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Foundations of Programming: Python

Assignment 07

<https://github.com/misterpantz/IntroToProg-Python>

<https://pyletha.wordpress.com/2019/02/25/7-serialization-exceptions/>

Serialization, Exceptions

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Overview

For assignment 7, I created a very simple script that included pickling and exception handling. The purpose of the script is to set who is on pager duty. It reads the current pager duty assignment from a data file, elegantly handling an exception if the file is empty or there is no file. Then it prompts the user to define the new pager duty assignment and stores the input in the same file.

You can find the script in my [class github repository](#).

Importing pickle

In order to serialize and deserialize data, I imported the ***pickle*** module.

```
1  # Title: Pickling, Exceptions
2  # Dev: Letha
3  # Date: Feb 24, 2019
4  # ChangeLog: (Who, When, What)
5  # Letha, 02/24/2019, Created script
6  #
7  #
8  #
9  #
10 # Import the Pickle module so that I can pickle and unpickle data
11 import pickle
```

Note: I learned about the module on the [Python Software Foundation documentation](#) and in tutorials such as [Python Central](#) and [Python Programming](#). Importing the module opens up a wide range of capabilities for me. But in this very simple exercise I used only a couple of them.

Collecting the data

I first needed to collect the data that I would be serializing, or pickling. Since I had decided on a simple pager duty assignment script, I needed to collect the name and phone number of the person to assign pager duty.

```
29 # Identify who is on pager duty this week
30 strName = input("Who is on pager duty next? ")
31 strPhone = input("What's their phone number? ")
32
33 lstPagerDuty = [strName, strPhone]
34 print("Pager duty assigned: \n")
35 print(lstPagerDuty)
36 print("\n")
```

I collected two strings from user input and combined them into a list. To provide confirmation for the user (and for me) I then printed the new data. I tested this code and it worked fine in PyCharm.

Pickling the data

I opened the file (or created a new file) named **pagerduty.dat**. I specified the parameters **w** and **b** to **write** using **bytes**.

```
38 # Store the data using the pickle.dump method
39 objFile = open("pagerduty.dat", "wb")
40 pickle.dump(lstPagerDuty, objFile)
41 objFile.close()
```

I used the **pickle.dump** method to write my list to the file. Then I closed the file.

Now I had a way to collect user input, store it in a list, and serialize it in a data file. This allowed the user to assign pager duty to someone and save their name and phone number in a serialized file.

Unpickling the data

Next I wanted to be able to read who is currently on pager duty. That meant I needed to deserialize the data, or unpickle it. I wanted my script to do this first.

I opened the file and used the **pickle.load** method to deserialize the data and write it to my list.

```
19 objFile = open("pagerduty.dat", "rb")
20 objFileData = pickle.load(objFile)
21 objFile.close()
22 print("Current pager duty assignment: \n")
23 print(objFileData)
```

I tested this in PyCharm and it ran as expected.

Exception handling

I wanted anyone to be able to run this program without requiring them to start with an existing **pagerduty.dat** file. This was a nice opportunity to use exception handling.

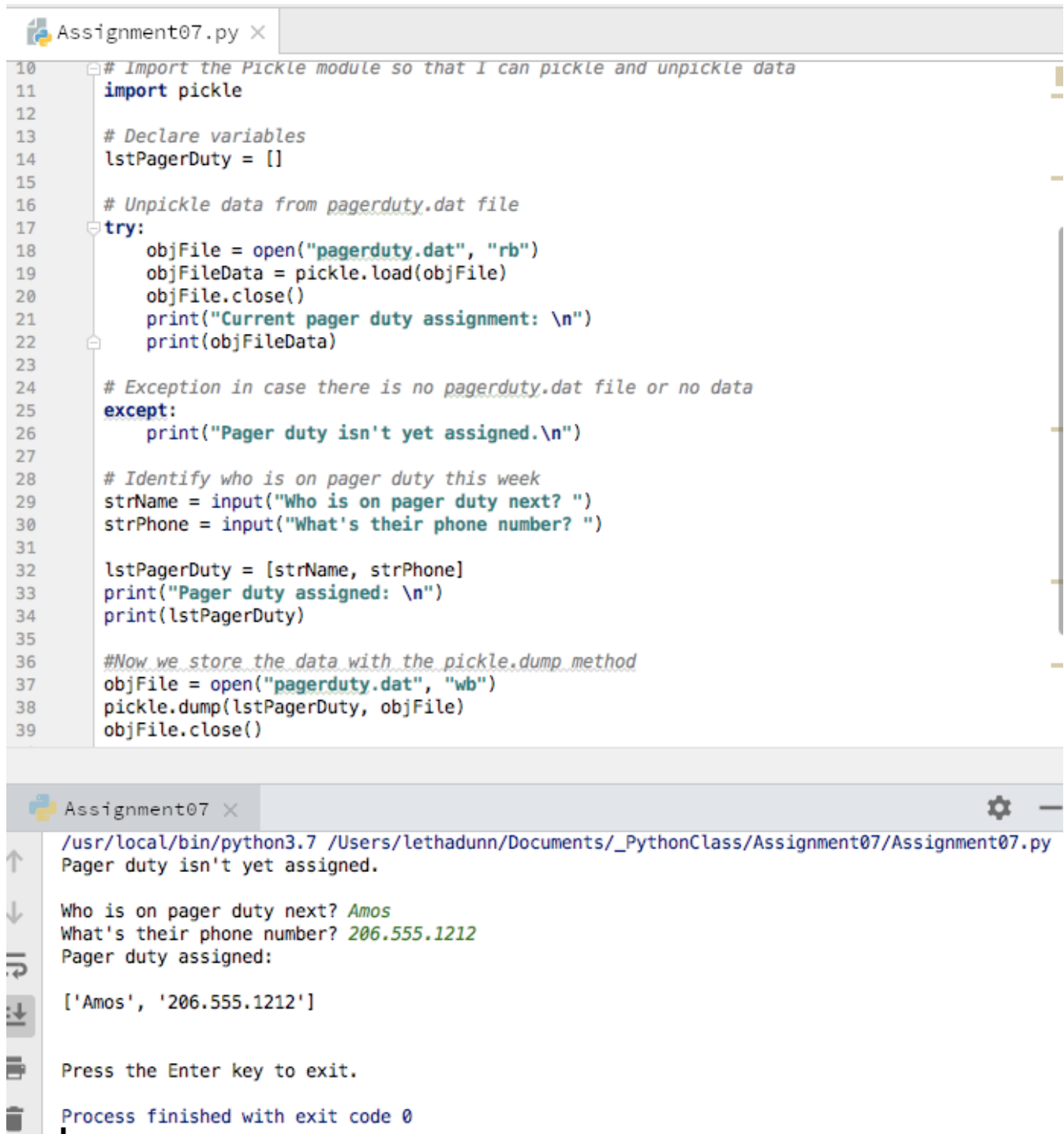
```
16 # Unpickle data from pagerduty.dat file using pickle.load method
17 # Use exception handling
18 try:
19     objFile = open("pagerduty.dat", "rb")
20     objFileData = pickle.load(objFile)
21     objFile.close()
22     print("Current pager duty assignment: \n")
23     print(objFileData)
24
25 # Exception in case there is no pagerduty.dat file or no data
26 except:
27     print("Pager duty isn't yet assigned.\n")
28
```

I put my best-case scenario in a **try**. To handle the exception, I added an **except** with an informative message instead of an error.

Note: I learned about exceptions in the [Python Software Foundation documentation](#) and [Real Python](#).

Testing

I first tested in PyCharm with no existing data.



The screenshot displays the PyCharm IDE interface. The top pane shows the code for `Assignment07.py`, which attempts to load data from `pagerduty.dat` using pickle. If the file or data is missing, it prompts the user for a name and phone number, then saves the new data. The bottom pane shows the terminal output, indicating that no data was found initially, and then showing the user input and the resulting list of pager duty assignments.

```
10 # Import the Pickle module so that I can pickle and unpickle data
11 import pickle
12
13 # Declare variables
14 lstPagerDuty = []
15
16 # Unpickle data from pagerduty.dat file
17 try:
18     objFile = open("pagerduty.dat", "rb")
19     objFileData = pickle.load(objFile)
20     objFile.close()
21     print("Current pager duty assignment: \n")
22     print(objFileData)
23
24 # Exception in case there is no pagerduty.dat file or no data
25 except:
26     print("Pager duty isn't yet assigned.\n")
27
28 # Identify who is on pager duty this week
29 strName = input("Who is on pager duty next? ")
30 strPhone = input("What's their phone number? ")
31
32 lstPagerDuty = [strName, strPhone]
33 print("Pager duty assigned: \n")
34 print(lstPagerDuty)
35
36 #Now we store the data with the pickle.dump method
37 objFile = open("pagerduty.dat", "wb")
38 pickle.dump(lstPagerDuty, objFile)
39 objFile.close()
```

Assignment07 ×

/usr/local/bin/python3.7 /Users/lethadunn/Documents/_PythonClass/Assignment07/Assignment07.py
Pager duty isn't yet assigned.

Who is on pager duty next? Amos
What's their phone number? 206.555.1212
Pager duty assigned:

['Amos', '206.555.1212']

Press the Enter key to exit.

Process finished with exit code 0

Then I tested in PyCharm with an existing **pagerduty.dat** file.

```
Assignment07 X
/usr/local/bin/python3.7 /Users/lethadunn/Documents/_PythonClass/Assignment07/Assignment07.py
Current pager duty assignment:

['Amos', '206.555.1212']
Who is on pager duty next? Eli
What's their phone number? 206.555.2222
Pager duty assigned:

['Eli', '206.555.2222']

Press the Enter key to exit.

Process finished with exit code 0
```

Finally, I tested in Terminal. I first ran the program with existing data. Then I deleted the file and ran it again.

```
Assignment07 — -bash — 80x33
[Lethas-MacBook-Air:assignment07 lethadunn$ ls
Assignment07.py cleese.jpg mpython.jpg pagerduty.dat pylogo.png
[Lethas-MacBook-Air:assignment07 lethadunn$ python3 assignment07.py
Current pager duty assignment:

['Eli', '206.555.2222']
Who is on pager duty next? Hanna
What's their phone number? 555.555.5555
Pager duty assigned:

['Hanna', '555.555.5555']

Press the Enter key to exit.
[Lethas-MacBook-Air:assignment07 lethadunn$ rm pagerduty.dat
[Lethas-MacBook-Air:assignment07 lethadunn$ ls
Assignment07.py cleese.jpg mpython.jpg pylogo.png
[Lethas-MacBook-Air:assignment07 lethadunn$ python3 assignment07.py
Pager duty isn't yet assigned.

Who is on pager duty next? Jemimah
What's their phone number? 123.456.7890
Pager duty assigned:

['Jemimah', '123.456.7890']

Press the Enter key to exit.
Lethas-MacBook-Air:assignment07 lethadunn$
```

Summary

In Assignment 7, I created a pager duty assignment program. It reads any existing pager duty assignment from a serialized file and displays the information to the user. Then it prompts for a new name and phone number and writes the new information to the same file. The script uses exception handling to display an informative message in lieu of an error.