Introduction to GameMaker: Finite State Machines

ITCS 4230/5230

This workshop is primarily aimed to increase proficiency in the use of the GameMaker programming Language (GML) to implement finite state machines. The project includes a significant amount of sample code. Make sure to **carefully examine the code provided and to understand what it does**.

Learning Outcomes

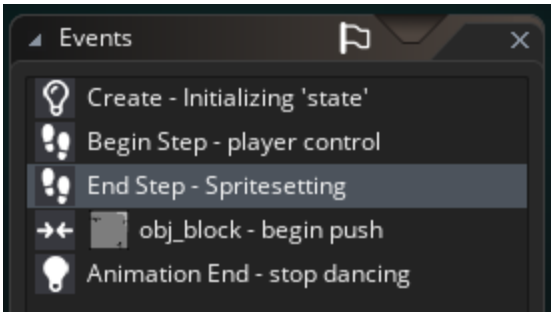
By the end of the workshop students will be able to:

1. Implement simple scripts using GML
2. Use the `enum` data type to implement States for a Finite State Machine (FSM).
3. Understand how to implement a state machine to:
    a. Handle character movement
    b. Use momentum to push a block
    c. Make the character show off with a dance

Setup

1. Read about the `enum` data type in the GameMaker Studio documentation: https://manual.yoyogames.com/GameMaker_Language/GML_Overview/Data_Types.htm
2. Download the file named ***BasicStateMachines.zip***, which is linked from the assignment on *Canvas*.
3. Open the project and try to run it. The game runs, but is hardly functional.

The Player Object:



1. The player controller needs to declare a variable named `state` with the following `enum` values: `Regular`, `Pushing` and `Dancing`.
2. Check the 'Variable Definitions' section for `obj_player`, down below 'Events', 'Parent' & 'Physics'. The variables defined there are special in that it is very easy and convenient to change their values.
3. Read through all of the events; use the comments to help you make some sense of them.
4. Note that there are `TODO` sections in most of `obj_player`'s events. You will need to write code in these sections to enable full player functionality. Try to reference surrounding code if you need some guidance. You can use **CTRL+F** to find all the `TODO` sections in a given event.

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The Block:

1. `obj_block` doesn't have any code in it, actually. It has an empty collision event with other `obj_block`s though. Since they are solid, the collision event will prevent two `obj_block` from overlapping.

The Room:

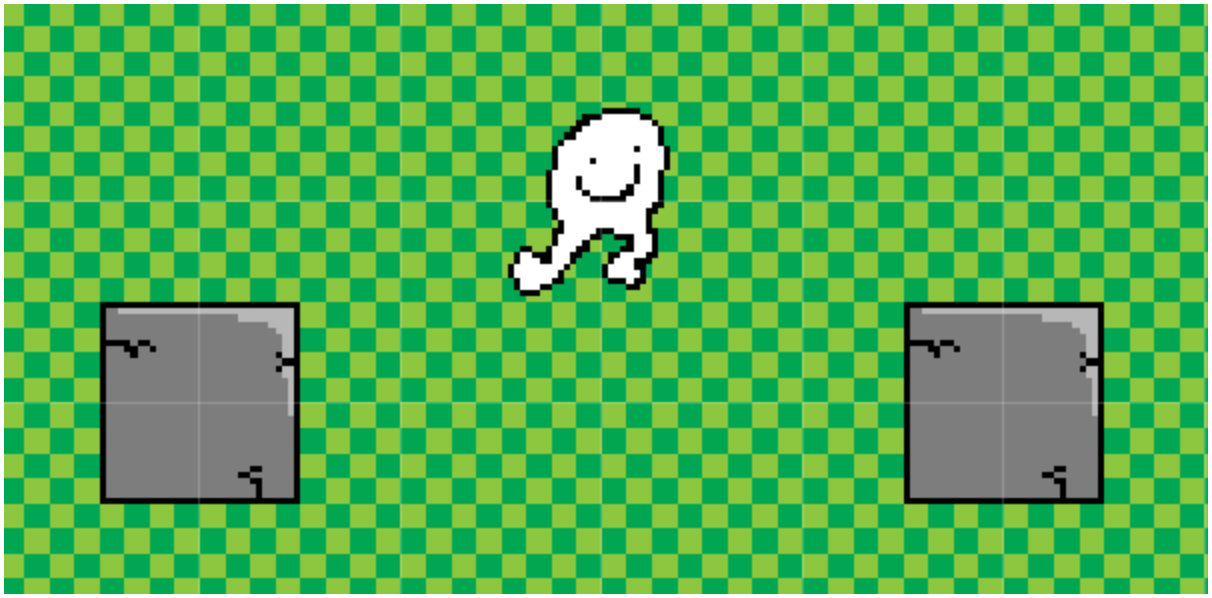
The room has two blocks in it. `obj_player` is also positioned inside the room. Use this to test your game and make sure functionality is correct.

You do not need to make any changes to the room configuration.

The Result:

`obj_player` will walk around as expected. When close to an `obj_block`, you should see a prompt indicating to press the 'E' key. If you press the 'E' key then, `obj_player` will start pushing the nearby block on either the *x* or *y* axis. Pressing 'E' again will stop pushing.

Most importantly, pressing 'Space' will cause the player to start dancing, and they will be unable to perform any other actions while doing so.



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