Introduction
For this lab session we will develop a Fuzzy Logic Controller to balance an Inverted Pendulum. This will involve a number of steps which will conclude with testing the Fuzzy Logic controller using a simulated cart and pole system written in Java.

Step 1
Download the FuzzyLite system from http://www.fuzzylite.com/downloads/

Step 2
Define a set of Linguistic variable that represent the cart and pole system. See lecture notes.

Step 3
Define a set of rules for controlling the force applied to the cart. See lecture notes.

Step 4
Test the Fuzzy system within qtFuzzyLite to make sure it works.

Step 5
Export the Java code for the system by going to the file menu and selecting Export and then Java.

Step 6
Ensure that you have Java 1.7 installed on your system. You may need to download the 1.7 JDK from Oracle.

http://www.oracle.com/technetwork/java/javase/downloads/jdk7-downloads-1880260.html

Step 7
Download the pole.java file from MOODLE.

Step 8
Fill in the TODO sections in the pole.java file with the code exported from FuzzyLite.

Step 9
You may need to copy the appropriate JAR files for fuzzylite into the system JRE/LIB/EXT folder. You can download the JAR files from MOODLE or you can download the fuzzylite source files and build the JAR files yourself.

Step 10
Compile and run the pole Applet to test your Fuzzy Logic Controller.