Assignment #21

Two-Dimensional Tables

Write definitions for each of the following Python functions, and for each function, include a clear and concise comment to describe its purpose.

Here, take a *table* to mean a two-dimensional grid of integers, in which all rows have equal length.

1. `PrintTable( t, width = 4 )`

   Output table 't', one row per line, with each item given a minimum of 'width' spaces

   ```
   PrintTable( [ [ 1,2,3 ], [ 4,5,6 ] ] )     ⇒  ␣␣␣1␣␣␣2␣␣␣3
                                                 ␣␣␣4␣␣␣5␣␣␣6

   PrintTable( [ [ 1,2,3 ], [ 4,5,6 ] ], 2 ) ⇒  ␣1␣2␣3
                                                 ␣4␣5␣6
   ```

   (here, the symbol ␣ denotes a blank space)

2. `Vflip( t )`

   The table created by flipping table 't' around a horizontal axis through its middle

   ```
   PrintTable( Vflip( [ 1,2,3 ], [ 4,5,6 ] ] ) )      ⇒   4  5  6
                                                          1  2  3

   PrintTable( Vflip( [ 1,2 ], [ 3,4 ], [ 5,6 ] ] ) ) ⇒   5  6
                                                          3  4
                                                          1  2
   ```

3. `Hflip( t )`

   The table created by flipping table 't' around a vertical axis through its middle

   ```
   PrintTable( Hflip( [ 1,2,3 ], [ 4,5,6 ] ] ) )      ⇒   3  2  1
                                                          6  5  4

   PrintTable( Hflip( [ 1,2 ], [ 3,4 ], [ 5,6 ] ] ) ) ⇒   2  1
                                                          4  3
                                                          6  5
   ```

4. `Transpose( t )`

   The table whose columns are formed from the rows of table 't', in order

   ```
   PrintTable( Transpose( [ 1,2,3 ], [ 4,5,6 ] ] ) )      ⇒   1  4
                                                              2  5
                                                              3  6

   PrintTable( Transpose( [ 1,2 ], [ 3,4 ], [ 5,6 ] ] ) ) ⇒   1  3  5
                                                              2  4  6
   ```

Program Submission:

Store the function definitions in a file named 'a21.py', and turn it in for grading by typing:

```
submit-cs1117 a21.py
```

Due Date: Fri Apr 15, 10:30am