Lab Report #6:

Serial Communications

**Authors:** Midshipman 3/C **First Last Name** and Midshipman 3/C **First Last Name**   
**Course:** SY202 Cyber Systems Engineering

**Enclosures:** (1)Part B mbed2 code

(2) Part C MATLAB code

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Metric** | **Weight** | **Quality** | | | | | **Max**  **Score** | **Midn**  **Score** |
| **0** | **1** | **2** | **3** | **4** |
| Use of Lab Template | 1 | No |  | Partially |  | Yes | 4 |  |
| Introduction | 1 | Problem, purpose, and objectives are unclear |  | Problem stated but purpose/objectives unclear |  | Well discussed | 4 |  |
| Results Part A  (Correctness) | 2 | Results are not presented, incomplete, or incorrect |  | Results are partially presented or some are incorrect; missing some required items |  | Results are complete and correct | 8 |  |
| Results Part A (Discussion/Analysis) | 2 | Results are not discussed or poorly discussed |  | Result are discussed, but missed some relevant observations |  | Results are well discussed; short but cohesive | 8 |  |
| Results Part B  (Correctness) | 1 | Results are not presented, incomplete, or incorrect |  | Results are partially presented or some are incorrect; missing some required items |  | Results are complete and correct | 4 |  |
| Results Part B (Discussion/Analysis) | 2 | Approach is not discussed or poorly discussed |  | Approach is discussed, but missed some relevant observations |  | Approach is well discussed; short but cohesive | 8 |  |
| Results Part C  (Correctness) | 2 | Results are not presented, incomplete, or incorrect |  | Results are partially presented or some are incorrect; missing some required items |  | Results are complete and correct | 8 |  |
| Results Part C (Discussion/Analysis) | 2 | Approach is not discussed or poorly discussed |  | Approach is discussed, but missed some relevant observations |  | Approach is well discussed; short but cohesive | 8 |  |
| Conclusions | 1 | Not included or poorly summarize main results |  | Included but inaccurate or vague |  | Included and cohesively summarize results | 4 |  |
| Comments | 1 | Not included |  | Included but not accurate or vague |  | Included and cohesively addressed the results | 4 |  |
| Grammar, organization, & Professionalism | 1 | Poor grammar and use of slang |  |  |  | Professional writing | 4 |  |
| **Total Points** | | | | | | | **64** |  |
| **Normalized Report Score = (Total Point / 64) x 50** | | | | | | **Letter Grade:** | **50** |  |

Instructions: **ERASE instructions that are given in red**.

# Introduction

In brief, describe the purpose and objective of the lab. This section should not be more than 2 paragraphs.

# Results and Discussion

## Part A: Results and Discussion

Discuss your results from Part A. Include your results from Part A.6.a-d in tables. Ensure that the tables do not break across pages to improve readability. Finally, include/provide an explanation for each result.

* 1. Identical settings: Tx/Rx 600 Baud, Tx/Rx 8 data bits, Tx/Rx 1 stop bit

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tx 600N81/Rx 600N81 | | | | | |
| Serial Device | # | Character | Hexadecimal | Decimal | Binary |
| Tx | 1 |  |  |  |  |
| 2 |  |  |  |  |
| Rx | 1 |  |  |  |  |
| 2 |  |  |  |  |

* 1. Mismatched baud rates: Tx **300 Baud**/Rx 600 Baud, Tx/Rx 8 data bits, Tx/Rx 1 stop bit

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tx 300N81/Rx 600N81 (1st Transmission) | | | | | |
| Serial Device | # | Character | Hexadecimal | Decimal | Binary |
| Tx | 1 |  |  |  |  |
| 2 |  |  |  |  |
| Rx | 1 |  |  |  |  |
| 2 |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tx 300N81/Rx 600N81 (2nd Transmission) | | | | | |
| Serial Device | # | Character | Hexadecimal | Decimal | Binary |
| Tx | 1 |  |  |  |  |
| 2 |  |  |  |  |
| Rx | 1 |  |  |  |  |
| 2 |  |  |  |  |

* 1. Mismatched data bit length: Tx/Rx 600 Baud, Tx 8 data bits /Rx **5 data bits**, Tx/Rx 1 stop bit

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tx 600N81/Rx 600N51 (1st Transmission) | | | | | |
| Serial Device | # | Character | Hexadecimal | Decimal | Binary |
| Tx | 1 |  |  |  |  |
| 2 |  |  |  |  |
| Rx | 1 |  |  |  |  |
| 2 |  |  |  |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tx 600N81/Rx 600N51 (2nd Transmission) | | | | | |
| Serial Device | # | Character | Hexadecimal | Decimal | Binary |
| Tx | 1 |  |  |  |  |
| 2 |  |  |  |  |
| Rx | 1 |  |  |  |  |
| 2 |  |  |  |  |

* 1. Mismatched stop bit length: Tx/Rx 600 Baud, Tx/Rx 8 data bits, Tx 1 stop bit/Rx **2 stop bit**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Tx 600N81/Rx 600N82 | | | | | |
| Serial Device | # | Character | Hexadecimal | Decimal | Binary |
| Tx | 1 |  |  |  |  |
| 2 |  |  |  |  |
| Rx | 1 |  |  |  |  |
| 2 |  |  |  |  |

## Part B: Results and Discussion

Discuss your approach used to accomplish the requirements of Part B. Include a simultaneous screen capture of both Tera Term windows (mbed1/mbed2) as shown in Lab 6, figure 4 to demonstrate successful completion of the task. mbed code should be provided as enclosure (1). Ensure that you code is commented thoroughly.

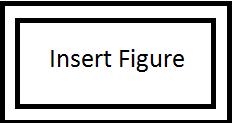


Figure 1. Include a descriptive Caption.

## Part C: Results and Discussion

Discuss your approach used to accomplish the requirements of Part C. MATLAB code from Part C should be provided in enclosure (2). Include the screen capture of the MATLAB command window showing the number of data points imported from Tera Term.

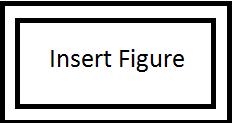


Figure 2. Include a descriptive Caption.

Provide the mean, maximum, and minimum values of the stored mbed data. Include a plot of Time (s) vs Output (V) as required for Part C plotting each data point as an “x”. Do **not** connect the data points with a line. Be sure to include your estimation of the length of time needed to obtain the minimum 1000 data points. Also, highlight any error checking performed on the imported data prior to plotting.

Table 1 Results from analysis of Part D received data.

|  |  |  |
| --- | --- | --- |
| Mean (V) | Maximum (V) | Minimum (V) |
| XXXX | XXXX | XXXXX |

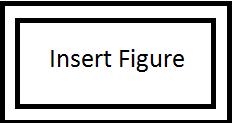


Figure 3. Include a descriptive Caption.

# Conclusions

Summarize your results and observations.

# Comments

Summarize any challenges that you overcame. Include what you learned and how the lab can be improved. Provide an approximation of individual time required to complete the lab outside of the scheduled lab period, if required.