

CmpE 436 HW: Testing Against Safety Properties

I. AIM

This homework aims to teach how to generate tests as counterexamples to safety properties in Linear-time Temporal Logic (LTL).

II. TASKS

- 1) Download the following Android GUI applications.
 - a) $N = \text{https://f-droid.org/en/packages/org.secuso.privacyfriendlynotes/}$
 - b) $Y = \text{https://f-droid.org/en/packages/com.tum.yahtzee/}$
 - c) $C = \text{https://f-droid.org/en/packages/cz.hejl.chesswalk/}$
- 2) Prepare tests as *Appium* scripts for the LTL properties given below. Please state which properties that you cannot prepare a test for, and why. State the test length. Get full points for finding the shortest test! Demonstrate your tests in a demo session.
 - a) $N \models_p \neg\Diamond[\text{activity} = \text{ManageCategoriesActivity}]$
 - b) $N \models_p \Box ([\text{activity} = \text{TextNoteActivity}] \rightarrow [\text{Category} = \text{Default}])$
 - c) $N \models_p \Box (([\text{activity} = \text{SketchNoteActivity}] \wedge [\text{SelectedColor} \neq \text{Black}]) \rightarrow \neg\Diamond[\text{SelectedColor} = \text{Black}])$
 - d) $Y \models_p \Box \neg[\text{text} = \text{Unfortunately, Yahtzee has stopped.}]$
 - e) $Y \models_p \neg\Diamond[\text{text} = \text{Player 1 won the game.}]$
 - f) $C \models_p \Box ([\text{activity} = \text{OfflineGame}] \rightarrow \neg\Diamond[\text{activity} = \text{NewGame}])$
- 3) (Bonus)
 - a) Design your own property or properties for N , Y , C , or another Android GUI Application of your choice.
 - b) Prepare a test or tests as *Appium* scripts for the property or properties in 3(a).
 - c) Get bonus points for **innovativeness**!