**Assignment 1**

**Cadmium Simulation by Adapting a Rock Paper Scissors CD++ Model**

**Part 1: Model Selection**

Diagram

Description automatically generatedThis assignment will cover the transformation of a CD++ model to be adapted in Cadmium. The model to be adapted is a CD++ simulation of a Rock-Paper-Scissors game with two players. Refer to the block diagram below for a representation of the models contained within.

There are three distinct atomic models, and two coupled models present within this DEVS model, constituting a complexity level of 2.

|  |  |  |
| --- | --- | --- |
| Model Name | Type | Purpose (Brief) |
| Comparer | Atomic | Referee role: Receives input to begin game and signals players to produce an output (rock, paper, or scissors). Upon receiving an input from each player, decides the victor, outputting a winReport. |
| Request Receiver | Atomic | Simulates the thought process within a human, and when the thought process turns from passive to active, sends an action request to Action Maker. |
| Action Maker | Atomic | Produces an action output to send back to comparer, in the form of a selection from rock, paper, or scissors. |
| Player | Coupled | Contains request receiver and action maker, two models that simulate a typical human player. |
| Rock Paper Scissors Game/Top Model | Coupled | Contains the two player coupled models, as well as the comparer atomic model. |

**Data Structures:**

There are a few data structures that will be used for testing and passing data between our models. Please refer to the table below for more details.

|  |  |  |
| --- | --- | --- |
| Structure Name | Variable (Type) | Purpose |
| PlayGame\_t | isTriggerGame (bool) | Signify if a game request has been sent or received; true for sent, false for not sent. |
|  |  |  |

Comparer = < X, Y, S, 𝛿𝑖𝑛𝑡 , 𝛿𝑒𝑥𝑡, 𝜆, ta >