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Foundations of Programming: Python

Assignment 07

[https://github.com/SirDubbins/IntroToProg\\_python\\_Mod07](https://github.com/SirDubbins/IntroToProg_python_Mod07)

# Pickling and Error Handling

## Introduction

In this module we learned about pickling and error handling. It was our duty to design a program that demonstrates our ability to teach the concepts of pickling and error handling. The function of my program is to begin the creation of a grocery list. The user is asked to input a grocery store item and then input the price of said item. The data is then pickled and stored to a binary file. If the user inputs incorrect data types for the item or price, the user is prompted with an error message to correct their mistake.

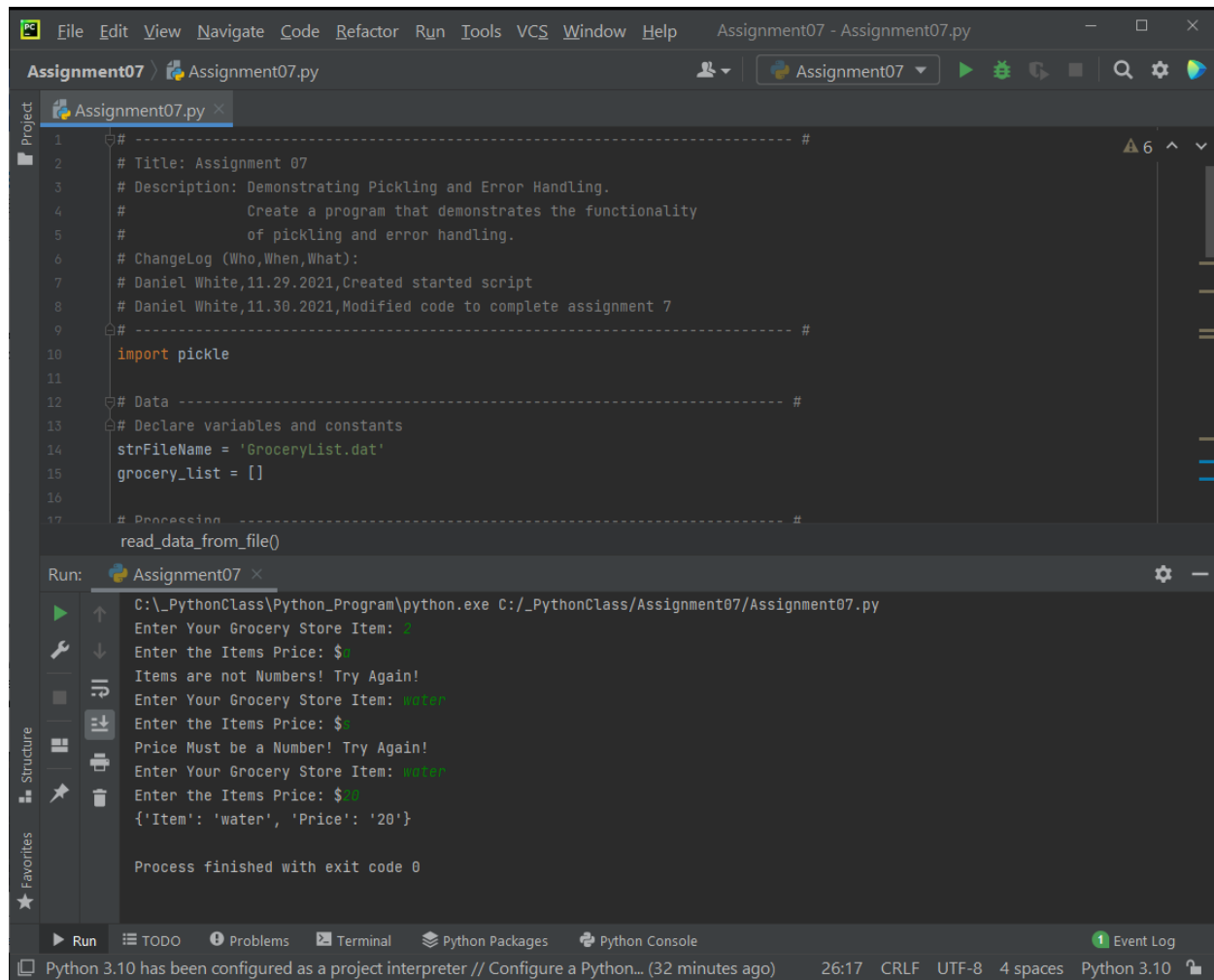
## Pickling

The concept of pickling in Python coincides with the concept of pickling in food storage. It means to preserve. In the same way that pickles are preserved as a food, pickling in python preserves a piece of data, like a list or dictionary, and save it in its entirety to a file. In this particular case, we saved the data as a binary file, instead of a text file like we have covered in previous modules. Binary files are more efficient and less data intensive than text files, but are no readable by humans. Pickled objects cannot be stored in text files, only binary. There is a unique syntax afforded to pickling, namely `pickle.dump` and `pickle.load`. The main takeaway is that you create a list, and dump it into a file. To read said file, you must load the pickle. The script below demonstrates this ability

## Error Handling

Error handling is a tool used to convey to the user that the input choice is incorrect. In this example, or the program I created, an incorrect choice would coincide with entering a number when an item title is appropriate, or entering words or letters when a price or numerical value is appropriate. To do this I

created a while loop for entering the grocery list data then implemented a try and except clause for error handling. I prompted the user to input a grocery store item then used an if then statement to raise and exemption if the input contained a number. To do this I designated the item as a string then used the isnumeric() function to raise the exception if a number was entered. Next I designated the price of said item as a float value. If a number was not entered then an error handling prompt was triggered. Below you will find the Grocery List program functioning in PyCharm and CMD.



The screenshot displays the PyCharm IDE interface. The top pane shows the code for 'Assignment07.py'. The code includes a header with title, description, and change log, followed by an import statement for 'pickle', variable declarations for 'strFileName' and 'grocery\_list', and a function call 'read\_data\_from\_file()'. The bottom pane shows the 'Run' console output, which includes the command to execute the script, user input for item and price, error messages for invalid inputs, and the final successful execution with a dictionary of items.

```
1 # ----- #
2 # Title: Assignment 07
3 # Description: Demonstrating Pickling and Error Handling.
4 # Create a program that demonstrates the functionality
5 # of pickling and error handling.
6 # ChangeLog (Who,When,What):
7 # Daniel White,11.29.2021,Created started script
8 # Daniel White,11.30.2021,Modified code to complete assignment 7
9 # ----- #
10 import pickle
11
12 # Data ----- #
13 # Declare variables and constants
14 strFileName = 'GroceryList.dat'
15 grocery_list = []
16
17 # Processing ----- #
18 read_data_from_file()
```

Run: Assignment07 ×

```
C:\_PythonClass\Python_Program\python.exe C:/_PythonClass/Assignment07/Assignment07.py
Enter Your Grocery Store Item: 2
Enter the Items Price: $1
Items are not Numbers! Try Again!
Enter Your Grocery Store Item: water
Enter the Items Price: $1
Price Must be a Number! Try Again!
Enter Your Grocery Store Item: water
Enter the Items Price: $20
{'Item': 'water', 'Price': '20'}

Process finished with exit code 0
```

Python 3.10 has been configured as a project interpreter // Configure a Python... (32 minutes ago) 26:17 CRLF UTF-8 4 spaces Python 3.10

**Figure 1.** The Grocery List program running successfully within PyCharm

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.19042.1348]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Dubbe>cd C:\_PythonClass\Assignment07

C:\_PythonClass\Assignment07>C:\_PythonClass\Assignment07\Assignment07.py
Enter Your Grocery Store Item: apple
Enter the Items Price: $20
{'Item': 'apple', 'Price': '20'}

C:\_PythonClass\Assignment07>C:\_PythonClass\Assignment07\Assignment07.py
Enter Your Grocery Store Item: 2
Enter the Items Price: $20
Items are not Numbers! Try Again!
Enter Your Grocery Store Item: orange
Enter the Items Price: $s
Price Must be a Number! Try Again!
Enter Your Grocery Store Item: apple
Enter the Items Price: $20
{'Item': 'apple', 'Price': '20'}

C:\_PythonClass\Assignment07>
```

**Figure 4.** The Grocery List program running successfully within CMD

## Summary

We learned about pickling and error handling in this module. I created a program that asked the user to begin making a grocery list. The user input was pickled and save to a binary file. If the user inputted data that was inappropriate for the data type an error handling message was prompted. The program was then ran successfully in both PyCharm and CMD.