Homework Assignment
Scrambler Design
CMPE 245

1. Design a 5^{th} order scrambler by
(1.1) drawing its block diagram;
(1.2) suppose input is 1 1 1 1 1 1 0 0 0 0 0, find it output after scrambling.

2. Design a embedded wireless system block diagram to include signal source block, scrambler block, and other necessary block(s) discussed in the class to form transmission node N_i, and design a receiving node N_j by giving a system block diagram.

3. Write a computer program (Use C/C++, or Python) to implement your design of scrambler and de-scrambler (for the 5^{th} order) and verify your result in 1.

Note: The ^ **(bitwise XOR)** in C or C++ takes two numbers as operands and does XOR on every bit of two numbers. The result of XOR is 1 if the two bits are different. For example:
temp_buffer[i] = op1[i] ^ op2[i];

4. What to submit:
(4.1) Homework question 1 - 3;
2. Photo of a screen capture of 3 with the result shown the verification required in (1.4);
3. Source code and binary executable, together with short readme instruction on what platform, compilation and build instruction;
4. Submission to CANVAS ONLY (please do not submit to email).
5. Put the submission material into one zip file, name it with

your first name + your last name + scrambler + yy/mm/dd.zip

(END)