

# Assignment

January 23, 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: "))
```