CPS 109 Assignment #2
Winter 2023

Part 1: Binary number system (20 points)

Write a 1-page report with the following information:

- Explain how the binary number system works. Why is the binary number system important in Computer Science? Describe step-by-step how the conversion from decimal integers to binary numbers can be computed.
- Convert the following decimal numbers to binary:

0	
1	
2	
3	
4	
5	
6	
7	

- Describe step-by-step how is the conversion of the fractional part of a number, expressed in the decimal system, to the binary system, computed. Then, explain why some decimals, such as 0.1, cannot be exactly converted to binary.

In the write-up, cite the sources of your ideas, and use your own words to express your thoughts. If you have to use someone else's words or close to them, use quotes and a citation.

Submit the document on the D2L site. Ensure you named your report appropriately: report_FirstnameLastName.pdf

As long as this is reasonable, you will have the flexibility to write more or less than 1 page. You also have the flexibility to format your report as you wish, as long as this is reasonable. For example, you could use 1 inch margins from each side, use 11pt or 12pt font size, use standard font types such as Times New Roman.

Part 2: Programming (80 points)

For Part 2, you will complete 8 problems. They are all worth the same number of points.

Important:
Write your code inside the function only. You are expected to replace the keyword 'pass', with the definitions and commands you deem appropriate. Make sure to use the keyword 'return' to ensure that the function returns the correct answer.

Very important: submit your python script without modifying its name. For example, if it's titled q2.py, the file you upload should be named q2.py as well. Failure to do so will result in your python script not being graded.
It is preferred that you submit 1 zip file with all your scripts, but you can also submit directly the scripts.

Plagiarism detection:
You are to work alone. The Measure of Software Similarity (MOSS) will be used to identify cases of possible plagiarism; see the following link for details: http://theory.stanford.edu/~aiken/moss. Note, MOSS can detect changing identifiers and rearranging code. The Department of Computer Science takes the act of plagiarism very seriously. Those caught plagiarizing (both originators and copiers) will be sanctioned.