Design/Practical Experience [EEN1010]
Department of Electrical Engineering

(End-term Report)

Academic Year:2021-2022 Semester: 1

Date of Submission of Report: 19-11-2021

1.Name of the Student: Shashank Kumar
2. Roll Number: B20EE063
3. Title of the Project: Design and implementation of scrambling and descrambling circuits for communication.
Project Category: 3
Targeted Deliverables: - Implementation of scrambler, descrambler on text data using python/c/MATLAB.
-Implementation of scrambler, descrambler on information signal
-We will try to implement real time application

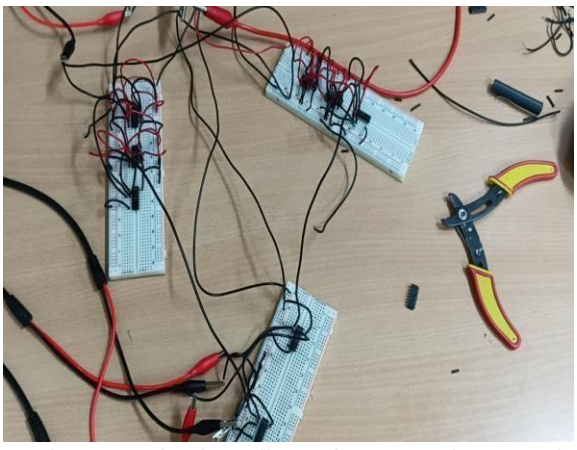
Work Done:

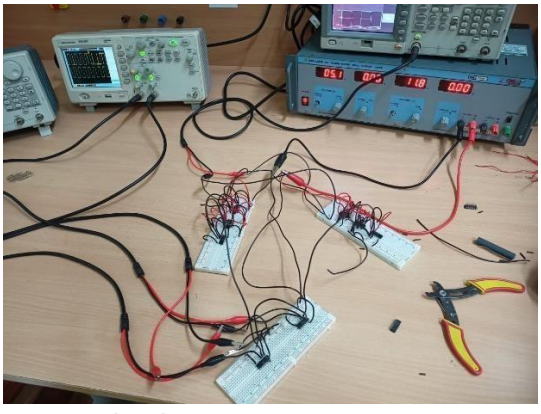
-Designed a pseudo random number generator on a breadboard essential for smooth traversing of long sequences of 1's and 0's, the scrambler sequence.

-Taken **XOR** of this scrambled sequence to produce scrambled signal, which as a result removes the continuous sequence of 1's and 0's; on one end;

-Taken **XOR** of this scrambled signal once again with the scrambled sequence to get back the original signal at the input end.

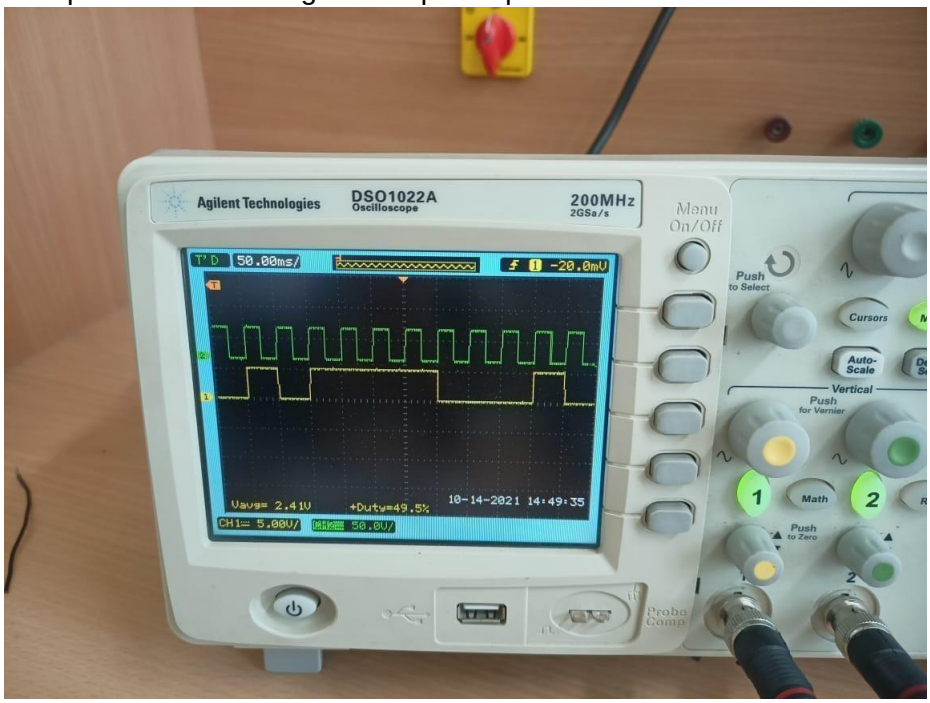
-On matching the final and input signal, they both are same and hence we can get back the same signal which we have scrambled at the sender's end.



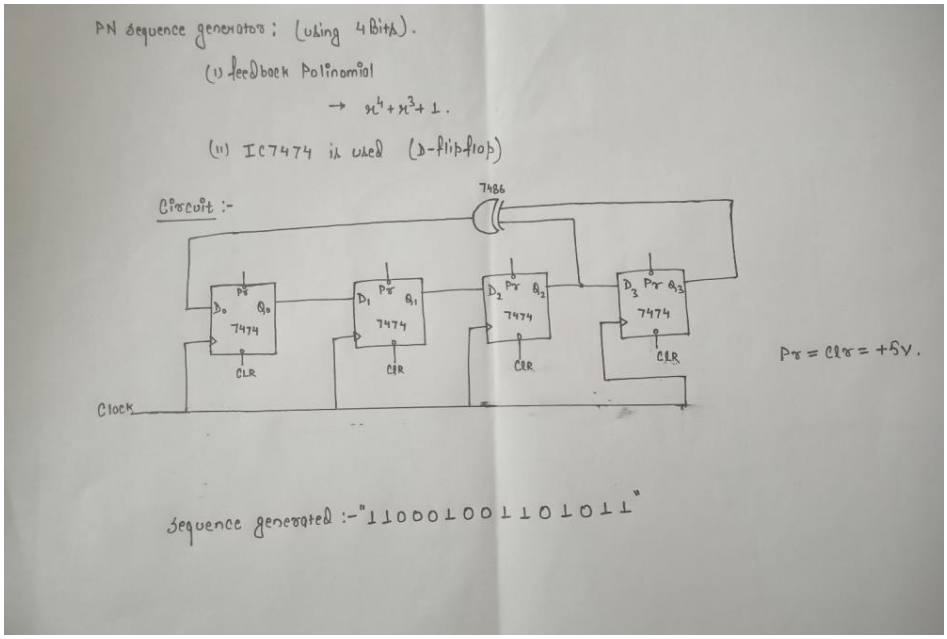


-Below are the beadboard connections and output received on DSO.

Comparison of initial signal and pn-sequence.



Schematic circuit

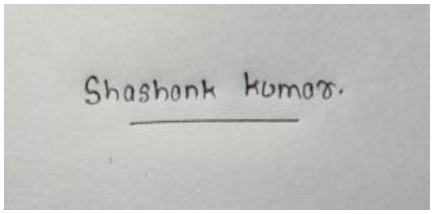


Comparison of input vs output signal (after scrambling and descrambling):

(With some clock synchronization issues which are needed to be fixed).

References: https://people.ece.ubc.ca/edc/4340.fall2014/lectures/lec12.pdf

Declaration: I declare that no part of this report is copied from other sources. All the references are properly cited in this report.



Signature of the Student

15/11/2021

Signature of the Supervisor

Supervisor's Recommendation for the Evaluation

Please tick any one of the following

1. The work done is satisfactory, and sufficient time has been spent by the student. The submission by the student should be evaluated in this term.

2. The work is not complete. Continuity Grade should be given to the student. The student would need to be evaluated in the next semester for the same Design Project with me.

3. The work is not satisfactory. There is no need for evaluation. The students should look for another Design Credit Project for the next semester.

4. [Other Comment, if 1-3 are not valid]
   _____

Signature of the Supervisor.