**24-677 Modern Control Theory  
Project 4**

**Exercise 1:**

1. **100 Step Kalman Filter**

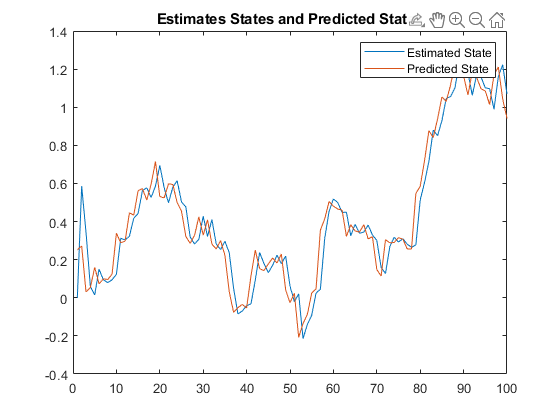


Figure 1: Graph of Estimated and Predicted States

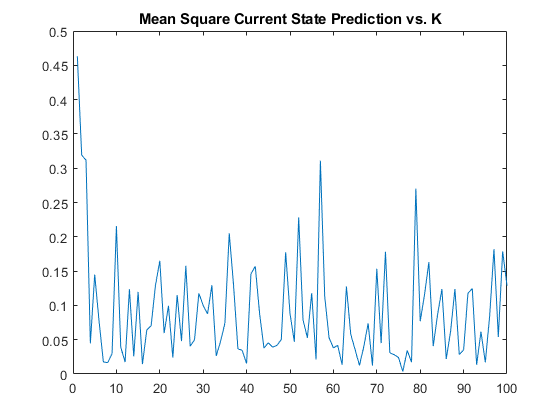


Figure 2: Graph of Mean Square Current State Prediction Error vs K

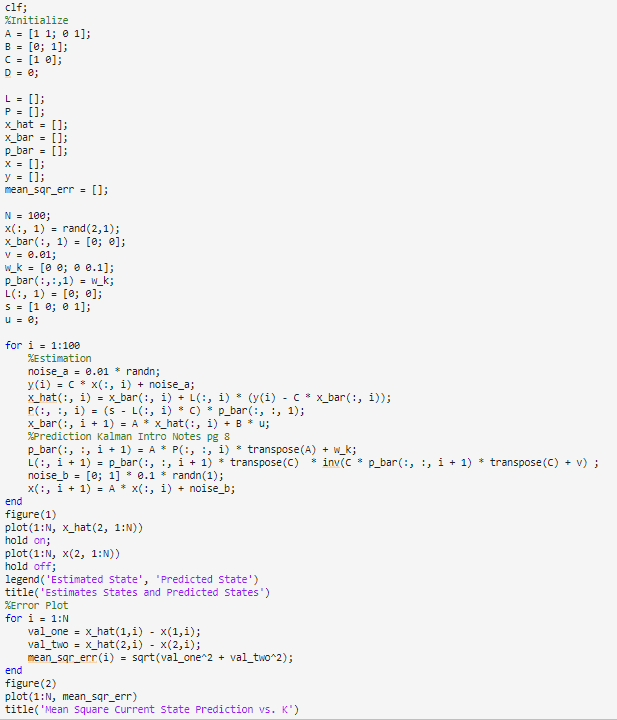


Figure 3: Code for Exercise 1.1

1. **Kinematic Kalman Filter**

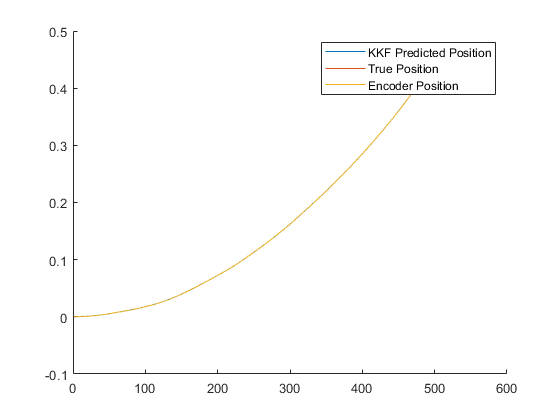


Figure 4: Graph of True State, Position State, and Encoder State

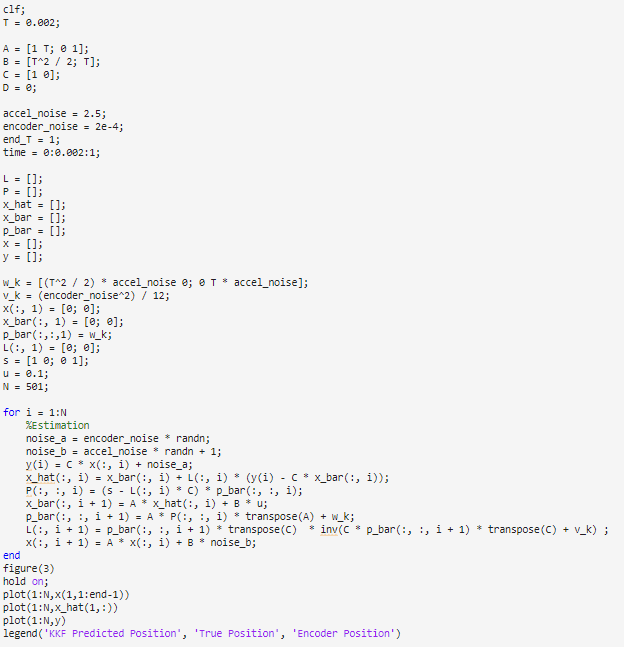
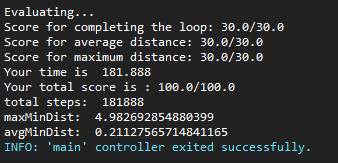
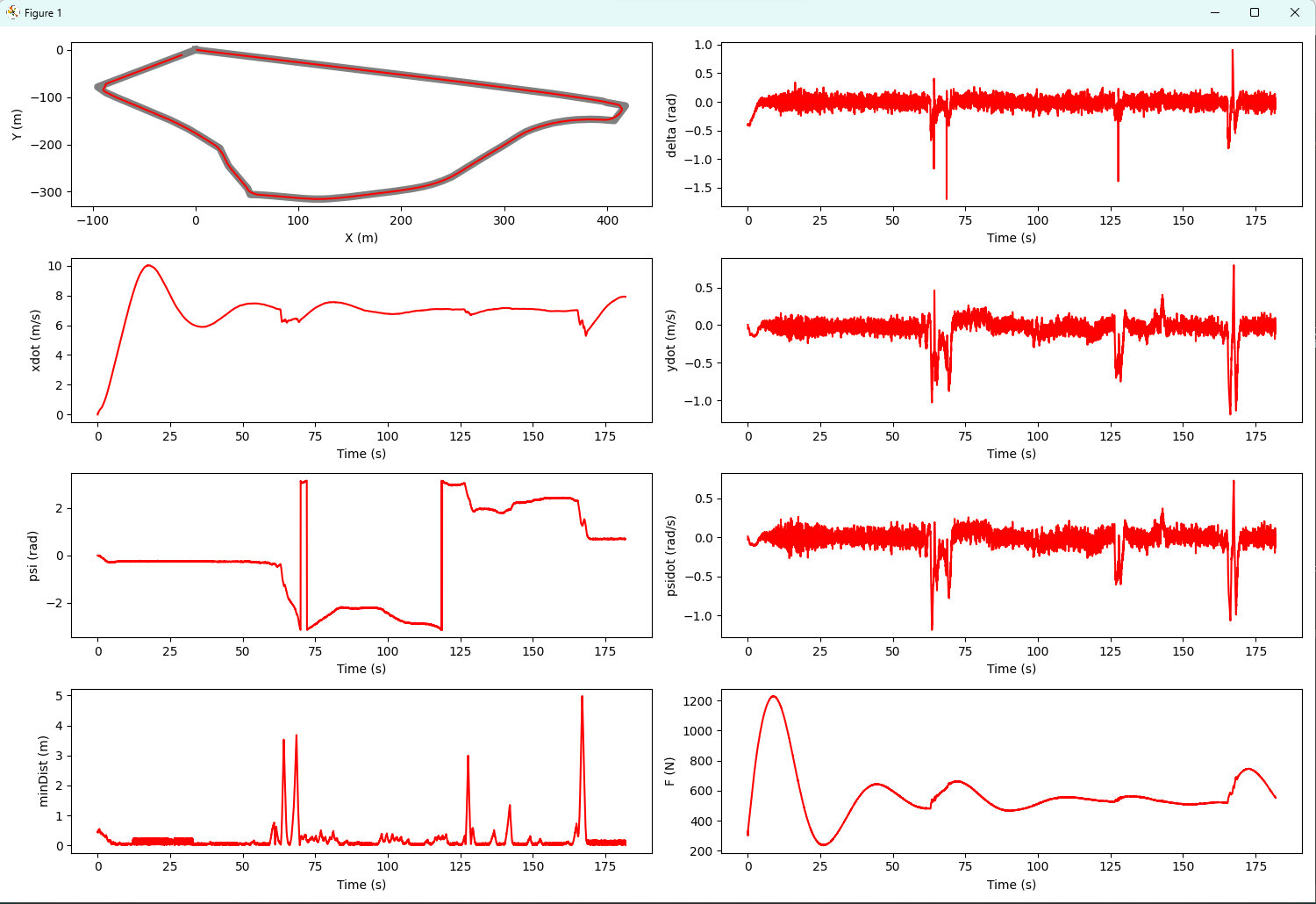


Figure 5: Code for Exercise 1.2

**Exercise 2:**

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