CS4998: Blockchain Development

Faculty Advisor: Andrew Myers, andru@cornell.cs.edu

Teaching Assistants:

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- Daniel Mistrik (administrative), dm743@cornell.edu

Office Hours

To be decided.

Credits/Grading

Blockchain Development is exclusively pass-fail. Students need a 70% or higher to pass the course.

This course consists of 4-6 coding projects that will be assigned throughout various points of the semester.

Prerequisites

Students are expected to have taken both CS1110 and CS2110.

CS1998: Introduction to Blockchain is a soft requirement; if a student believes they have the blockchain knowledge necessary to navigate the topics of this course, they do not need to have taken CS1998.

Course Materials

- Canvas Page: to be added.
- Class Github Page: https://github.com/CornellBlockchain/cs4998-blockchain-development-sp2023

Time

This course meets every Monday and Wednesday, 1:30-2:20pm

Course Description

This course teaches students the fundamentals of developing on EVM-compatible blockchains using the Solidity programming language. Topics include a brief overview of blockchain theory, the Solidity syntax, Solidity-specific features, setting up a Solidity development environment. In addition, students will be taught the basics of gas golfing, smart contract testing, and will become familiar with frequently used smart contracts. This course will also explore the Ethereum Virtual Machine and blockchain paradigms outside the EVM-ecosystem.

Course Objectives

Upon completion of this course, students should be able to:

- Read the source code and logic of most smart contracts written in Solidity
- Write smart contracts in Solidity, with an emphasis of gas-optimization and security
- Set up and customize a Solidity development environment
- Understand the differences between the paradigm of smart contract development and traditional software development
- Understand how Solidity code is executed within the Ethereum Virtual Machine

Tentative Schedule

- Basic Blockchain Theory
- Solidity Syntax
- Setting up a Solidity Development Environment
- Testing & Security
- Gas Optimization
- Frequently-Used Smart Contracts
- Ethereum Virtual Machine
- Blockchain Paradigms

Academic Integrity

All students are expected to abide by Cornell's Academic Integrity Policy.