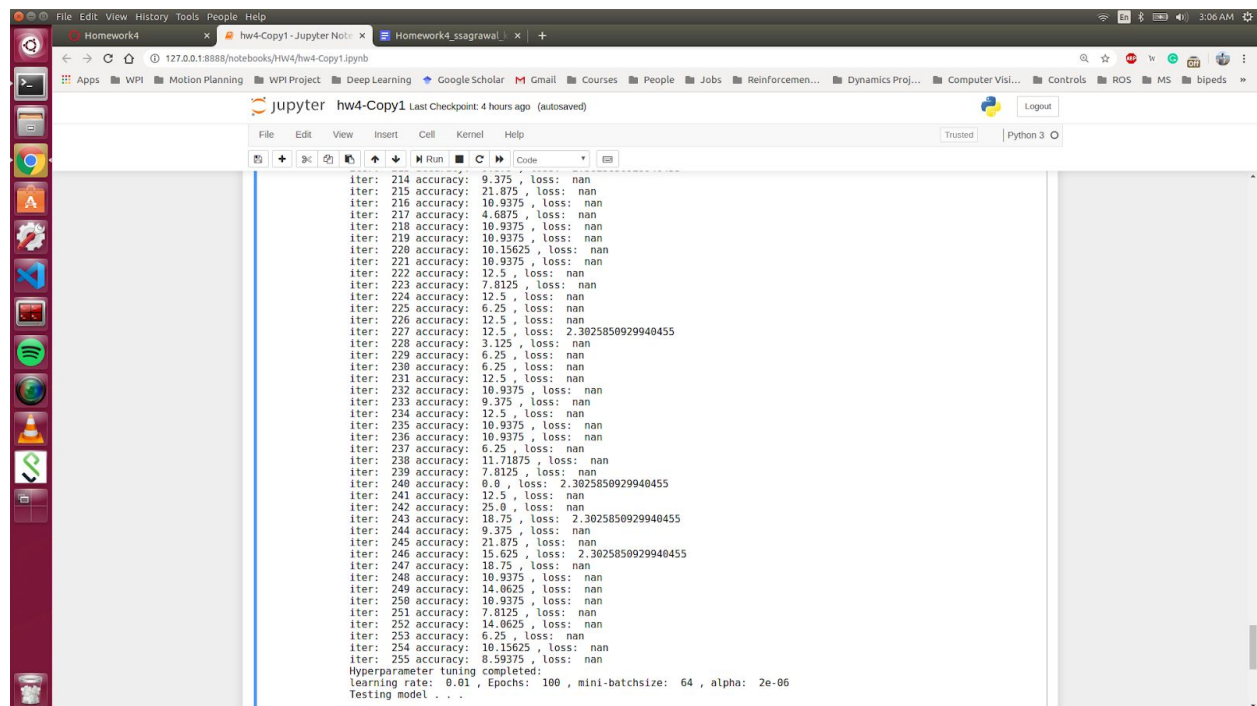
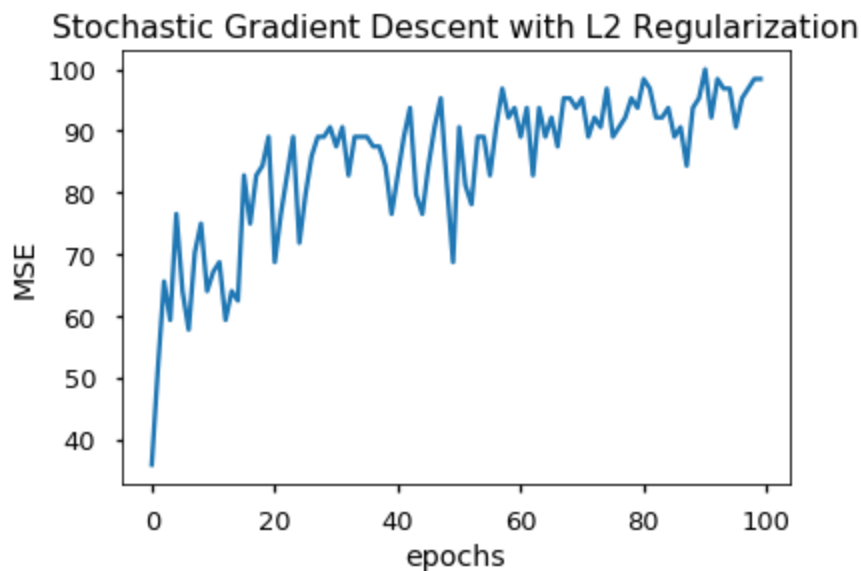


## (b) Hyperparameter Tuning:



```
Iter: 214 accuracy: 9.375, loss: nan
Iter: 215 accuracy: 21.875, loss: nan
Iter: 216 accuracy: 10.9375, loss: nan
Iter: 217 accuracy: 4.6875, loss: nan
Iter: 218 accuracy: 10.9375, loss: nan
Iter: 219 accuracy: 10.9375, loss: nan
Iter: 220 accuracy: 10.15625, loss: nan
Iter: 221 accuracy: 10.9375, loss: nan
Iter: 222 accuracy: 12.5, loss: nan
Iter: 223 accuracy: 7.8125, loss: nan
Iter: 224 accuracy: 12.5, loss: nan
Iter: 225 accuracy: 6.25, loss: nan
Iter: 226 accuracy: 12.5, loss: nan
Iter: 227 accuracy: 12.5, loss: 2.3025850929940455
Iter: 228 accuracy: 3.125, loss: nan
Iter: 229 accuracy: 6.25, loss: nan
Iter: 230 accuracy: 6.25, loss: nan
Iter: 231 accuracy: 12.5, loss: nan
Iter: 232 accuracy: 10.9375, loss: nan
Iter: 233 accuracy: 9.375, loss: nan
Iter: 234 accuracy: 12.5, loss: nan
Iter: 235 accuracy: 10.9375, loss: nan
Iter: 236 accuracy: 10.9375, loss: nan
Iter: 237 accuracy: 6.25, loss: nan
Iter: 238 accuracy: 11.71875, loss: nan
Iter: 239 accuracy: 7.8125, loss: nan
Iter: 240 accuracy: 0.0, loss: 2.3025850929940455
Iter: 241 accuracy: 12.5, loss: nan
Iter: 242 accuracy: 25.0, loss: nan
Iter: 243 accuracy: 18.75, loss: 2.3025850929940455
Iter: 244 accuracy: 9.375, loss: nan
Iter: 245 accuracy: 21.875, loss: nan
Iter: 246 accuracy: 15.625, loss: 2.3025850929940455
Iter: 247 accuracy: 18.75, loss: nan
Iter: 248 accuracy: 10.9375, loss: nan
Iter: 249 accuracy: 14.0625, loss: nan
Iter: 250 accuracy: 10.9375, loss: nan
Iter: 251 accuracy: 7.8125, loss: nan
Iter: 252 accuracy: 14.0625, loss: nan
Iter: 253 accuracy: 6.25, loss: nan
Iter: 254 accuracy: 10.15625, loss: nan
Iter: 255 accuracy: 8.59375, loss: nan
Hyperparameter tuning completed:
learning rate: 0.01, Epochs: 100, mini-batchsize: 64, alpha: 2e-06
Testing model . . .
```

## (c) Results:



**Total Layers:** 3 (Input + Hidden + Output)

**Hidden Layers:** 40 neurons

**accuracy (mean over last 10 samples):** **96.40**

**Cross entropy loss on test data:** 0.3201685067841064

**Tuned Hyperparameters:**

learning rate: 0.01, Epochs: 100, mini-batchsize (in %): 64, alpha: 2e-06

