

COP 2930 - Introduction to Computing

Functions 3 - Suggested Exercises

Objectives:

1. Practice writing void functions using the Python Turtle.
2. Practice calling those functions.
3. Practice writing other functions that return values.

1) Redesign a function to draw a checkboard, where the user specifies the following information:

- a) Number of squares on each dimension
- b) The number of pixels per small square side
- c) The x coordinate of the lower left pixel of the whole design
- d) The y coordinate of the lower left pixel of the whole design

Here is the function prototype:

```
# Draws an n by n checkerboard, with lower left coordinate (x,y)
# such that each small square is numpixels by numpixels squares.
def checkerboard(n, numpixels, x, y):
```

2) Redesign a function to draw nested squares, where the user specifies the following information:

- a) Number of squares
- b) The number of pixels per smallest square
- c) The step in pixels, between squares

Here is the function prototype:

```
# Draws n nested squares centered around (0, 0), where
# the smallest square is numpixels by numpixels and each subsequent
# square's side increases by step. It's guaranteed that numpixels
# and step are positive even integers.
def checkerboard(n, numpixels, step):
```

3) Write a program that determines whether or not Anna and Bob were at the restaurant at the same time. Ask the user when Anna and Bob arrived at and left the restaurant, respectively. (The user should answer in number of minutes after midnight, and assume that both arrived and left on the same day.) Determine whether or not Anna and Bob were at the restaurant at the same time, and if so, for how many minutes they overlapped. For example, if Anna arrived at 720 minutes after midnight and left 800 minutes after midnight and Bob arrived at 600 minutes after midnight and left 740 minutes after midnight, they were at the restaurant together for 20 minutes.

In writing your program, write a function called `minutesmeet`, that returns the number of minutes both people were in the restaurant at the same time.

```
def minutesmeet(int start1, int end1, int start2, int end2):
```