

1. MATLAB Stateflow

1. Design a Stateflow chart to simulate a washing machine cycle with states such as Fill, Wash, Rinse, Spin, and Done. Define each state's operation and simulate the flow from start to end.
 2. Construct a Stateflow chart for an elevator control system. The elevator should have states for each floor (e.g., Floor 1, Floor 2, etc.) and transitions for Up and Down. Add logic for door open/close.
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2. MATLAB Programming

1. Develop a MATLAB script that simulates and plots the trajectory of a projectile. Take into account initial velocity, launch angle, and gravitational acceleration. Plot the range and maximum height.
 2. Write a MATLAB script to generate a sequence of random numbers and plot them as a line graph.
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3. Simulink

1. Develop a Simulink model for an RC circuit and simulate its response to a step input voltage. Plot the charging and discharging curve of the capacitor and analyze the time constant.
2. Create a Simulink model to simulate the temperature change in a water tank as it heats up over time. Use a basic heat source and observe the temperature rise.

4. PID Control in MATLAB/Simulink

1. $tf = (s^3 - s + 10) / (s^4 + 3s^2 - 20)$
2. $tf = (s^3 + 2s^2 + s + 10) / (s^4 + 3s - 20)$