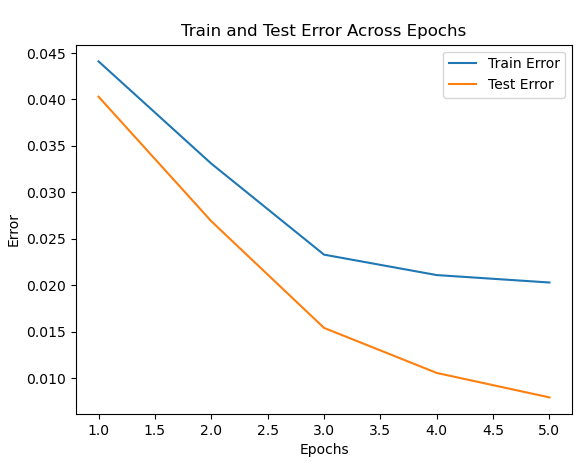
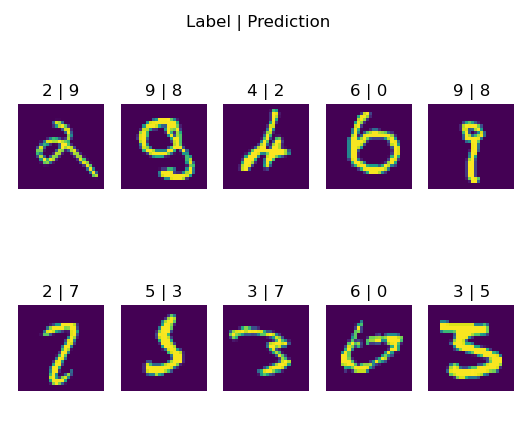
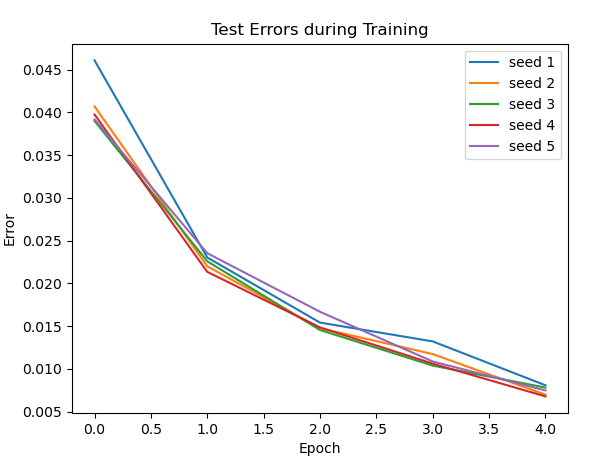
**Applied Deep Learning - Homework 3**

**Tasks 1**  


Test error of final network on the 10000 test images: 0.008417.

Accuracy of: 99.1583%.



**Task 2**  


Mean final Error is 0.00741.

Standard deviation of final Errors is 0.00055.

Judging by the variance and the graph provided, it appears that the model's performance is relatively stable and not too sensitive to the initial seed number chosen.

The final errors exhibit very low standard deviation, and the graph illustrates that the errors have comparable patterns among various seed values.

**Task 3**

**Task 4**

|  |  |  |  |
| --- | --- | --- | --- |
| **Hidden Size** | **Batch Size** | **Learning Rate** | **Test Error** |
| 100 | 100 | 0.01 | 0.0321 |
| 100 | 100 | 0.001 | 0.0329 |
| 100 | 100 | 0.0001 | 0.0804 |
| 100 | 1000 | 0.01 | 0.0297 |
| 100 | 1000 | 0.001 | 0.066 |
| 100 | 1000 | 0.0001 | 0.1389 |
| 500 | 100 | 0.01 | 0.0279 |
| 500 | 100 | 0.001 | 0.0229 |
| 500 | 100 | 0.0001 | 0.0608 |
| 500 | 1000 | 0.01 | 0.0222 |
| 500 | 1000 | 0.001 | 0.0466 |
| 500 | 1000 | 0.0001 | 0.1032 |

**Task 5**

