Formal Methods in Software Engineering

Assignment 3

Due Date: Azar 21th

Please be sure to upload your solution as an ALS to the course website before the due date.

Hollywood is a wealthy city; There are many buildings in Hollywood, and every person lives exactly in one of them. Some of those buildings are cinemas. Each cinema has at least one screen that, at specific times, plays movies. Movies cast actors and actresses and hire exactly one director, and some movies have sequels like all marvel movies. It is also good to know that there are people with other professions in this city, and any of them (actor or not) might be married.

- Write predictors that show:

    - A specific person is not married.
    - No one lives in a specific building.
    - A married couple does not live in the same building (Like Ross and Rachel on a break).

- Write facts that show:

    Partner of the partner of a married person is him/herself.Every screen belongs to exactly on cinema. In any cinema, a movie would not play on two screens at the same time. There is no movie without any actor or actress. No one can live in a cinema. A married person would not let his/her partner live with another person of the opposite gender (it is haram!). The sequel relation between movies can not have a cycle. One movie can not be the sequel of two movies.

- Write functions that output:

    - Movies of an actor/actress.
    - People who are directors but not actors/actresses.
    - A relation between screen and time of all available choices given the desired cinema and movie.

- Write assertions and check if there:

    - is not any couple that both play in the same movie.
    - Are no two couples where the men live together separately from their wives.
    - Are at most two buildings that at least three people live in. (check this assertion a second time with exactly five couples)