Introduction to GameMaker: Finite State Machines

ITCS 4230/5230

Learning Outcomes

This workshop is primarily aimed to increase proficiency in the use of the GameMaker programming Language (GML), i.e., it features a large swath of example code, and you'll likely learn some new skills if you read through all that is there. For those who are not focused on programming, the actual requirements of the workshop are fairly straightforward.

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

1. Implement simple scripts using GML
2. Use the **enum** data type to implement States for an 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://docs2.yoyogames.com/source/_build/3_scripting/3_gml_overview/9_data_types.html
2. Download the file named ***BasicStateMachines.zip***
3. Open the project and try to run it. The game runs, but is hardly functional.

The Player Object:

1. Note that the player controller declares a variable "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. 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're confused! (Use **ctrl-f** to easily find all the TODO sections in a given event)
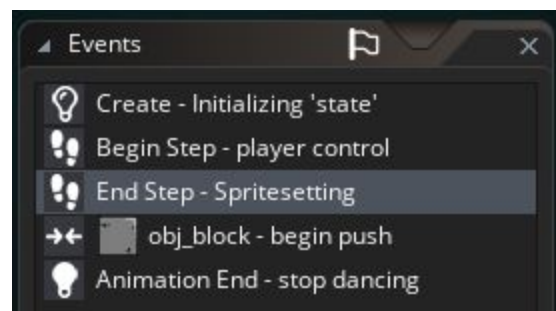
The Block:

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