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Homework 7

1b)

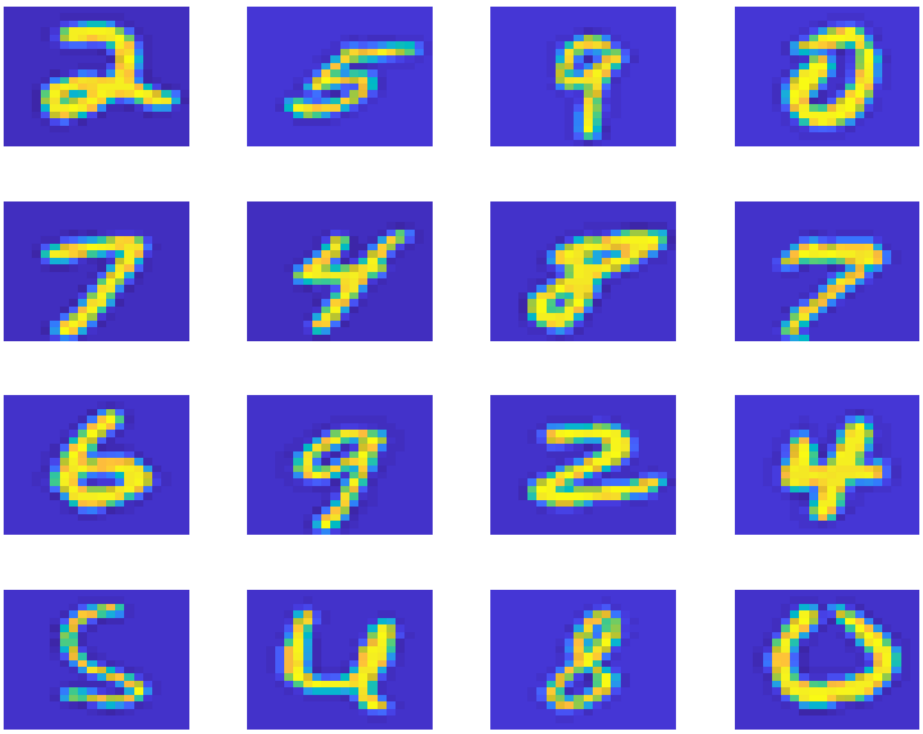

*Figure 1: output/ps7-1-b.png*

1c)

```
accuracy =

    0.9752
```

*Figure 2: output/ps7-1-c.png*

2a)

```
ans =

    0.0000
    0.2500
    0.0000
```

*Figure 3: output/ps7-2-a.png*

3a)

```
Lambda = 0

ans =

    0.2876

Lambda = 1

ans =

    0.3811
```

*Figure 4: output/ps3-3-a.png*

3b) Something is not quite right with the backpropagation as the relative difference in this part and part 3c is much larger than it should be. This also affects the accuracy in the final part.

```
the relative difference will be sma

Relative Difference: 0.00374725
```

*Figure 5: output/ps3-3-b.png*

3c)

```
Relative Difference: 0.188893
```

*Figure 6: output/ps7-3-c.png*

3d) The accuracies are much lower than you would expect due to a bug in the backpropegation that I was not able to find. My guess is that a lower lambda and a mid level max iter. Would give the highest accuracy

```
ans =

  4×4 table
```

| | MaxIter_50 | MaxIter_100 | MaxIter_200 | MaxIter_400 |
|---|---|---|---|---|
| **lambda=0** | 0.1 | 0.1 | 0.1 | 0.1 |
| **lambda=1** | 0.1 | 0.1 | 0.1244 | 0.098 |
| **lambda=2** | 0.1 | 0.1 | 0.1 | 0.1 |
| **lambda=4** | 0.1362 | 0.0882 | 0.1 | 0.1 |