Parallel
Project Proposal

Shawn Smith
Christian Winwood

March 10 2021

1 Introduction

Using processes running in parallel and communicating over MPI, the goal of this project is to create a distributed baseball program. This program will highlight MPI capabilities in a fun and educational manner.

2 Description

The purpose of this program will be to simulate a baseball game. The game will consist of 9 innings with two teams. Each team will get half an inning to bat and attempt to increase their score while the opposing team will try to prevent them from scoring. At the end of the game, the team with the most points will be known as the winner. The application will have multiple processes, each representing a different player on the field. The pitcher process will be the root process that keeps track of controlling the game and keeping track of the different scores. The messages being passed represent the ball. The pitcher sends a message to the batter - this represents the pitch. The batter than randomly decides whether to hit it and passes a message to the fielder. The fielder then messages the batter or pitcher of whether they caught the ball or made an error. They can then pass the ball back to the pitcher to continue the game.

3 Tests

There will be multiple permutations and combinations of the following variables:

1. Catch Probability - simulate the probability of the player catching the ball
2. Hit Probability - simulate the probability of a player hitting the ball
3. Error Probability - simulate the probability of a player making an error

Each test will be a different combination of these variables. We will want to test many different combinations, including all values being relatively low, all permutations of one being high and the rest being low, all permutations of two being high and the last being low, and all values being relatively high.

4 Expected Results

The expected results of this project are going to be quite simple. We are expecting a print out at each stage during the game so the user can follow step by step what is happening. After that we expect the scores to work correctly and a winner to be announced at the end of the game.

5 Distribution

As the owners of this future project, we hereby give the Professor of Parallel Programming (CS5500) at Utah State University, know as Dan Watson, permission to distribute this document for the sole purpose of education and nothing more. If any event is being debated of whether or not the purpose is for education, the original creators of this document will have the final say. Any profits made from this document are forfeited to the original creators known as Shawn Smith and Christian Winwood. By distributing this document you agree to these terms.