

**Department of Physics**

|  |  |
| --- | --- |
| Course Number | COE 328 |
| Course Title | Digital Circuits |
| Semester/Year | Fall 2021 |
| Instructor | Dr. Reza Sedaghat |
| TA Name | Sajjad Rostami Sani |

|  |  |
| --- | --- |
| Lab/Tutorial Report No. | 4 |
|  |  |
| Report Title | Lab 4 Part 2 |

|  |  |
| --- | --- |
| Section No. | 03 |
| Submission Date | 22-11-2021 |
| Due Date | 28-11-2021 |

|  |  |  |
| --- | --- | --- |
| Student Name | Student ID | Signature\* |
| Ahmad El-Gohary | 501011852 |  |

\*By signing above, you attest that you have contributed to this submission and confirm that all work you have contributed to this submission is your own work. Any suspicion of copying or plagiarism in this work will result in an investigation of Academic Misconduct and may result in a “0” on the work, an “F” in the course, or possibly more severe penalties, as well as a Disciplinary Notice on your academic record under the Student Code of Academic Conduct, which can be found online at:

http://www.ryerson.ca/content/dam/senate/policies/pol60.pdf

**Objective**

The objective of this lab was to build and modify the code for a Johnson counter such that every cycle/count the circuit out puts digit of my student number starting from the 4th digit up to the last a 9th digit spanning a total of 6 cycles.

[This part of page is left blank intentionally]

**Procedure**

VHDL code for the Johnson Counter:

Text

Description automatically generatedGraphical user interface

Description automatically generated with medium confidence

VHDL code for 7-segment display:

Text

Description automatically generated with medium confidence

Text

Description automatically generated

Circuit connecting Johnson Counter with 7-segment display:

Calendar

Description automatically generated

Waveform of the inputs and the outputs:

Box and whisker chart

Description automatically generated

**References**

Brown, S. D., & Vranesic, Z. G. (2009). *Fundamentals of Digital Logic with VHDL Design*. New York, United States: McGraw-Hill Education.