

NNDL-ICP2 SCREENSHOTS

1.

```
Epoch 1/100
18/18 [=====] - 6s 5ms/step - loss: 0.9374 - acc: 0.3802
Epoch 2/100
18/18 [=====] - 0s 4ms/step - loss: 0.7141 - acc: 0.5399
Epoch 3/100
18/18 [=====] - 0s 5ms/step - loss: 0.6752 - acc: 0.6615
Epoch 4/100
18/18 [=====] - 0s 5ms/step - loss: 0.6619 - acc: 0.6632
Epoch 5/100
18/18 [=====] - 0s 4ms/step - loss: 0.6557 - acc: 0.6632
Epoch 6/100
18/18 [=====] - 0s 5ms/step - loss: 0.6545 - acc: 0.6632
Epoch 7/100
18/18 [=====] - 0s 3ms/step - loss: 0.6482 - acc: 0.6632
Epoch 8/100
18/18 [=====] - 0s 3ms/step - loss: 0.6472 - acc: 0.6632
Epoch 9/100
18/18 [=====] - 0s 3ms/step - loss: 0.6441 - acc: 0.6632
Epoch 10/100
18/18 [=====] - 0s 3ms/step - loss: 0.6418 - acc: 0.6632
```

2.

```
Epoch 100/100
14/14 [=====] - 0s 4ms/step - loss: 0.1872 - acc: 0.9225
Epoch 100/100
14/14 [=====] - 0s 5ms/step - loss: 0.1853 - acc: 0.9366
Model: "sequential_1"
```

Layer (type)	Output Shape	Param #
dense_3 (Dense)	(None, 20)	620
dense_4 (Dense)	(None, 1)	21

=====
Total params: 641
Trainable params: 641
Non-trainable params: 0

```
None
5/5 [=====] - 0s 3ms/step - loss: 0.2894 - acc: 0.8881
[0.28943607211112976, 0.8881118893623352]
```

3.

```
14/14 [=====] - 0s 3ms/step - loss: 0.2531 - acc: 0.9366
Epoch 100/100
14/14 [=====] - 0s 3ms/step - loss: 0.2515 - acc: 0.9272
Model: "sequential_2"
```

Layer (type)	Output Shape	Param #
dense_5 (Dense)	(None, 20)	620
dense_6 (Dense)	(None, 1)	21

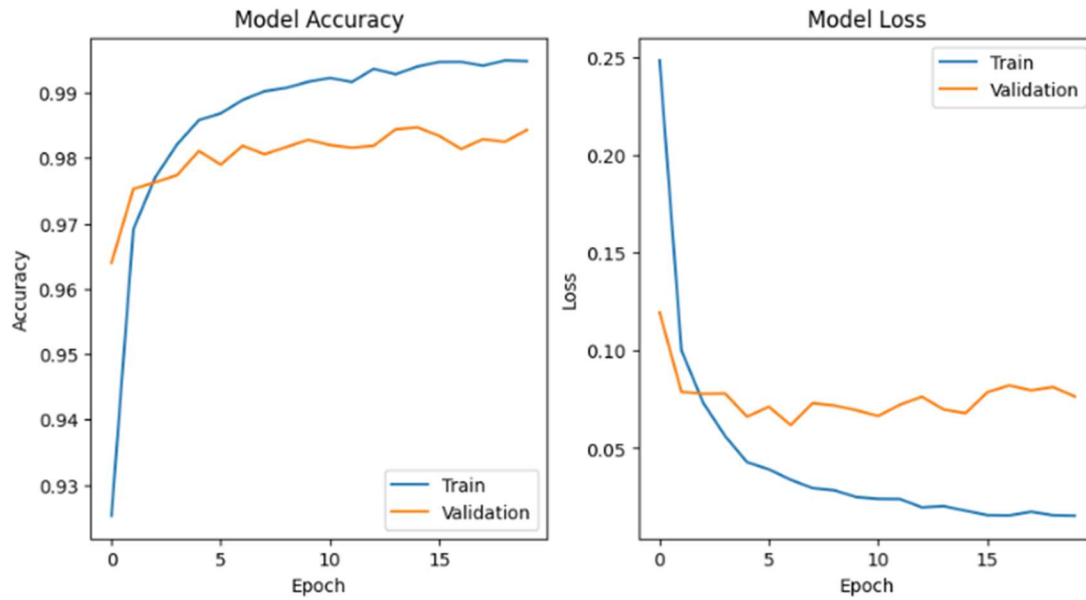
```
=====  
Total params: 641  
Trainable params: 641  
Non-trainable params: 0
```

```
None  
5/5 [=====] - 0s 4ms/step - loss: 0.6826 - acc: 0.8811  
[0.6825757622718811, 0.881118893623352]
```

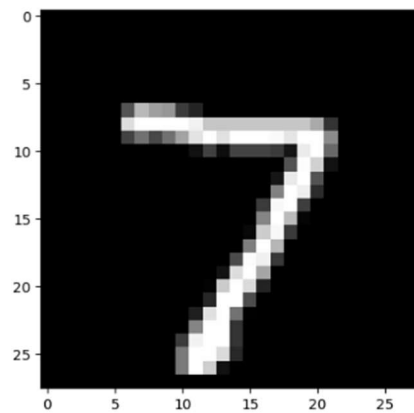
```
Downloading data from https://storage.googleapis.com/tensorflow/tf-keras-datasets/mnist.npz
11490434/11490434 [=====] - 2s 0us/step
Epoch 1/20
469/469 [=====] - 4s 5ms/step - loss: 0.2483 - accuracy: 0.9253 - val_loss: 0.1195 - val_accuracy:
0.9640
Epoch 2/20
469/469 [=====] - 2s 5ms/step - loss: 0.1000 - accuracy: 0.9691 - val_loss: 0.0789 - val_accuracy:
0.9753
Epoch 3/20
469/469 [=====] - 2s 5ms/step - loss: 0.0732 - accuracy: 0.9771 - val_loss: 0.0779 - val_accuracy:
0.9763
Epoch 4/20
469/469 [=====] - 2s 4ms/step - loss: 0.0562 - accuracy: 0.9821 - val_loss: 0.0780 - val_accuracy:
0.9774
Epoch 5/20
469/469 [=====] - 2s 4ms/step - loss: 0.0429 - accuracy: 0.9858 - val_loss: 0.0662 - val_accuracy:
0.9811
Epoch 6/20
469/469 [=====] - 2s 4ms/step - loss: 0.0392 - accuracy: 0.9869 - val_loss: 0.0712 - val_accuracy:
0.9790
Epoch 7/20
469/469 [=====] - 2s 5ms/step - loss: 0.0339 - accuracy: 0.9889 - val_loss: 0.0619 - val_accuracy:
0.9819
Epoch 8/20
469/469 [=====] - 3s 7ms/step - loss: 0.0296 - accuracy: 0.9902 - val_loss: 0.0731 - val_accuracy:
0.9806
Epoch 9/20
469/469 [=====] - 2s 4ms/step - loss: 0.0285 - accuracy: 0.9908 - val_loss: 0.0719 - val_accuracy:
0.9817
Epoch 10/20
469/469 [=====] - 2s 4ms/step - loss: 0.0251 - accuracy: 0.9917 - val_loss: 0.0695 - val_accuracy:
0.9828
Epoch 11/20
469/469 [=====] - 2s 4ms/step - loss: 0.0241 - accuracy: 0.9923 - val_loss: 0.0665 - val_accuracy:
0.9820
Epoch 12/20
469/469 [=====] - 2s 4ms/step - loss: 0.0241 - accuracy: 0.9916 - val_loss: 0.0723 - val_accuracy:
0.9816
Epoch 13/20
469/469 [=====] - 2s 4ms/step - loss: 0.0198 - accuracy: 0.9937 - val_loss: 0.0764 - val_accuracy:
0.9819
Epoch 14/20
```

Problem-2

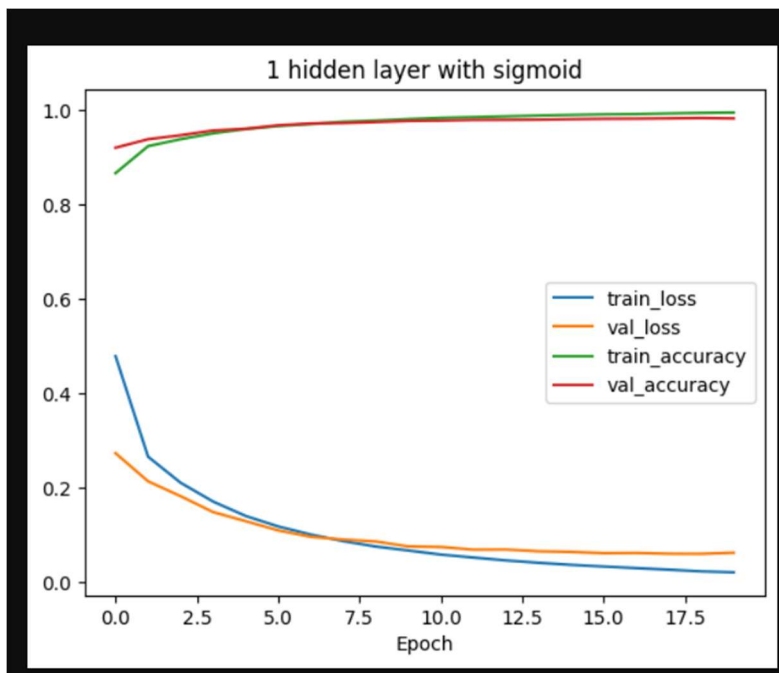
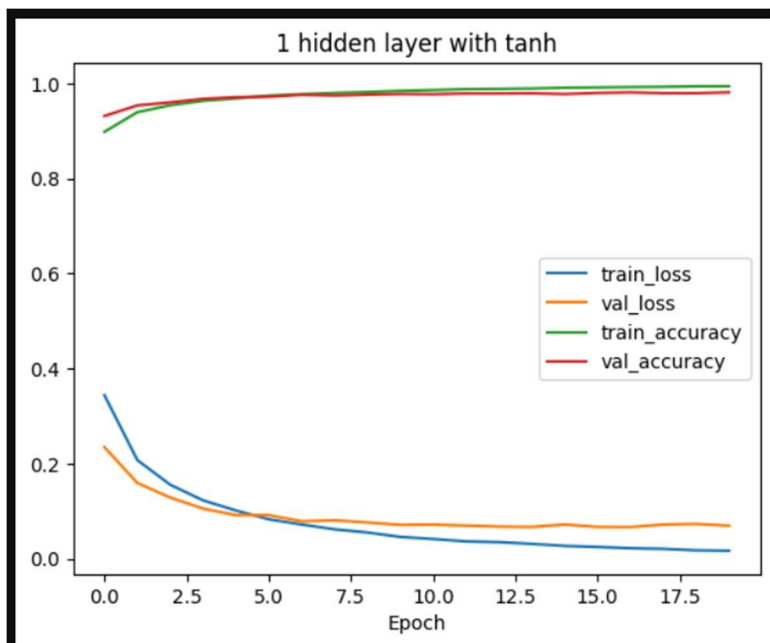
0.9845



```
Epoch 13/20
469/469 [=====] - 2s 4ms/step - loss: 0.0196 - accuracy: 0.9934 - val_loss: 0.0750 - val_accuracy: 0.9811
Epoch 14/20
469/469 [=====] - 3s 6ms/step - loss: 0.0188 - accuracy: 0.9937 - val_loss: 0.0721 - val_accuracy: 0.9823
Epoch 15/20
469/469 [=====] - 3s 6ms/step - loss: 0.0186 - accuracy: 0.9936 - val_loss: 0.0770 - val_accuracy: 0.9814
Epoch 16/20
469/469 [=====] - 2s 4ms/step - loss: 0.0174 - accuracy: 0.9941 - val_loss: 0.0789 - val_accuracy: 0.9825
Epoch 17/20
469/469 [=====] - 2s 5ms/step - loss: 0.0169 - accuracy: 0.9944 - val_loss: 0.0997 - val_accuracy: 0.9797
Epoch 18/20
469/469 [=====] - 2s 4ms/step - loss: 0.0190 - accuracy: 0.9937 - val_loss: 0.0865 - val_accuracy: 0.9816
Epoch 19/20
469/469 [=====] - 2s 4ms/step - loss: 0.0169 - accuracy: 0.9943 - val_loss: 0.0769 - val_accuracy: 0.9824
Epoch 20/20
469/469 [=====] - 3s 6ms/step - loss: 0.0157 - accuracy: 0.9948 - val_loss: 0.0775 - val_accuracy: 0.9826
```



```
1/1 [=====] - 0s 80ms/step
Model prediction: 7
```



Without scaling

