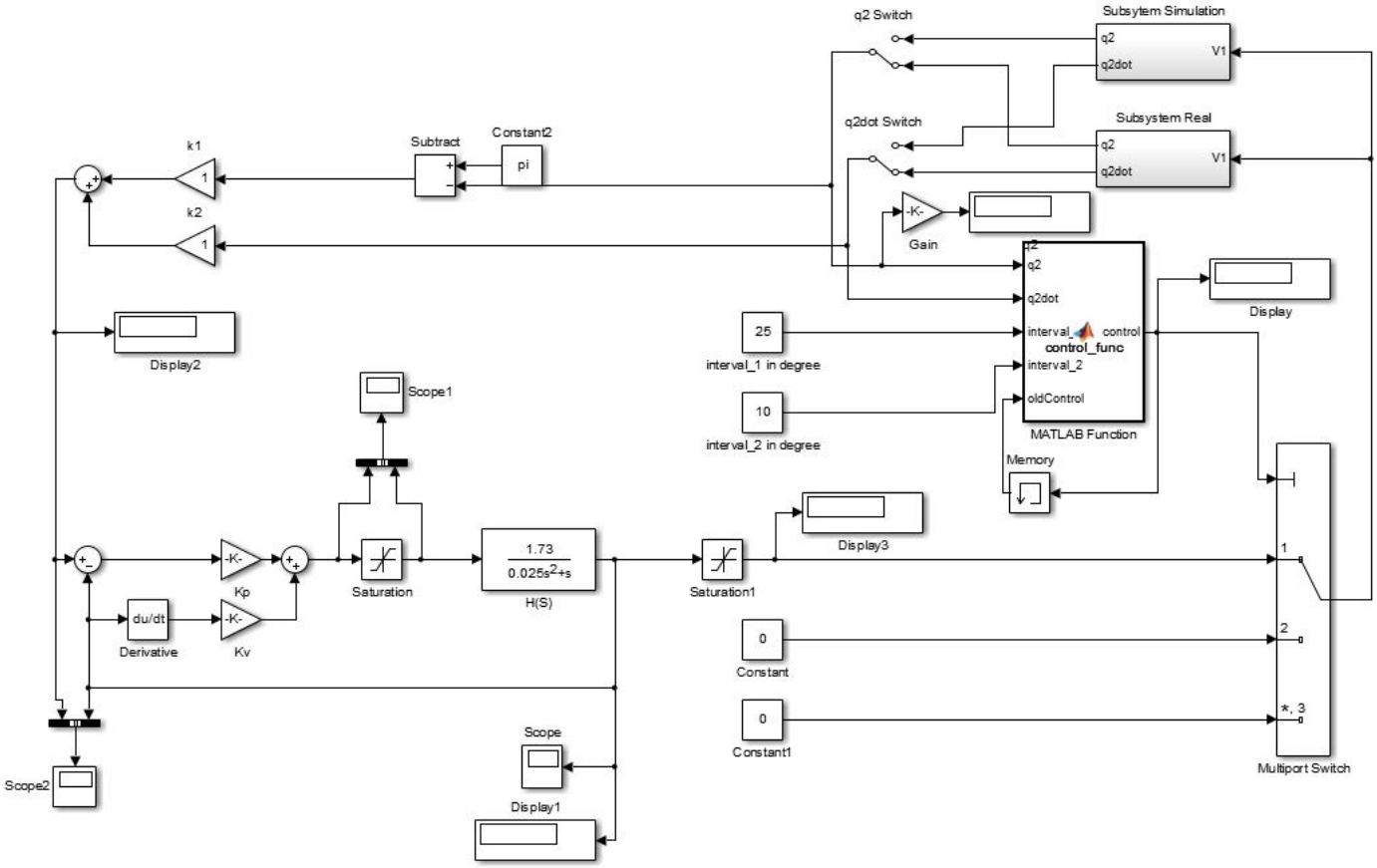
1. Items done this session:

This time, we continue on calculating the system overall transfer function to derive Kp and Kv through comparing with the desired second-order transfer function formed by Theta and Wn of the last lab. Our Kp and Kv are 12.1 and -9.11e-4. The design our final design this time show in the following picture.



For this time, we add PD controller before simplified Robotic model H(s) as to calculate q1 actual replacing the previous sin-wave. And we put the q2 and q2dot into q1D = k1*q2 + k2*q2dot. For our implementation, the subsystems output q2 range in [0, 2pi], so we have to add a pi shift after q2. Furthermore, we add saturation of +/- 10 before H(s) and +/- pi after q1 actual.

After implemented this model, we'd tried various combinations of k1 and k2. The results are swinging at mot close to the top, yet cannot move over the top.

2. Items for next session:

For next time, we're going to continue to figure out the k1, k2 parameters and double check other parts of the implementation.

3. Problems / Concerns:

We're not sure about the saturation of q1 actual is used correctly or not and other parts of the model that might affect our result.