Computer Code for Beginners

Week 3

Global Variable Swap

The file `globalVarSwap.py` declares two variables, `x` and `y`, with different values and prints them four times. This is because the two functions are empty.

Try running the program and you should see:

```
x = 10 y = 20
x = 10 y = 20
x = 10 y = 20
x = 10 y = 20
```

Implement the `swap()` function so that it swaps `x` and `y`, treating them as `global` variables. Then implement `swap2(a, b)` so that it swaps the `a` and `b` parameters and returns them. Run the program again and it should print:

```
x = 10 y = 20
x = 20 y = 10
x = 10 y = 20
x = 20 y = 10
```

Don't change the rest of the program.

Longest Word

Write a program that implements a function to take a list of words and return the length of the longest word.

- Make a new function `longestWordLength(wordList)`
- You'll need to loop through `wordList` and for each word

  - Get its length
  - If it's the longest word you've seen, store it
  - Remember to store the longest word outside the loop, but inside the function
- After you've looped through the list of words, you can return the length of the longest word (which you have stored in a variable)

Mine Detector

The `mineDetector.py` file contains a two-dimensional list (a list where each item in it is a list) that represents a grid, where an "O" represents an empty space and an "M" represents a space containing a mine.

- Implement the `printGrid(grid)` function so that it `print`s out the grid
  - Each row of the grid should be printed on a new line
  - This will only need one loop
- Implement the function, `mineDetector(gird)` so that it returns a list of (x,y) coordinates of the locations of mines.
  - Try planning out how you would check each row, and then each item in that row, for a mine
  - This is tricky as you will need two loops, one inside the other
  - Think about what you need to check, for each item, to see if it is a mine or not
  - Helpfully, the loop indices of the two loops will give you the (x,y) coordinates, when you find a mine

Challenge:

- Write a function, `buildGrid()`, that returns a two-dimensional list from a list of x,y coordinates of the locations of mines.
  - What parameter does this function need to take?
  - Use the output of `mineDetector(gird)` to test this function