CS 6840
Formal System Design
Summer Semester 2025

FINAL PROJECT PROPOSAL
DUE **7/29/2025**

Please fill out and submit the following final project information:

(1) Indicate the type of project
(2) Provide a project title
(3) Describe the project concept in 100 words or less

Student Name: _____***Kevin Bell***_____

Project Type: ____ Research Paper __***X***__ Programming Project

Project Title: __**Developing a BDD-Based CTL Model Checker**_____

Project Concept (100 words or less):

Design and implement a model checker for Computational Tree Logic (CTL) using Binary Decision Diagrams (BDDs) to represent state sets symbolically. Starting from a user-specified transition system and CTL formula, the tool will construct BDDs for atomic propositions, compute predecessor and fixpoint operations, and evaluate temporal operators (EG, EU, AF, etc.) efficiently. Compare its performance against an explicit-state checker on benchmark examples, analyze memory and runtime trade-offs, and document how BDD variable ordering impacts scalability. The final deliverable includes source code and test suite.