

Homework Assignment 3

Total Points: 50

Professor Karem A. Sakallah

EECS 598-002: Formal Verification of Hardware & Software Systems

Assigned: February 6, 2024

Due: February 13, 2024

Guidelines

- The College of Engineering Honor Code applies to all work in this course.
- The due date is firm. Follow submission instructions (at the end).

Objectives

This assignment explores the use of CUDD (using the repyCUDD Python wrapper) to verify the equivalence of combinational and sequential circuits.

1 [Combinational Equivalence Checking] (25 Points)

Using CUDD, check the equivalence of the two combinational circuits specified by the netlist files h3p1C1.isc and h3p1C2.isc.

2 [Sequential Equivalence Checking] (25 Points)

The three sequential circuits specified by the netlist files h3p2C1.isc, h3p2C2.isc, and h3p2C3.isc correspond to three different implementations of a particular finite-state machine. Determine which of them are equivalent and which are not. You may assume that the initial states are as follows:

Circuit	Initial State
h3p2C1.isc	$y_1y_2 = 00$
h3p2C2.isc	$y_3y_4 = 00$
h3p2C3.isc	$y_5y_6 = 01$

Submission Instructions

1. Create a directory named <your unique name>_hw3
2. Place in the directory the following Python files corresponding to each of the problems or problem parts:

- Problem 1: h3p1.py
 - Problem 2: h3p2.py
3. Where applicable, execute your Python files to produce similarly named dot files.
 4. Where applicable, use dot to generate similarly-named pdf files.
 5. Zip the entire directory using “zip -r <your unquename> _hw3.zip <your unquename> _hw3” and upload to Canvas.