CSE 4610/5110

**Requirements Engineering**

**Spring 2018**

**Date due: 04/05/2018**

1. We do not need to define properties in SpeAR, specifying requirements is enough. Explain for or against the topic (**5 points**)

2. Design the cruise controller as specified below in SpeAR and prove properties as mentioned below: (**75 points**)

Specification for a Cruise Controller (CC)

1. To enable cruise control functionality cruise button should be pressed.

2. CC can be in the OFF state, ARMED state (on, but not set) and ACTIVE state (i.e., cruising is on and speed set).

3. Once CC is ARMED and set cruise button is pressed CC changes state to ACTIVE

4. When the system is under CC (ACTIVE) and the brake is pressed, CC is disabled.

5. When the current speed is less than threshold CC is in ARMED state.

Properties to prove:

1. Initial mode is OFF or ARMED
2. CC is disabled when brake is pressed
3. When set cruise is not pressed the mode should not be ACTIVE
4. When speed is below desired speed 35mph CC is not ACTIVE
5. CC should be in ARMED state before going to ACTIVE state
6. When CC is enabled it should not be in OFF state
7. When Mode is ACTIVE desired speed is greater than threshold.
8. When set cruise is set and cruise is enabled CC should be in ACTIVE state
9. While proving properties indicate if any properties failed to prove
10. For properties that failed what did the counterexample indicate the reason for failure,
11. Now modify the property to see if it proves.