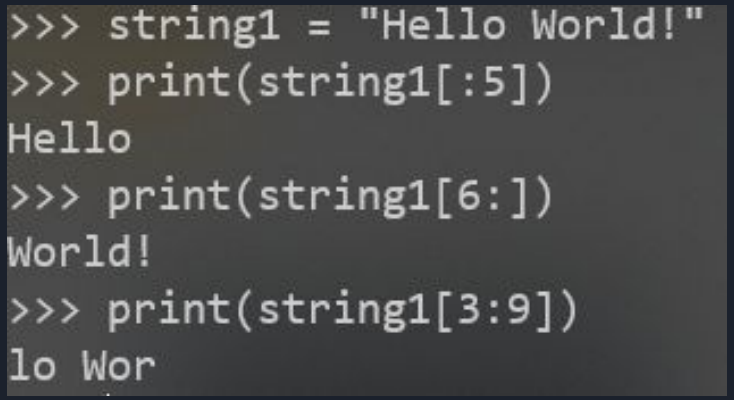


From: Geeks for Geeks

Large Group Project 1: Matching Output

String Indexing/ Slicing

- String Indexing works just like list indexing
  - To get the first index of string, simply use s[0]
- To get a chunk of the string use slicing
  - Syntax: s[*startIndex* : *stopIndex + 1*]
  - If you want to start at the beginning, remove *stopIndex*. Syntax: s[: *stopIndex + 1*]
  - If you want to end at the end of the string, remove *stopIndex + 1*. Syntax: s[*startIndex*:]



String Indexing/ Slicing (cont.)

- What if you only want to include a chunk at the end or remove a chunk at the end, but you don't know how long the string is?
- Use negative numbers
- Removing chunks of string at the end:
  - Syntax: s[:-***n***] where ***n*** is the number of characters to remove
- Only including a chunk at the end:
  - Syntax: s[-***n***:] where ***n*** is the number of characters

```
>>> string1 = "Hello World!"
>>> print(string1[:-1])
Hello World
>>> print(string1[-6:])
World!
```

Large Group Project 2: Making Tables

Pair Project
Pig Latin