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(base) C:\Users\Mehmet\Desktop\>GPU_MNIST.py
##### NETWORK 1 #####
Epoch number: 1
[1, 2000] loss: 1.560
[1, 4000] loss: 0.223
[1, 6000] loss: 0.130
[1, 8000] loss: 0.104
[1, 10000] loss: 0.090
[1, 12000] loss: 0.088
Epoch number: 2
[2, 2000] loss: 0.067
[2, 4000] loss: 0.067
[2, 6000] loss: 0.063
[2, 8000] loss: 0.062
[2, 10000] loss: 0.053
[2, 12000] loss: 0.044
Epoch number: 3
[3, 2000] loss: 0.038
[3, 4000] loss: 0.044
[3, 6000] loss: 0.045
[3, 8000] loss: 0.036
[3, 10000] loss: 0.044
[3, 12000] loss: 0.045
Epoch number: 4
[4, 2000] loss: 0.030
[4, 4000] loss: 0.033
[4, 6000] loss: 0.031
[4, 8000] loss: 0.037
[4, 10000] loss: 0.031
[4, 12000] loss: 0.034
Epoch number: 5
[5, 2000] loss: 0.019
[5, 4000] loss: 0.033
[5, 6000] loss: 0.021
[5, 8000] loss: 0.027
[5, 10000] loss: 0.028
[5, 12000] loss: 0.030
Epoch number: 6
[6, 2000] loss: 0.018
[6, 4000] loss: 0.020
[6, 6000] loss: 0.021
[6, 8000] loss: 0.023
[6, 10000] loss: 0.027
[6, 12000] loss: 0.021
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Epoch number: 7
[7, 2000] loss: 0.019
[7, 4000] loss: 0.021
[7, 6000] loss: 0.016
[7, 8000] loss: 0.021
[7, 10000] loss: 0.025
[7, 12000] loss: 0.020
Epoch number: 8
[8, 2000] loss: 0.015
[8, 4000] loss: 0.012
[8, 6000] loss: 0.022
[8, 8000] loss: 0.015
[8, 10000] loss: 0.015
[8, 12000] loss: 0.022
Epoch number: 9
[9, 2000] loss: 0.014
[9, 4000] loss: 0.017
[9, 6000] loss: 0.014
[9, 8000] loss: 0.011
[9, 10000] loss: 0.016
[9, 12000] loss: 0.015
Epoch number: 10
[10, 2000] loss: 0.010
[10, 4000] loss: 0.014
[10, 6000] loss: 0.013
[10, 8000] loss: 0.013
[10, 10000] loss: 0.012
[10, 12000] loss: 0.015
Finished training for NETWORK 1 .
Training time for NETWORK 1 : 1481.7078971 seconds
Accuracy of the NETWORK 1 on the 10.000 test images: 98 %
Accuracy of 0 : 99 %
Accuracy of 1 : 99 %
Accuracy of 2 : 99 %
Accuracy of 3 : 99 %
Accuracy of 4 : 99 %
Accuracy of 5 : 99 %
Accuracy of 6 : 98 %
Accuracy of 7 : 98 %
Accuracy of 8 : 97 %
Accuracy of 9 : 98 %
```

NETWORK 2

Epoch number: 1

[1, 2000] loss: 2.304

[1, 4000] loss: 2.304

[1, 6000] loss: 2.303

[1, 8000] loss: 2.303

[1, 10000] loss: 2.304

[1, 12000] loss: 2.303

Epoch number: 2

[2, 2000] loss: 2.303

[2, 4000] loss: 2.302

[2, 6000] loss: 2.301

[2, 8000] loss: 2.302

[2, 10000] loss: 2.301

[2, 12000] loss: 2.303

Epoch number: 3

[3, 2000] loss: 2.301

[3, 4000] loss: 2.301

[3, 6000] loss: 2.300

[3, 8000] loss: 2.300

[3, 10000] loss: 2.296

[3, 12000] loss: 2.289

Epoch number: 4

[4, 2000] loss: 2.151

[4, 4000] loss: 1.662

[4, 6000] loss: 0.900

[4, 8000] loss: 0.614

[4, 10000] loss: 0.461

[4, 12000] loss: 0.360

Epoch number: 5

[5, 2000] loss: 0.264

[5, 4000] loss: 0.218

[5, 6000] loss: 0.182

[5, 8000] loss: 0.166

[5, 10000] loss: 0.161

[5, 12000] loss: 0.143

Epoch number: 6

[6, 2000] loss: 0.133

[6, 4000] loss: 0.115

[6, 6000] loss: 0.122

[6, 8000] loss: 0.114

[6, 10000] loss: 0.103

[6, 12000] loss: 0.098

Epoch number: 7

[7, 2000] loss: 0.090

[7, 4000] loss: 0.091

[7, 6000] loss: 0.091

[7, 8000] loss: 0.091

[7, 10000] loss: 0.084

[7, 12000] loss: 0.073

```
Epoch number: 8
[8, 2000] loss: 0.081
[8, 4000] loss: 0.073
[8, 6000] loss: 0.065
[8, 8000] loss: 0.067
[8, 10000] loss: 0.067
[8, 12000] loss: 0.070
Epoch number: 9
[9, 2000] loss: 0.060
[9, 4000] loss: 0.066
[9, 6000] loss: 0.056
[9, 8000] loss: 0.065
[9, 10000] loss: 0.056
[9, 12000] loss: 0.064
Epoch number: 10
[10, 2000] loss: 0.062
[10, 4000] loss: 0.055
[10, 6000] loss: 0.057
[10, 8000] loss: 0.051
[10, 10000] loss: 0.048
[10, 12000] loss: 0.053
Finished training for NETWORK 2 .
Training time for NETWORK 2 : 1307.5817902 seconds
Accuracy of the NETWORK 2 on the 10.000 test images: 97 %
Accuracy of 0 : 98 %
Accuracy of 1 : 99 %
Accuracy of 2 : 97 %
Accuracy of 3 : 99 %
Accuracy of 4 : 95 %
Accuracy of 5 : 98 %
Accuracy of 6 : 97 %
Accuracy of 7 : 97 %
Accuracy of 8 : 95 %
Accuracy of 9 : 98 %
```

NETWORK 3

Epoch number: 1

[1, 2000] loss: 2.300

[1, 4000] loss: 1.288

[1, 6000] loss: 0.238

[1, 8000] loss: 0.141

[1, 10000] loss: 0.109

[1, 12000] loss: 0.098

Epoch number: 2

[2, 2000] loss: 0.074

[2, 4000] loss: 0.085

[2, 6000] loss: 0.064

[2, 8000] loss: 0.062

[2, 10000] loss: 0.057

[2, 12000] loss: 0.068

Epoch number: 3

[3, 2000] loss: 0.048

[3, 4000] loss: 0.045

[3, 6000] loss: 0.046

[3, 8000] loss: 0.044

[3, 10000] loss: 0.038

[3, 12000] loss: 0.040

Epoch number: 4

[4, 2000] loss: 0.032

[4, 4000] loss: 0.032

[4, 6000] loss: 0.030

[4, 8000] loss: 0.037

[4, 10000] loss: 0.033

[4, 12000] loss: 0.033

Epoch number: 5

[5, 2000] loss: 0.020

[5, 4000] loss: 0.027

[5, 6000] loss: 0.023

[5, 8000] loss: 0.022

[5, 10000] loss: 0.026

[5, 12000] loss: 0.031

Epoch number: 6

[6, 2000] loss: 0.019

[6, 4000] loss: 0.022

[6, 6000] loss: 0.020

[6, 8000] loss: 0.022

[6, 10000] loss: 0.021

[6, 12000] loss: 0.026

Epoch number: 7

[7, 2000] loss: 0.013

[7, 4000] loss: 0.017

[7, 6000] loss: 0.016

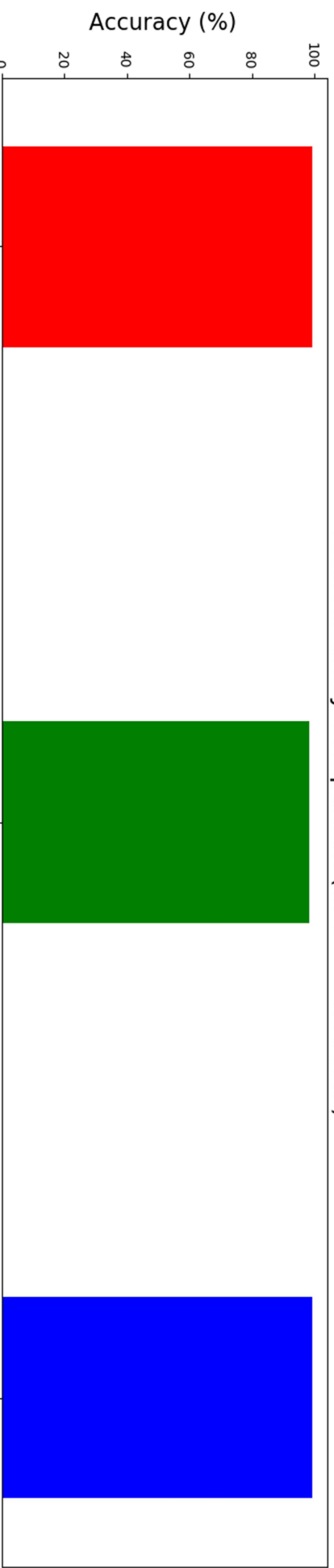
[7, 8000] loss: 0.017

[7, 10000] loss: 0.018

[7, 12000] loss: 0.020


```
Epoch number: 8
[8, 2000] loss: 0.012
[8, 4000] loss: 0.012
[8, 6000] loss: 0.012
[8, 8000] loss: 0.016
[8, 10000] loss: 0.018
[8, 12000] loss: 0.014
Epoch number: 9
[9, 2000] loss: 0.009
[9, 4000] loss: 0.010
[9, 6000] loss: 0.011
[9, 8000] loss: 0.016
[9, 10000] loss: 0.014
[9, 12000] loss: 0.016
Epoch number: 10
[10, 2000] loss: 0.007
[10, 4000] loss: 0.010
[10, 6000] loss: 0.008
[10, 8000] loss: 0.014
[10, 10000] loss: 0.010
[10, 12000] loss: 0.015
Finished training for NETWORK 3 .
Training time for NETWORK 3 : 2034.4557243 seconds
Accuracy of the NETWORK 3 on the 10.000 test images: 99 %
Accuracy of 0 : 99 %
Accuracy of 1 : 100 %
Accuracy of 2 : 99 %
Accuracy of 3 : 99 %
Accuracy of 4 : 99 %
Accuracy of 5 : 98 %
Accuracy of 6 : 98 %
Accuracy of 7 : 99 %
Accuracy of 8 : 97 %
Accuracy of 9 : 98 %
TOTAL Processing time for all these calculations: 4903.3593356 seconds
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Total Accuracy Comparison (GPU = GTX 965m)



Each Accuracy for 3 NETWORKS Each Class Comparison (GPU = GTX 965m)

