Mini Coding Challenges

*If you feel any of these programs are too easy, attempt to complete them in the least number of lines possible. Think of it as coding golf\*. Feel free to skip any programs that are too easy. Feel free to collaborate but I suggest each person type the code him/herself for good practice.*

Write a script to:

1. Print “hello world!” to the console.
2. Ask the user for his/her name, and then greet the user personally. :)
3. Ask the user for his/her full legal name, and then print his/her initials.
4. Modify challenge 3 to print the initials of n different names, where n is entered by the user.
5. Write a function that takes an array of integers, and returns the arithmetic mean. Implement this method by asking the user for 5 values, and then printing the mean.
6. Modify challenge 7 to calculate the geometric mean.
7. Modify challenge 8 to calculate the harmonic mean.
8. At the beginning of the program, define two lists:

a **=** [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]  
 b **=** [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]

Write a program to print only the elements present in both lists

1. Modify program 8 to generate 2 lists of 100 random numbers from 1 to 25
2. Write a program to generate a list of 100 random numbers from 1 to 25 (copy code from exercise 11) and then sort this list in ascending order. Print the sorted list.
3. Modify exercise 10 to use python’s built in “.sort()” method (documentation: <https://www.tutorialspoint.com/python/list_sort.htm> )
4. Write a program that asks the user how many Fibonacci numbers to generate and then generates them.
5. Rewrite challenge 12 to use this generation formula for Fibonacci numbers: <http://mathworld.wolfram.com/BinetsFibonacciNumberFormula.html>
6. Write a rock-paper-scissors game. Have the player play against the computer. The computer plays randomly. Keep track of score.
7. Modify challenge 14 to support 2 players. Players should take turns entering their choice, clearing the console in between inputs so that player 2 cannot cheat.
8. Create a 2 dimensional array to store a tic-tac-toe board. Write a function to take a 2-D array and print the board in an aesthetically pleasing way.
9. Write a function to take a gameboard and determine if any player has won (has 3 in a row). Return this boolean.
10. Integrate challenges 16 and 17 with the turn-based concept from challenge 15 to create a fully functioning console-based tic-tac-toe game.
11. Write a program to read data from a text file (in the same file folder as the source code) and print its contents.
12. Write a program to read data from a text file (in the same file folder as the source code), reverse its contents, and write the reversed string to the text file (i.e. “abcd123” ---> “321dcba”)
13. Write a program to fetch the html data from the HOHS website homepage. Print the raw HTML to the console (as a string). [NOTE: please take care not to request the website too often or we could *literally* DDOS them. So please, none of this: “while True: request(www.meme.com)”.]
14. Modify challenge 21 to print only the url for all images referenced on the homepage.
15. Create a program that prints its own source code.

\**Par for each ‘hole’ is approximately proportional to the challenge number (e.g. challenge 4 should take ~4 lines of code). I will be keeping track of the record number of lines for each challenge here:*

|  |  |  |  |
| --- | --- | --- | --- |
| **Challenge #** | **Record Lines (statements)** | **Chars (only if tie)** | **Author** |
| 1 | 1 |  | Micah ¯\\_(ツ)\_/¯ |
| 2 | 1 |  | Liam Gerst |
| 3 | 1 |  | Liam Gerst |
| 4 | 1 |  | Liam Werst |
| 5 | 1 |  | Liam Werst |
| 6 | 1 |  | Russell “hole-in-one” Schwartz |
| 7 | 1 |  | Russell |
| 8 | 1 | **78** | Micah ¯\\_(ツ)\_/¯ |
| 9 | 2 |  | R&M |
| 10 | 2 |  | R&M |
| 11 |  |  |  |
| 12 |  |  |  |
| 13 | 1 |  | R&M |
| 14 | 2 |  | R&M |
| 15 |  |  |  |
| 16 |  |  |  |
| 17 |  |  |  |
| 18 |  |  |  |
| 19 |  |  |  |
| 20 |  |  |  |
| 21 |  |  |  |
| 22 |  |  |  |
| 23 | 2 |  | Micah ¯\\_(ツ)\_/¯ |

Encryption Partner Competition

Scenario:

You are a spy, about to leave on a top secret mission to the country of **REDACTED**. Before you leave, you and your contact in the states must figure out a way of communicating while you are abroad. However, these messages are likely to be intercepted by the enemy! How can you and your contact securely communicate?

The Challenge:

1. Design an encryption protocol to encode and decode a message. It must be a unique encryption method such that only you and your contact can decipher the true meaning.
2. Write a program to take plain text, and encrypt it. Write another program to take encrypted text, and decrypt it.

Criteria:

* At the top of your code (or in a separate text document), you must include a detailed write-up of your encryption method.
* The encrypted message must be so difficult, that it cannot be cracked by the rest of the club in under 5 minutes.
* You may not directly use existing encryption methods, however combining existing methods into a more complex algorithm is encouraged. ([Helpful Resource](http://members.aon.at/cipherclerk/Doc/CipherList.html))
* The more convoluted the better. Additional layers of encryption make code-breaking exponentially harder.
* The code must work completely. It can be in any language of your choosing.
* Prompt 0 XDer
* The name of your favorite new League of Legends champion \”\_\_\_\_\_\_\_\”
* “
* How would you explain the Birds and the Bees?
* Look if you had one shot or one opportunity to seize a small boy in your enclosure in one moment would you capture him or just let him slip?
* Most skill based game
* What is the best color of crayon?
* Do you gotta do the cooking by the books?
* To whom does this triagonal sign belong?
* Hello and welcome to the six o’clock news, my name is \”\_\_\_\_\_\_\_\_\_\_\_\”
* What is your favorite“type of pizza available in your home country?
* What is the very best pizza topping?
* If I could copy paste just one thing in real life, I would copy paste \”\_\_\_\_\_\_\_\_\_\_\”
* Real Prompts ecksdee:
* How many licks does it take to \_\_\_\_\_\_\_?
* What the \_\_\_\_\_ did you just say to me, you little \_\_\_\_\_?
* Has Anyone Really Been Far Even as Decided to Use Even Go Want to do Look More Like?
* Which one of us should we sacrifice to satan?
* On a scale from 1 to 100, how tilted is Chase right now?