CS F214
Logic in CS

BITS Pilani, Hyderabad Campus

Assignment -3

Total Marks: 18 (weightage : 6%)

Objective: In this assignment, you will learn the software NuSMV as described in Section 3.3.2 of your textbook used for Model checking. It allows you to model the LTL transition system and checks if a given LTL formula is satisfied in that model.

NuSMV is present in the Systems and Data Science Lab. To enter the NuSMV command line, use the command 'NuSMV -int'. The Link to NuSMV is http://nusmv.fbk.eu/. Feel free to use the User Manual and Tutorials to understand the basics of it. You can discuss with your peers also.

DAY 1
[Marks = 8]

Which of the following pairs of CTL formulas are equivalent? For those which are not, exhibit a model of one of the pair which is not a model of the other:

1. EF $\emptyset$ and EG $\emptyset$
2. EF $\emptyset$ V EF φ and EF ($\emptyset$ V φ)
3. AF $\emptyset$ V AF φ and AF ($\emptyset$ V φ)
4. EF ~$\emptyset$ and ~AF $\emptyset$

Tasks:
1. Create a file "Ans_Day1.txt" having your answers for each part.
2. If the formulas are equivalence, write proper arguments in the "Ans_Day1.txt" file.
3. If they are not, write a program to create the models in NuSMV. Each model should be present in a separate '.smv' file. You should include the model filename and model description in case of non – equivalence in "Ans_Day1.txt" file.

Guidelines:
- This assignment should be done as per the old group.
- Zip all the files including "Ans_Day1.txt" and all the files for models(.smv). The name of the zip file should be "LOGIC_A3_DAY1.zip".
- Submission will be done in the same manner as you have done for assignment1 and 2. You will submit the final zip file.
- You can discuss with your friends but refrain from copying the code and submitting.
- please do not use code downloaded from internet. Such codes will receive 0 credits.
- You have to demo the code to the instructor on a scheduled date and timing after submission.
- All the members should be present during the demo. Absence from demo will amount to no credit for the assignment.