Algonquin College Logo

# SCHOOL OF ADVANCED TECHNOLOGY

### ICT - Applications & Programming

### Computer Engineering Technology – Computing Science



A11

Computer Science Challenge

CST8221 Java Application Programming / 302:

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CS Challenge 1: Cellular Automata

|  |  |
| --- | --- |
| **Part**  **1** | **Implementing CA** |

* 1. **UC Solution**

**UC Diagram** (change this diagram to accommodate the actors and functionalities to be used):

A diagram of a window

Description automatically generated

A diagram of a computer

Description automatically generated

**Actors table**:

|  |  |
| --- | --- |
| **Actors** |  |
| User | Represents the person interacting with the game. |
| Computer | The computer shows the initial window, choose the game in user, and the computer show the Cellular Automata result based on binary configuration |

**UC table**:

|  |  |
| --- | --- |
| **Use Cases** |  |
| Select Language | This use case describes the select the language which have the two languages English and Tamil. |
| Model (Enter Binary) | This use case describes the Enter proper Binary configuration, and the other model it shows the total binary number. |
| Set | This use case describes click set, it will be based on the binary configuration image. |

**Details**

* 1. **Visual Components**

**Main Window / Basic interface**

A screenshot of a computer

Description automatically generated

**Initial Window**:

This window will allow the user to select the proper assignment. It could be a main menu where the user can choose different options, including starting the CA simulation.

*A screenshot of a computer

Description automatically generated*

**CA Implementation**

CA Window

This is the main window where the CA simulation will be displayed. It includes various components:

Title (Cellular Automata)

A visual representation or logo representing the CA game. This could be an image.

Area to Show the CA Evolution

This is the central part of the window where the CA grid will be displayed, showing the evolution of the automaton over time.

Language Selection (Drop-down Menu)

A drop-down menu allowing the user to select their preferred language for the interface, the languages are English, Tamil, and Gujarati. This controls the language of buttons, labels, and other textual elements.

Input (Binary Numbers)

An input field or area where the user can enter the binary configuration for the CA. This could be a text box or a set of toggle switches for each cell.

Info about Corresponding Integer Representation

An informational section that displays the corresponding integer representation of the binary input provided by the user.

Command to Perform Execution

The Set button that the user can click to start the CA simulation with the provided configuration.

**Languages**

In the game's settings or options menu, players will have the ability to select their desired language from a drop-down menu. This feature allows them to customize the game's language and internationalization settings based on their personal preference.

English will be designated as the primary language and will serve as the default choice for players. In addition to English, Tamil will also be provided as an option in the drop-down menu.

I give two languages because me and my partner have different language so the first language Tamil will be chosen since this is my native (birthplace) language, and the second language is Gujarati will be chosen since this is my partner native (birthplace) language.

**FINAL SUGGESTIONS**

**Error Handling**:

Implement informative error messages that guide users on how to correct their inputs or actions if they make a mistake.

Fun: When the user enters more than 8 numbers or less than 8 numbers, it will automatically set zeros

**References**

We learned the Cellular Automata how to implement in rule 90.

[*https://www.youtube.com/watch?v=W1zKu3fDQR8*](https://www.youtube.com/watch?v=W1zKu3fDQR8)

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