ECE59500 – Introduction to Discrete Event Dynamic Systems

Fall 2015 Project 1: Programming Assignment

Due: ***December 13*** *(Sunday) by 5pm EST.* ***(Late submissions are not accepted).***

You are asked to form a team of two. Submit your project report and computer program in a zip file by the due date electronically on OnCourse along with the printouts (obtained from the program) showing the results.

In this project we are dealing with the "Cat and Mouse" problem. Consider the house layout shown in Figure 1, which contains four rooms 1, 2, 3, 4. The owner has a pet cat and a pet mouse. The cat and the mouse can move following the directions of the arrows in the house (Red for cat, Purple for mouse). Now assume that initially the cat is in Room 4 and the mouse is in Room 1.

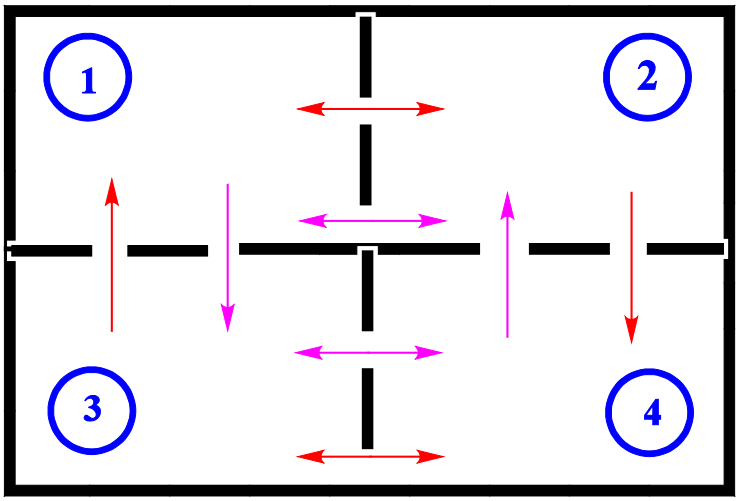

Figure 1. Layout of a house.

You are asked to:

1. Build a Petri net model for the movement of the cat;
2. Build a Petri net model for the movement of the mouse;
3. Design a Petri net controller to guarantee that the cat and mouse can never be in the same room.
4. Write a computer program (preferably in Matlab or C) to calculate all possible reachable states of the **Controlled Petri net**.