Assignment

January 26, 2016

1 Week 3 Assignment

Homeworks for this week can be written inside of an ipython notebook file. Questions can be labelled accordingly.

1.1 Readings

You are to read the included pdf files for this week's assignment.

1.2 If statements

The mythical island nation of Laskoatu has a rather simple tax code. The first $1000 of income is taxed at 5%. The next $1000 is taxed at 10%. Any income beyond the first $2000 is taxed at 15%. Complete the following script so that it asks the user for his or her income and outputs the amount of tax owed.

```
In [2]: income = int(input("Please enter your income:"))
```

```
Please enter your income:5000
```

1.3 While loops

Write a script that prompts the user for his or her name. Using a while loop that counts downwards, print the name with the letters reversed. You may use `s.lower()` and `s.upper()` to change a string `s` to lowercase and uppercase letters.

```
Enter your name: Paul
Luap
```

If the name is the same forward and backwards, print "Palindrome!" on the next line.

```
Enter your name: Ana
Ana
Palindrome!
```

```
In [ ]: name = input("Enter your name: ")
```

1.4 Tree Prints

Write a script that prompts the user for an integer tree size, then displays a number tree as shown below:

Enter a size: 5

```
    1
   121
  12321
 1234321
123454321
```

```
In [ ]: n = int(input("Enter a size: "))
```

1.5 Fibonacci

The Fibonacci numbers begin with 1, 1. After the first two numbers, each number is the sum of the previous two. $1 + 1 = 2$, so 2 is the third number. Then $1 + 2 = 3$, so 3 is the next one, and so on. Write a script that prompts the user for a number, then prints all the Fibonacci numbers that are less than or equal to the input, in order.

```
Enter a number: 15
1 1 2 3 5 8 13
```

```
In [ ]: n = int(input("Enter a number: "))
```

1.6 Pascal's Triangle

Pascal's triangle is a triangle of numbers that is computed as follows. The first row contains a 1. Each row after that begins and ends with a 1, and every other number is the sum of the two numbers above it. The first six rows of Pascal's triangle are shown below.

```
      1
     1 1
    1 2 1
  1  3 3  1
 1 4  6  4 1
1 5 10 10 5 1
```

Write a script to compute the nth row of Pascal's triangle.

```
In [ ]: n = int(input("Enter a number: "))
```