



Advanced Python Modules



Complete Python Bootcamp

- Python has several built-in modules that we haven't fully explored yet!
- In this section we will dive deeper into some useful built-in modules, explore their use cases, and then give you a puzzle exercise to solve.



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- Modules Covered
 - Collections
 - Os module and Datetime
 - Math and Random
 - Python Debugger
 - Timeit
 - Regular Expressions
 - Unzipping and Zipping Modules



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- Let's get started!



Collections Module



Shutil and OS Modules

Opening and Reading Files and Folders



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- We already know how to open an individual file with Python, but we still don't know how to do a few things:
 - What if we have to open every file in a directory?
 - What if we want to actually move files around on our computer?



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- Python's `os` module and `shutil` allow us to easily navigate files and directories on the computer and then perform actions on them, such as moving them or deleting them.
- Let's get started!



Datetime Module



Math and Random Modules



Python Debugger



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- When trying to figure out what errors there are in your code, you've probably used `print()` to try to track down the error.
- Fortunately, Python comes with a built-in debugger tool that allows you to interactively explore variables within mid-operation of your Python code!



Regular Expressions

Part One



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- We already know we can search for substrings within a larger string with the **in** operator:
 - **“dog” in “my dog is great”**
 - True



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- This has severe limitations, we need to know the exact string, and need to perform additional operations to account for capitalization and punctuation.
- What if we only the pattern structure of the string we're looking for? Like an email or phone number?



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- Regular Expressions (regex) allow us to search for general patterns in text data!
- For example, a simple email format can be:
 - user@email.com
- We know in this case we're looking for a pattern "text" + "@" + "text" + ".com"



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- Regular Expressions (regex) allow us to search for general patterns in text data!
- For example, a simple email format can be:
 - **user@email.com**
- We know in this case we're looking for a pattern **"text"** + "@" + **"text"** + ".com"



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- Regular Expressions (regex) allow us to search for general patterns in text data!
- For example, a simple email format can be:
 - user@**email.com**
- We know in this case we're looking for a pattern "text" + "@**" + "text" + **".com"****



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- The **re** library allows us to create specialized pattern strings and then search for matches within text.
- The primary skill set for regex is understanding the special syntax for these pattern strings.



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- Don't feel like you need to memorize these patterns! Focus on understanding how to look up the information.
- Phone Number
 - (555)-555-5555
- Regex Pattern
 - `r"(\d\d\d)-\d\d\d-\d\d\d\d"`



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- Don't feel like you need to memorize these patterns! Focus on understanding how to look up the information.
- Phone Number
 - (**555**)-**555**-**5555**
- Regex Pattern
 - `r"(\d\d\d)-\d\d\d-\d\d\d\d"`



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- Don't feel like you need to memorize these patterns! Focus on understanding how to look up the information.
- Phone Number
 - (555)-555-5555
- Regex Pattern
 - `r"(\d{3})-\d{3}-\d{4}"`



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- This series of lectures will first focus on how to use the **re** library to search for patterns within text.
- Afterwards we will focus on understanding the regex syntax codes.
- Let's get started!



Regular Expressions

Part Two



Timing Your Code



Regular Expressions

Part Two



Regular Expressions

Part Three



Timing Your Code



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- As you learn more Python, you will discover multiple solutions for a single task and you may find yourself trying to figure out the most efficient approach.
- An easy way to do this is to time your code's performance.



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- We will focus on 3 ways of doing this:
 - Simply tracking time elapsed
 - Using the `timeit` module
 - Special `%%timeit` “magic” for Jupyter Notebooks



Unzipping and Zipping Files



Advanced Modules Exercise Puzzle

SOLUTION