CSC 401 – Introduction to Programming

Assignment 7

In this assignment, you will create 3 recursive functions as described below.
You can put the 3 functions in the same file.

1) Create a recursive function based upon the "countdown" function from the text (Chapter 10, pg 332) called "timer" that waits 1 second for each count and prints a message when the countdown expires. Assume all inputs will be integer values. Sample output:

```
timer(5)
5 <1 sec pause>
4 <1 sec pause>
3 <1 sec pause>
2 <1 sec pause>
1 <1 sec pause>
Timer Done
```

2) Create a function "find_file" that accepts a full directory path parameter (i.e., *C:\Users\cs401\Desktop\Docs*) and a file name parameter (i.e., *MyFile.txt*) that recursively searches all folders and subfolders under the provided path for the specified filename. When found, the full file pathname should be printed. *Note there may be multiple files that match the specified name.* If the file is not found, nothing should be printed. If listing the files in a folder results in a PermissionError – skip that folder but continue processing. Sample output:

```
find_file("C:\\Users\\cs401\\Desktop\\Docs", "build.xml")

C:\Users\Hieldc\Desktop\Docs\Arrays\Arrays\build.xml
C:\Users\Hieldc\Desktop\Docs\comm\Client\build.xml
C:\Users\Hieldc\Desktop\Docs\JavaApplication41\build.xml
```

3) Assume a game (like monopoly) has fake money that needs to be distributed as efficiently as possible throughout the game. Create a function that accepts a dollar amount (i.e., $126) and *returns* a string indicating the most efficient set of paper bills that make up that amount (i.e., "$50 $50 $20 $5 $1"). Assume the set of paper bills available in the game are: $1, $5, $10, $20 & $50.

Sample inputs & outputs:

$12	➔ "$10 $1 $1"	$63	➔ "$50 $10 $1"
$100	➔ "$50 $50"	$88	➔ "$50 $20 $10 $5 $1 $1 $1"
$181	➔ "$50 $50 $50 $20 $10 $1"	$69	➔ "$50 $10 $5 $1 $1 $1 $1"

4) Create a separate "main" python module that calls/tests each of the above 3 functions

Submission

- Your submission should consist of 2 Python ".py" files (functions & main), submitted via D2L.
- This assignment is due (submitted via D2L) before the start of class in *1 week*
- NO LATE ASSIGNMENTS CAN BE ACCEPTED.
- You may email me with any questions on this assignment at any time between now and the due date at chield@depaul.edu or christopher.hield@gmail.com.