

Laboratory 6:

1. Use a Python program to solve the following puzzle. The Python program should systematically search through all possible mileages.

"I was driving on the highway the other day and I happened to notice my odometer. Like most odometers, it shows six digits, in whole miles only. So, if my car had 300,000 miles, for example, I'd see 3-0-0-0-0-0.

"Now, what I saw that day was very interesting. I noticed that the last 4 digits were palindromic; that is, they read the same forward as backward. For example, 5-4-4-5 is a palindrome, so my odometer could have read 3-1-5-4-4-5.

"One mile later, the last 5 numbers were palindromic. For example, it could have read 3-6-5-4-5-6. One mile after that, the middle 4 out of 6 numbers were palindromic. And you ready for this? One mile later, all 6 were palindromic!

"The question is, what was on the odometer when I first looked?"

2. Download the file "avocado.csv" from the Kaggle data set that contains the Avocado prices in the US. The first column contains an identifier, the second column the date, the third column the average price, the third-last the type (conventional or organic) and the last one the region. Create a program that takes these data and creates a new file with the date, the average price, the type, and the region for the 2015-11-01 date. Here is how the new file should look:

```
2015-11-01 1.02 conventional Albany
2015-11-01 0.99 conventional Atlanta
2015-11-01 1.12 conventional BaltimoreWashington
2015-11-01 1.14 conventional Boise
2015-11-01 1.06 conventional Boston
```

3. Create a table of dividers for all integers between 50 and 100. The list of dividers should be aligned to the right (so you will have to use format). (Hint: First write a function that given a number returns a list of dividers. Then write another function that converts a list of integers into a string. This is how your output should look like:

number		list of divisors
50		2, 5, 10, 25
51		3, 17
52		2, 4, 13, 26
53		
54		2, 3, 6, 9, 18, 27
55		5, 11
56		2, 4, 7, 8, 14, 28