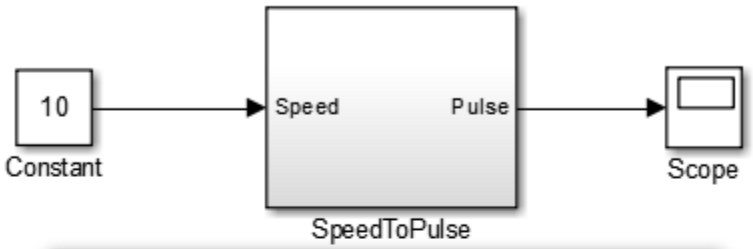
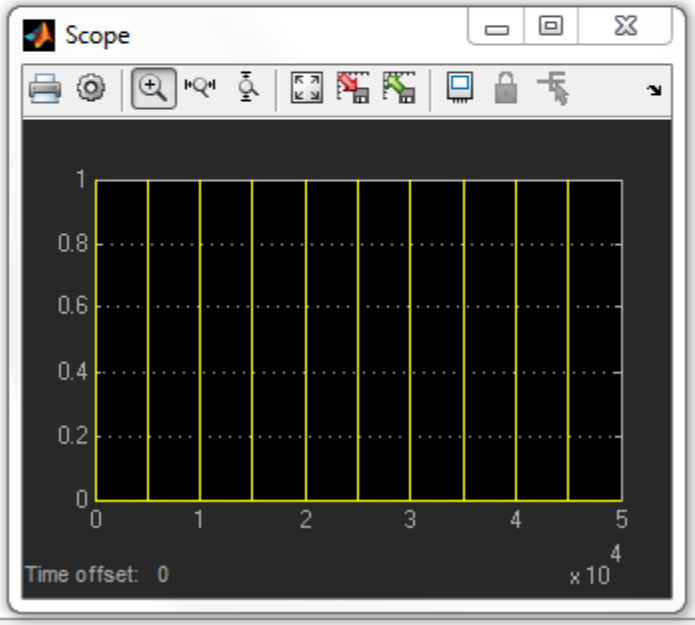
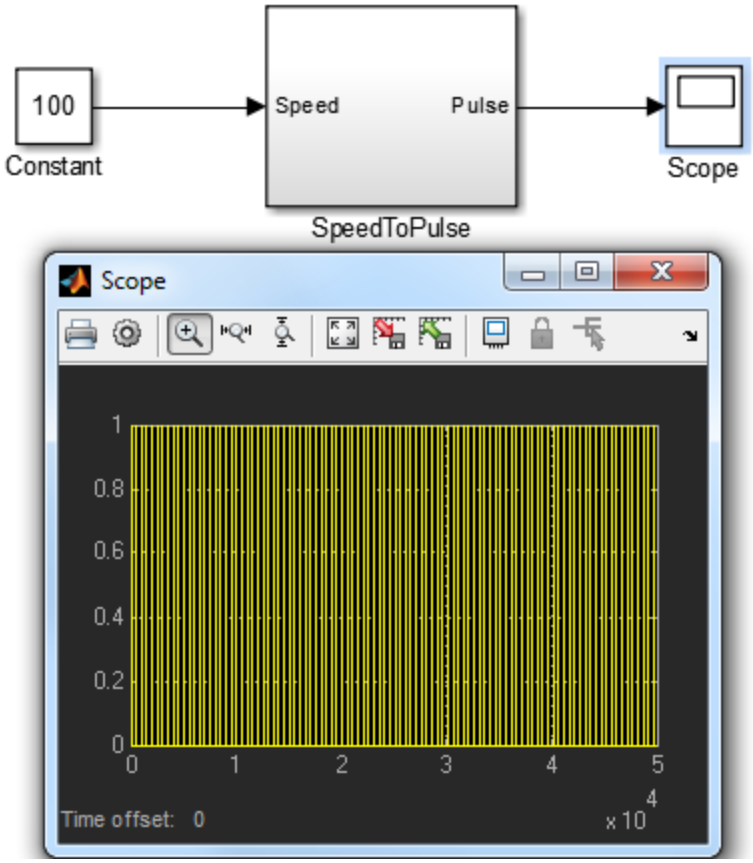
Raymond You
Patrick Sheehan

Lab 10

Assignment 1

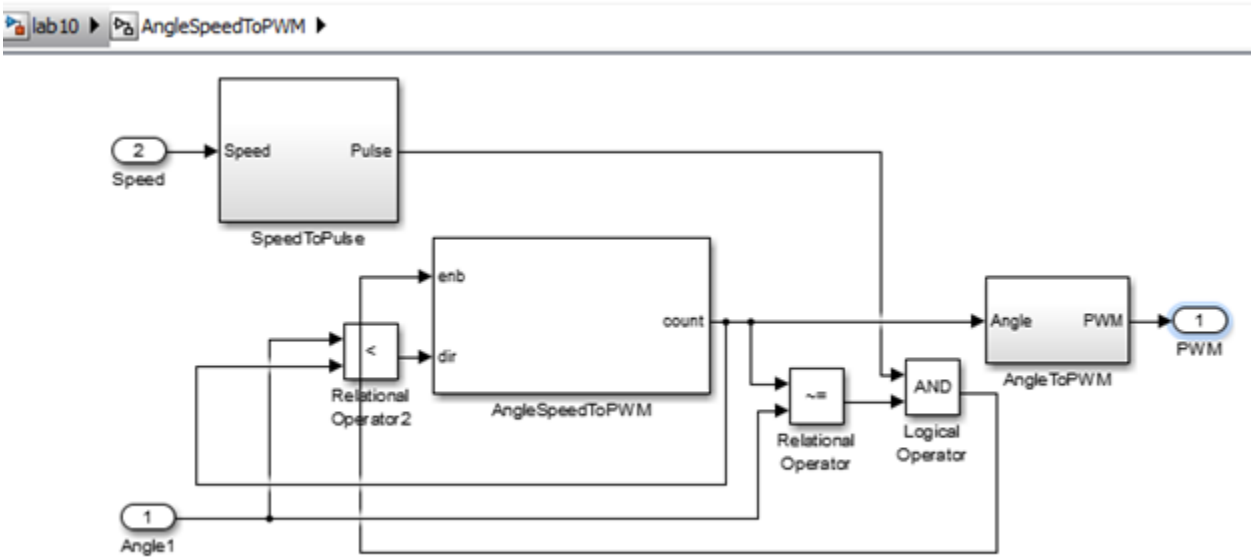


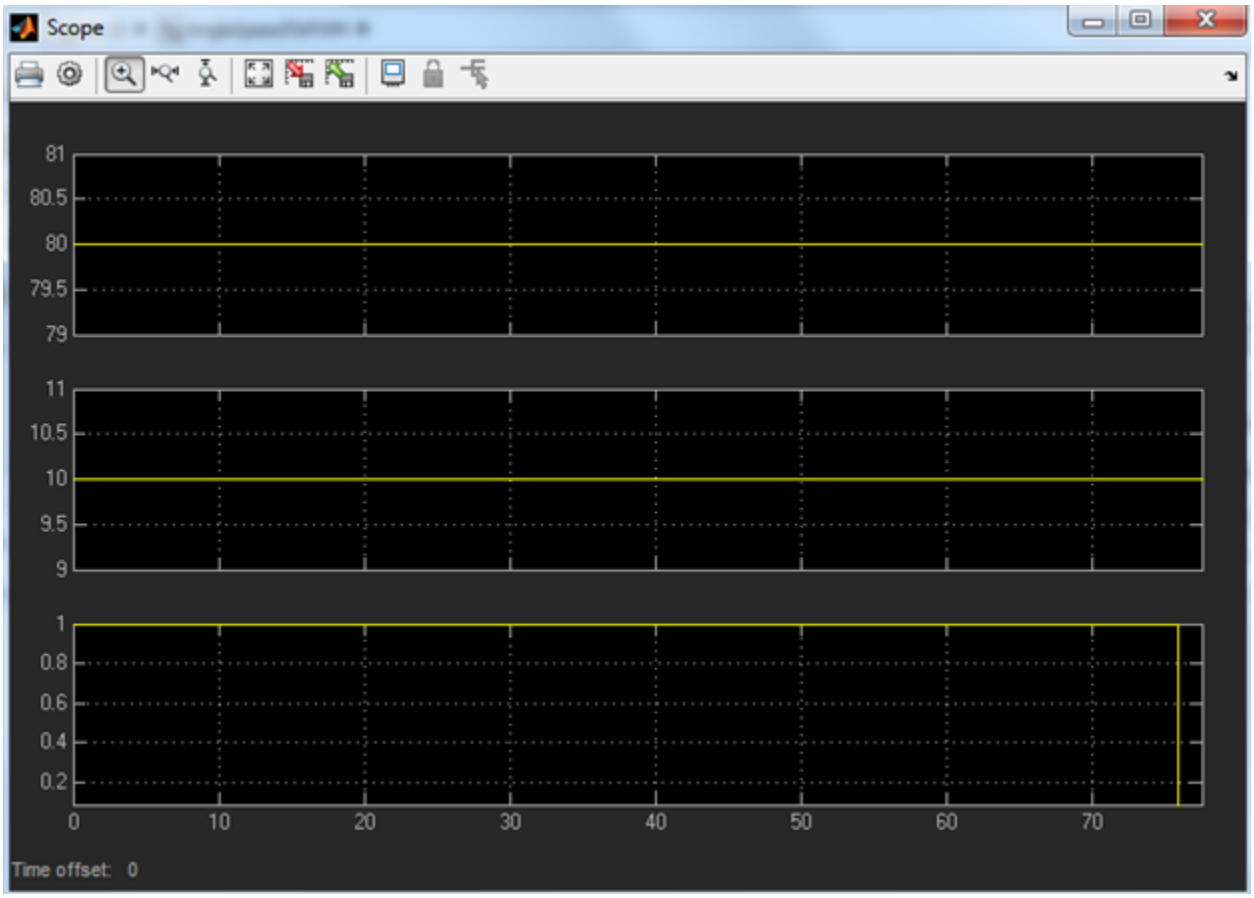


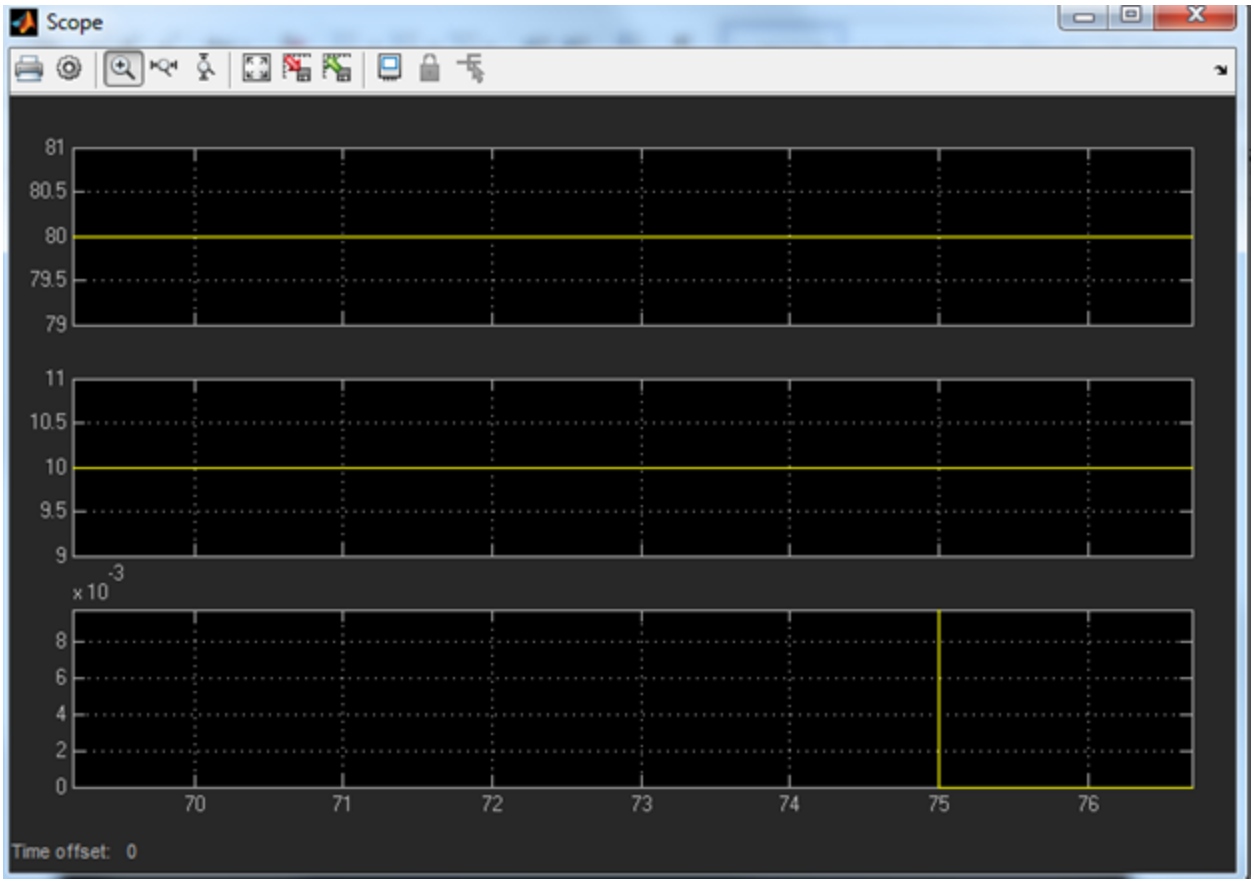


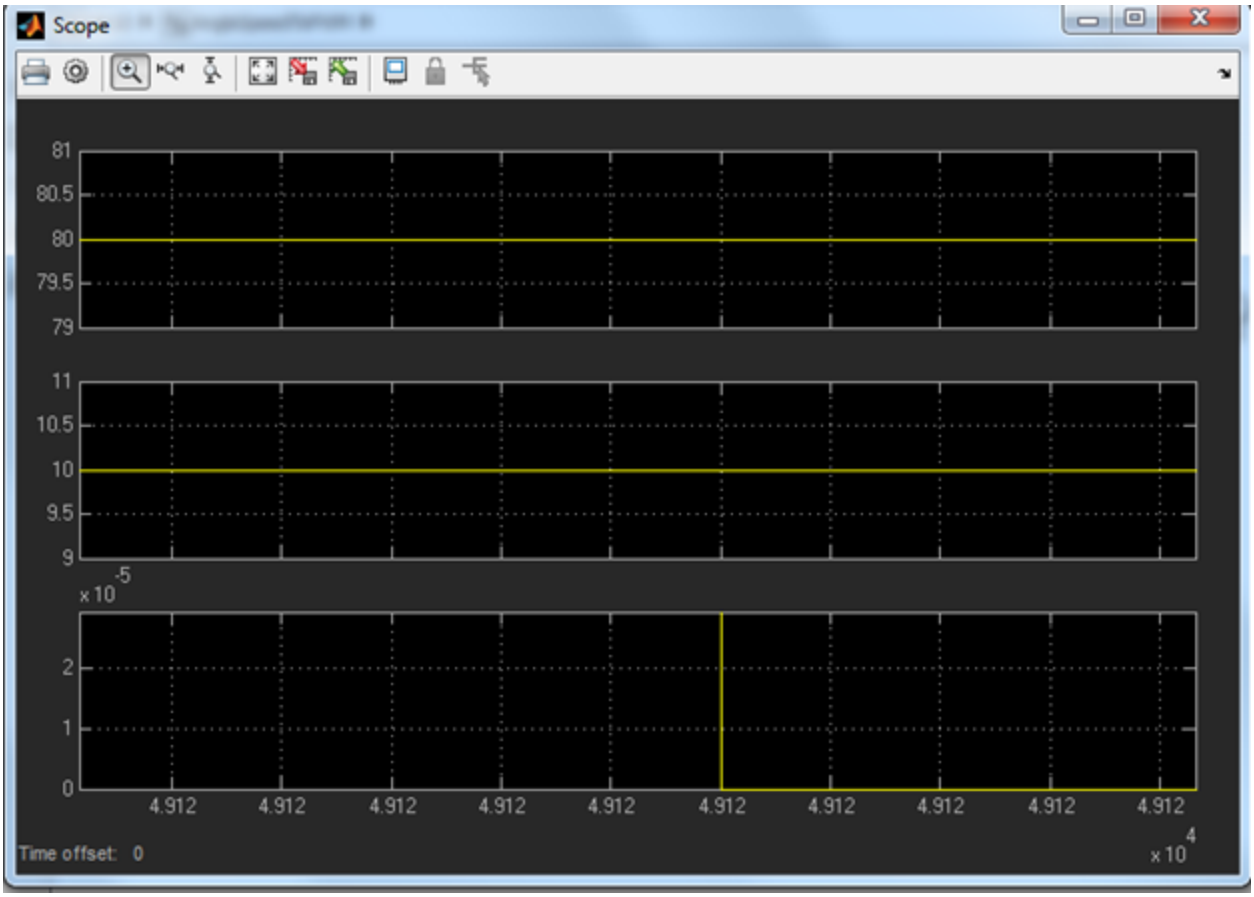
The faster the speed, the smaller the period.

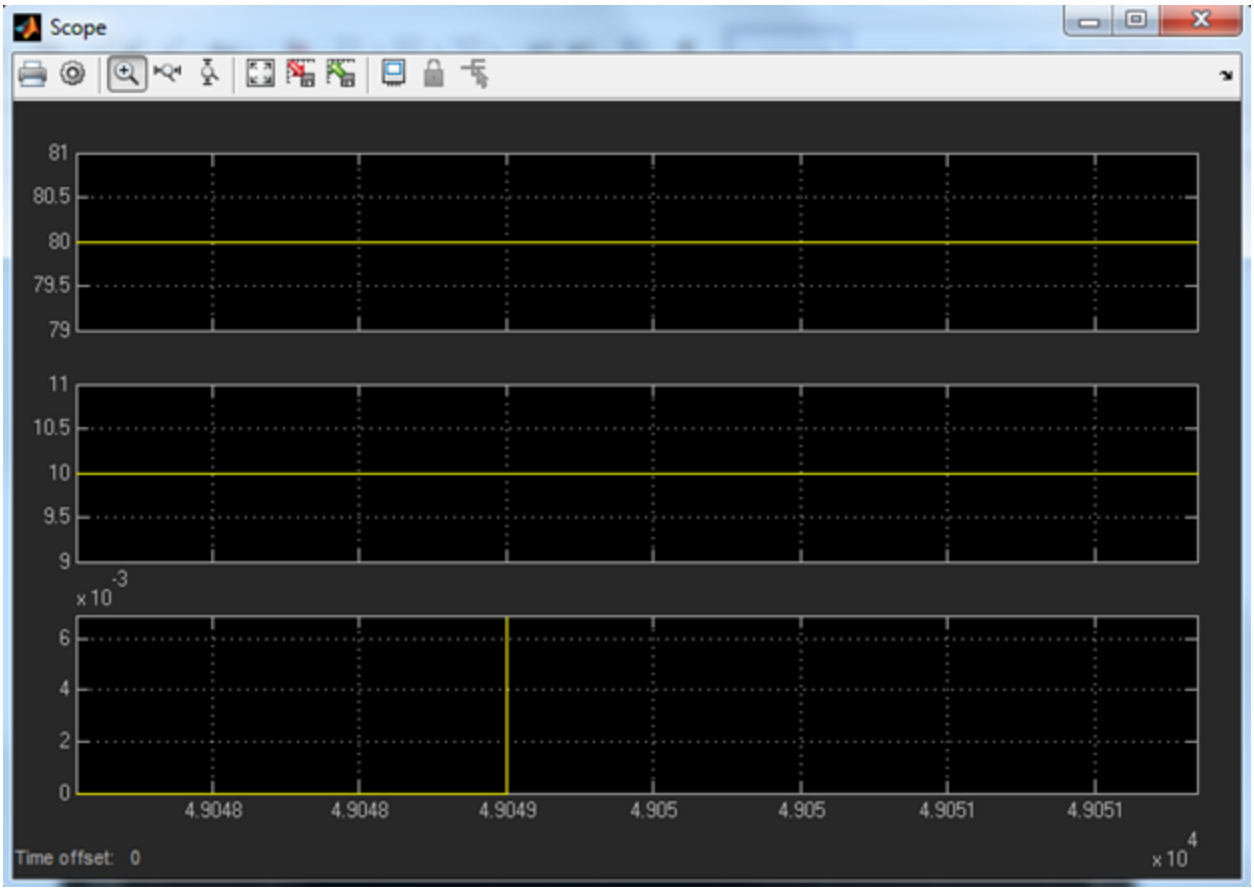
Assignment 2






Scope
81
80.5
80
79.5
79
11
10.5
10
9.5
9
x 10^-3
8
6
4
2
0
70
71
72
73
74
75
76
Time offset: 0


Scope
81
80.5
80
79.5
79
11
10.5
10
9.5
9
x 10^-5
2
1
0
4.912
4.912
4.912
4.912
4.912
4.912
4.912
4.912
4.912
4.912
Time offset: 0
x 10^4



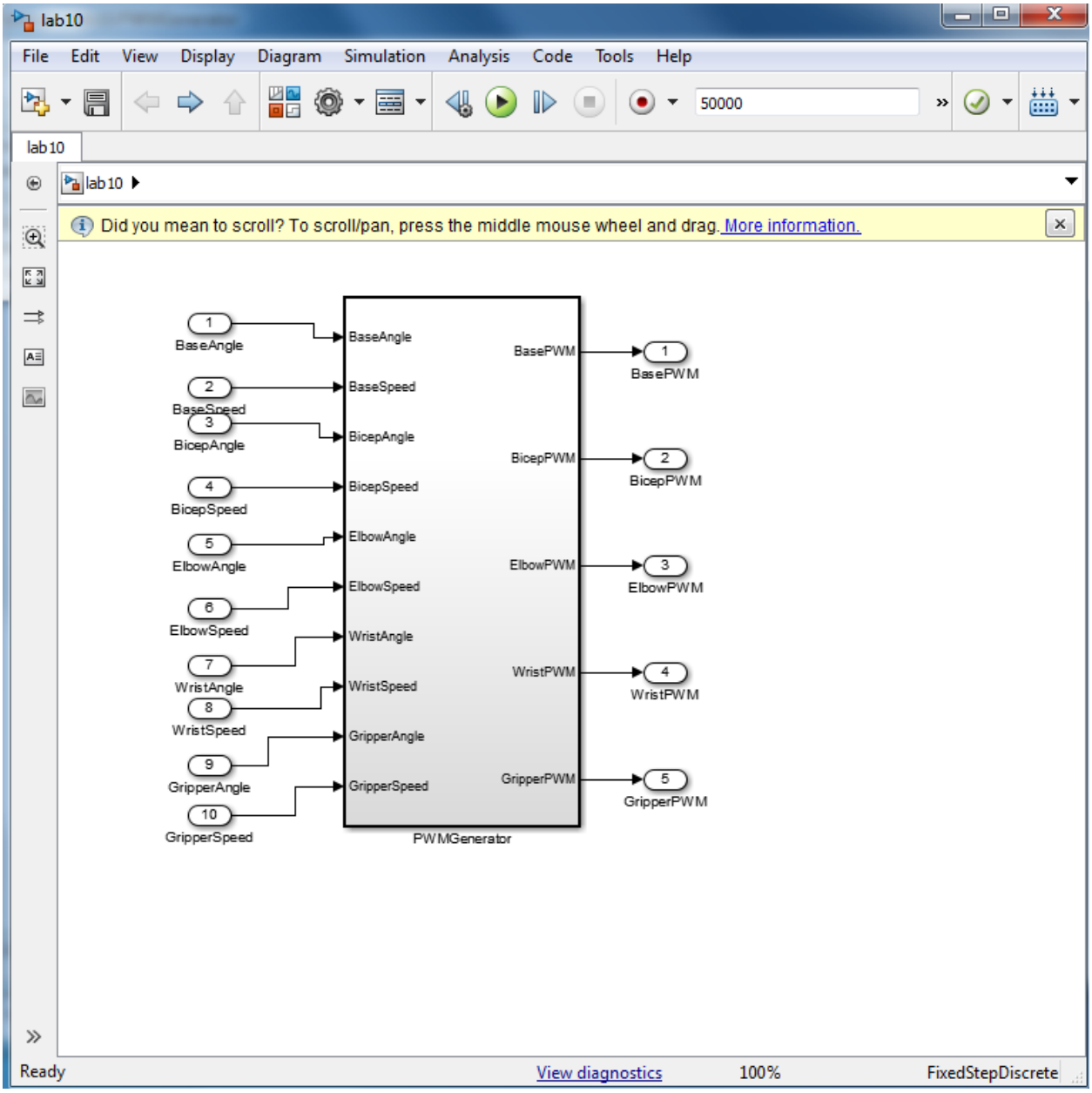
4.912 – 4.9049 = 0.0080

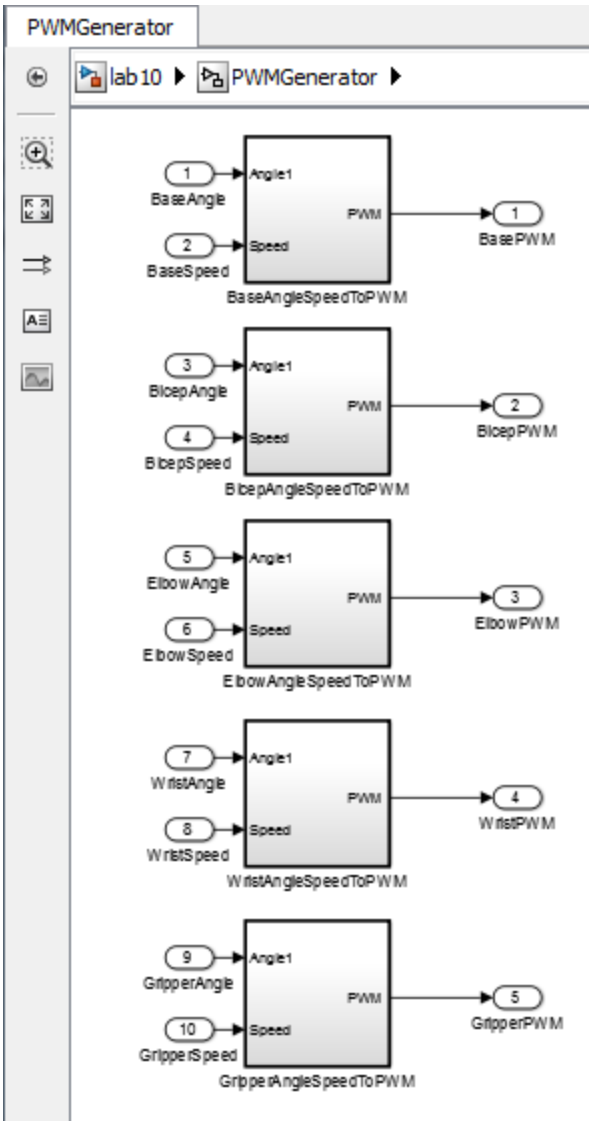
The AngleSpeed controls how fast the angle counter changes. So the angle you start with at the beginning with is 90 degrees, slowly alters to the given angle which was 80 degrees.

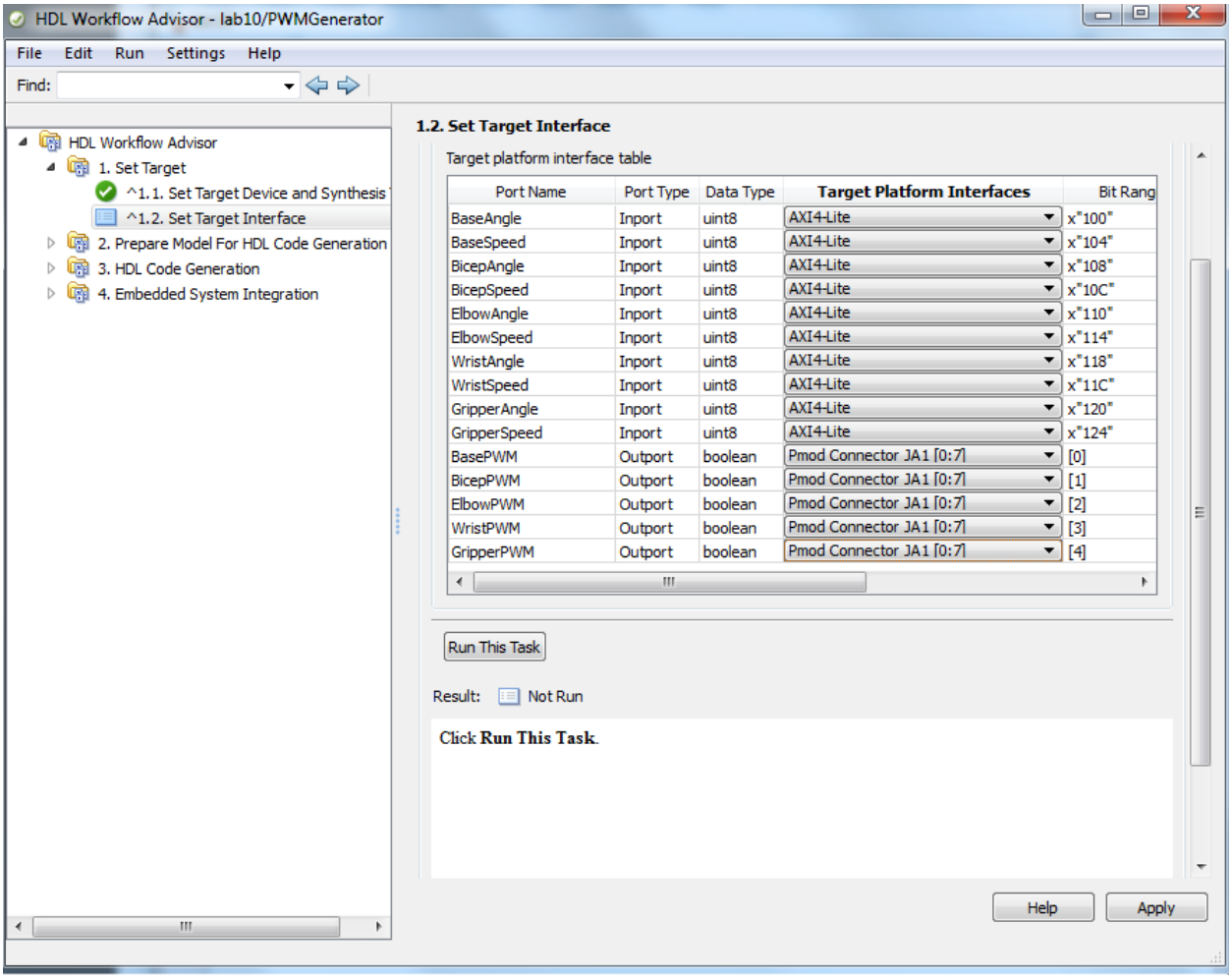
Assignment 3

Video attached to demonstrate

Assignment 4




PWMGenerator
lab10
PWMGenerator
1
BaseAngle
2
BaseSpeed
Angle1
Speed
PWM
BaseAngleSpeedToPWM
1
BasePWM
3
BicepAngle
4
BicepSpeed
BicepAngleSpeedToPWM
2
BicepPWM
5
ElbowAngle
6
ElbowSpeed
ElbowAngleSpeedToPWM
3
ElbowPWM
7
WristAngle
8
WristSpeed
WristAngleSpeedToPWM
4
WristPWM
9
GripperAngle
10
GripperSpeed
GripperAngleSpeedToPWM
5
GripperPWM


HDL Workflow Advisor - lab10/PWMGenerator
File Edit Run Settings Help
Find:
HDL Workflow Advisor
1. Set Target
^1.1. Set Target Device and Synthesis
^1.2. Set Target Interface
2. Prepare Model For HDL Code Generation
3. HDL Code Generation
4. Embedded System Integration
1.2. Set Target Interface
Target platform interface table
Port Name | Port Type | Data Type | Target Platform Interfaces | Bit Rang
BaseAngle | Inport | uint8 | AXI4-Lite | x"100"
BaseSpeed | Inport | uint8 | AXI4-Lite | x"104"
BicepAngle | Inport | uint8 | AXI4-Lite | x"108"
BicepSpeed | Inport | uint8 | AXI4-Lite | x"10C"
ElbowAngle | Inport | uint8 | AXI4-Lite | x"110"
ElbowSpeed | Inport | uint8 | AXI4-Lite | x"114"
WristAngle | Inport | uint8 | AXI4-Lite | x"118"
WristSpeed | Inport | uint8 | AXI4-Lite | x"11C"
GripperAngle | Inport | uint8 | AXI4-Lite | x"120"
GripperSpeed | Inport | uint8 | AXI4-Lite | x"124"
BasePWM | Outport | boolean | Pmod Connector JA1 [0:7] | [0]
BicepPWM | Outport | boolean | Pmod Connector JA1 [0:7] | [1]
ElbowPWM | Outport | boolean | Pmod Connector JA1 [0:7] | [2]
WristPWM | Outport | boolean | Pmod Connector JA1 [0:7] | [3]
GripperPWM | Outport | boolean | Pmod Connector JA1 [0:7] | [4]
Run This Task
Result: Not Run
Click Run This Task.
Help
Apply

Assignment 5

Attached a video to demonstrate the object throw.

Assignment 6

In the main file:
All the angles for each servo are initially set to 90. You press up to set the direction up (increase angle) and you press down to set the direction down (decrease angle). The angle is in the bound of 0 to 180. The minus button controls the base. The home button controls the bicep. The plus button controls the elbow. The one button controls the wrist. The two button controls the gripper. At the end of the while loop, it moves all 5 servos to the correct location.