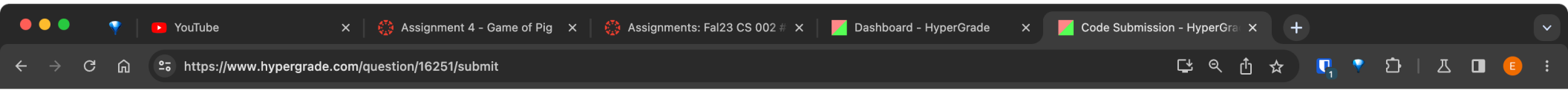

HyperGrade

Eli Griffiths

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Assignment 04 - Game of Pig

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assignment_04.cpp	3.88 KB	

5 points
CS002 - Assignment 4: Game of Pig - Monte Carlo Method
Collaboration Policy
We encourage collaboration on various activities such as lab, codelab, and textbook exercises. However, **no collaboration between students is allowed on the programming assignments**. Please be sure to read and understand our full policy at:
Full Collaboration Policy
Submission Instructions
Submit in Canvas
Assignment Specifications
We are going to use the Monte Carlo Method to determine the probability of scoring outcomes of a **single turn** in a game called Pig.
Your Task
For this assignment you will simulate a given number of **hold-at-N turns** of a game called Pig, and report the estimated probabilities of the possible scoring outcomes. You are **NOT** implementing the game of Pig, only a *single turn* of this game. The value of **N** will be acquired via user input, as will the number of repetitions.
What is Pig?
Pig is a folk dice game with simple rules: Two players race to reach 100 points. In each turn, a player repeatedly rolls a die until *either* the player holds and is credited with the sum of the rolls so far (i.e. the current turn score) *or* rolls a 1 ("pig"), in which case the turn score is 0.
So at every point during a turn, the player is faced with a choice between two moves:

- **roll (again)** - a roll of the die occurs
- **2 - 6**: the number is added to the current turn score; the turn continues
- **1**: the player loses all points accumulated in the turn (i.e. scores a 0); turn ends
- **hold** - The turn ends as the the hold option is invoked for one reason or another.

You can play the game yourself a few times before you start to think about the assignment. It can be useful to visualize and understand how a turn works. Play the game here.
Hold-at-N Turn Strategy
A good strategy to help decide when to hold and when to roll is the ?**hold-at-N strategy?**:
the player chooses a number, N, that will hopefully both maximize their turn score while minimizing their chances of losing that score by rolling a 1; as soon as their current turn score reaches (or passes) N, the player holds.
We are going to test this strategy for different values of N, which will be supplied by user input, by simulating a number of turns (which will also be supplied by user input). Obviously, the larger the number of simulations, the better the estimate of probabilities.