Objective:

Create a three-state control switch to swing the stick from directing downward to upward.
State range:
state 1: q2 = 180 +/- 10 degree.
state 3: q2 = 0 +/- 25 degree.
state 2: q2 = other.
State change can be only executed in the order of state1->state3->state2->state1...

1. Items done this session:

Creating a SimuLink model including previous implementation of simulation and real collecting models into two subsystems.
We added switch to choose between either simulation subsystem or real subsystem, which pass [q2, q2dot] from one of the subsystems into multi-port switch that has three state condition.

Then we created a control function which take [q1,q2dot, interval1, interval2] as input argument and out put a control state in order to decide whether the current state should be chosen for the multi-port switch. Interval1 = 25 and interval2 = 10 degree in our first trial case.

For the switch, we put state 1 a sin-wave with amplitude of 10 and frequency of 10, state 2 and state 3 for constant zero.

In the first few trials of different amplitude and/or frequency in the sin-wave, the stick still cannot successfully swing up to the third state region.

After we tried setting interval2 from 10 to 30 degree, and the sin-wave amplitude 10 and frequency 20, it successfully swing to the state3 region.

2. Items for next session:

Confirm the implementation and continue the lab.

3. Problems / Concerns:

It might be some incorrectness in our implementation because we cannot swing to the top with the 30 and 10 interval value.