SilverCoders

DIGITAL LITERACY IMPROVEMENT THROUGH EFFECTIVE LEARNING EXPERCIENCES FOR ADULTS

CHALLENGE #28

TIC TAC TOE

CODING TRAINING PROGRAMME

FOR +55 ADULTS

SILVER CODERS

ERASMUS+ No. *2020-1-SE01-KA227-ADU-092582*

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STRUCTURE OF THE CHALLENGE

DESCRIPTION

We are going to create a Tic Tac Toe kind of game. It is meant to be played by two persons.

GENERAL GOAL

We are going to create a Tic Tac Toe kind of game, meant to be played by two persons. We will also learn about Arrays, a form of storing data.

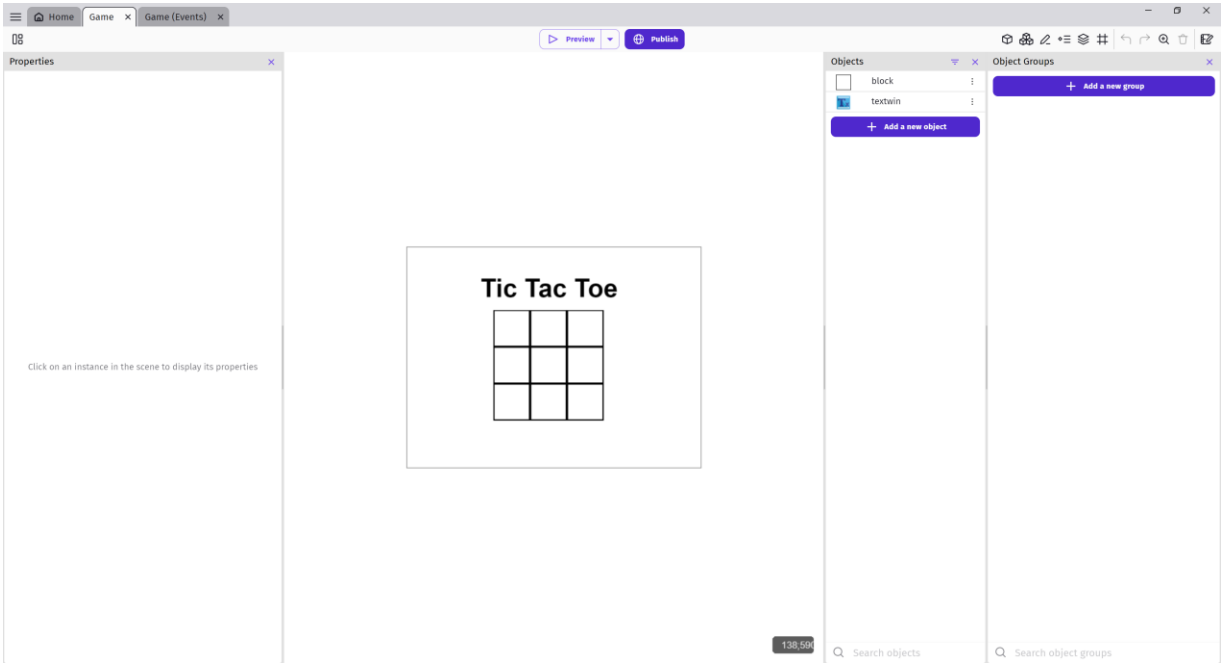
LEARNING OBJECTIVES

In the end of this challenge, you will be able ...:

- To have experience with a visual programming suite and be able to code standard small piece of software with it.
- Know what statements and command lines are and what they mean for a compiler.
- To be able to write instructions using correct syntax and with minimal errors.
- Know what operators are, what they do and which symbols stand for which operators.
- To be able to understand the assignment of values to variables and how to change them.
- To know all the basic arithmetic operations and how to use them.
- Recognize and know how to use all the data structures related to numbers.
- To know the structures linked to the use of text, such as strings and characters.
- To be able to use If statements correctly to execute code according to a certain defined fixed condition.
- To be able to use Arrays.

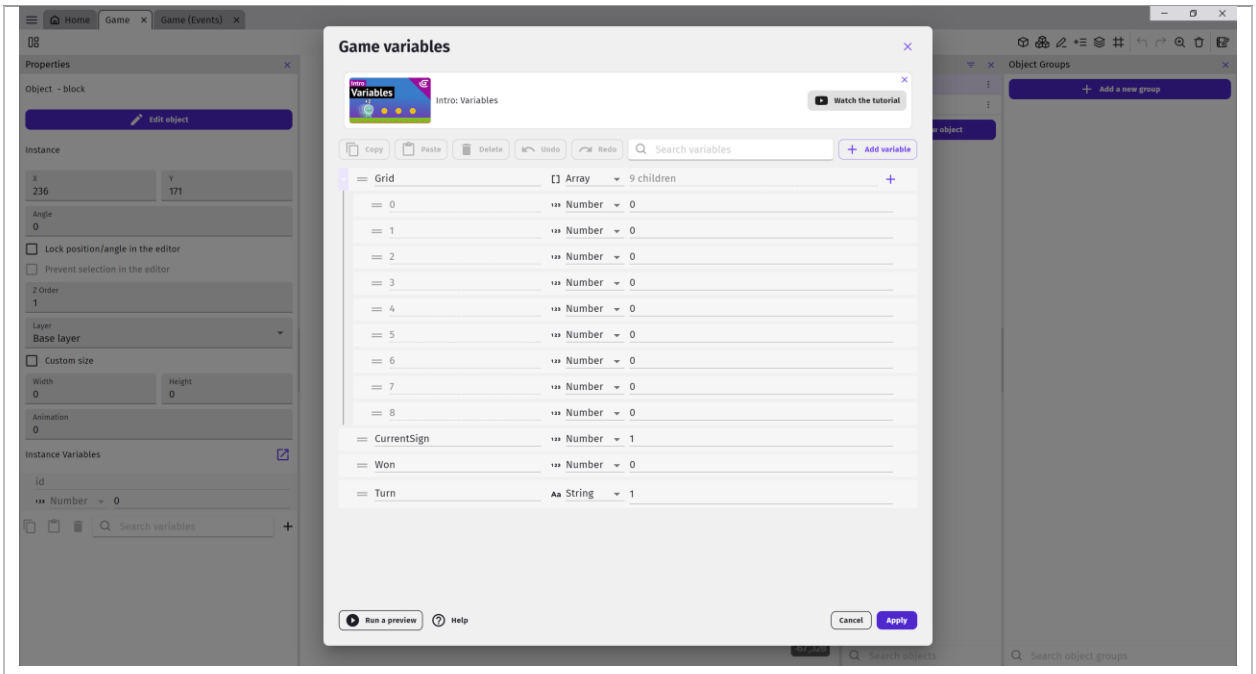
INSTRUCTIONS

This is your initial setup. In this case we provided the basic objects that you'll need for the game. As usual start by checking them carefully.

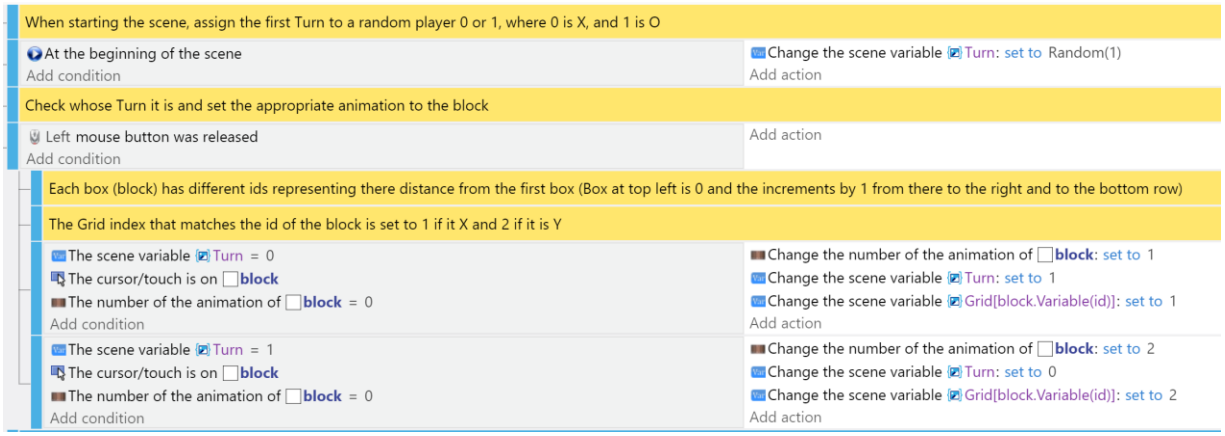


There are several important aspects in this setup:

- Each board tile is a **block** sprite. Each instance or copy of **block** has a variable called id that identifies it. So the top tiles are 0,1 and 2. The medium row tiles are 3, 4 and 5 and the bottom ones are 6, 7 and 8.
- The **block** sprite has 3 frames: one for the empty space (frame 0), one for the X (frame 1) and another for the O (frame 2).
- The scene has several variables created:
    - **CurrentSign** indicates which frame (or sign should be represented when we choose a tile).
    - **Won** tells us if someone already won.
    - **Turn** tells us if it is player 1 or 2 to play
- The most important variable is **Grid**, an array with 9 positions that tells us which symbol is in a certain position. When we start all the positions are 0 (empty).

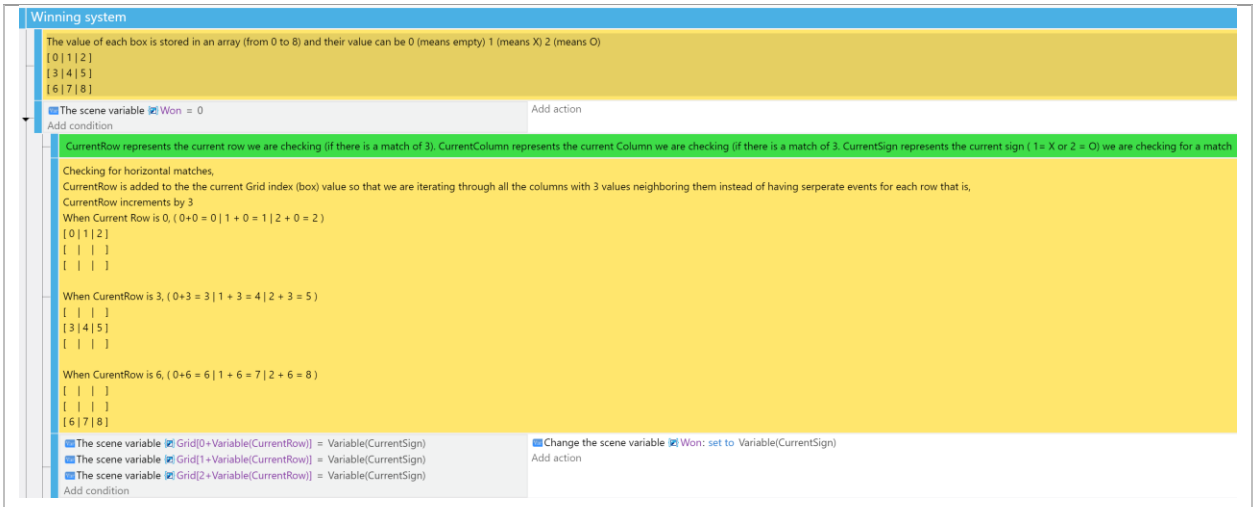


We also have the code that starts the game and we have the structure for the rest of the code.



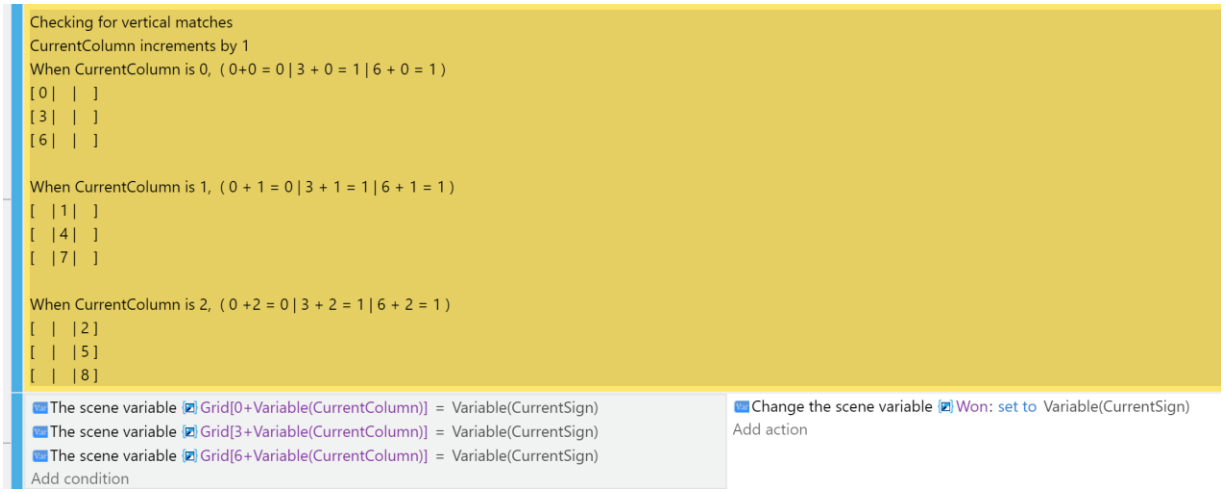
This code randomly sets the starting player. Then it checks if we pressed an empty tile, put there the player symbol and fills the corresponding **Grid** position with the right value.

What is left is to check if a player one. That means checking if he managed to put 3 equal symbols on a horizontal, vertical or diagonal line. We will do this by checking the **Grid** array. Let's start with the horizontal lines:

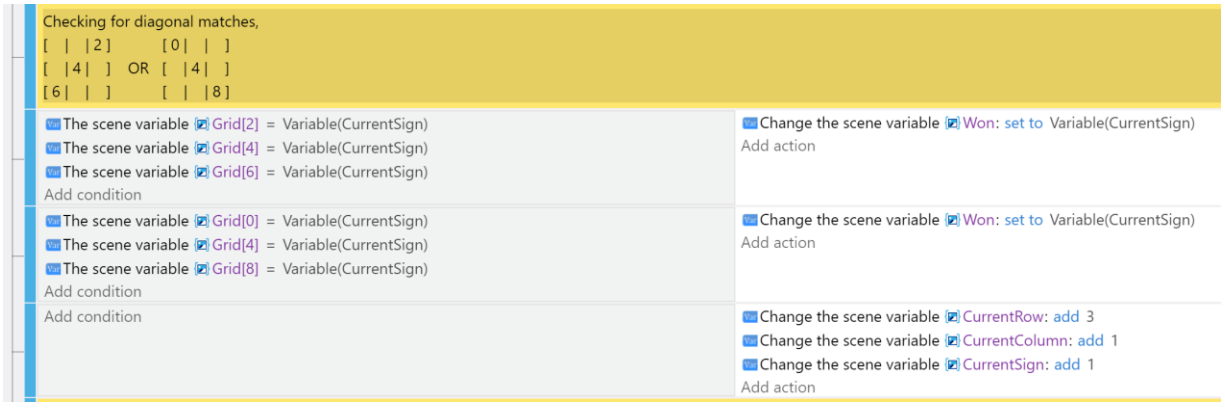


A complete explanation is given on the code comments.

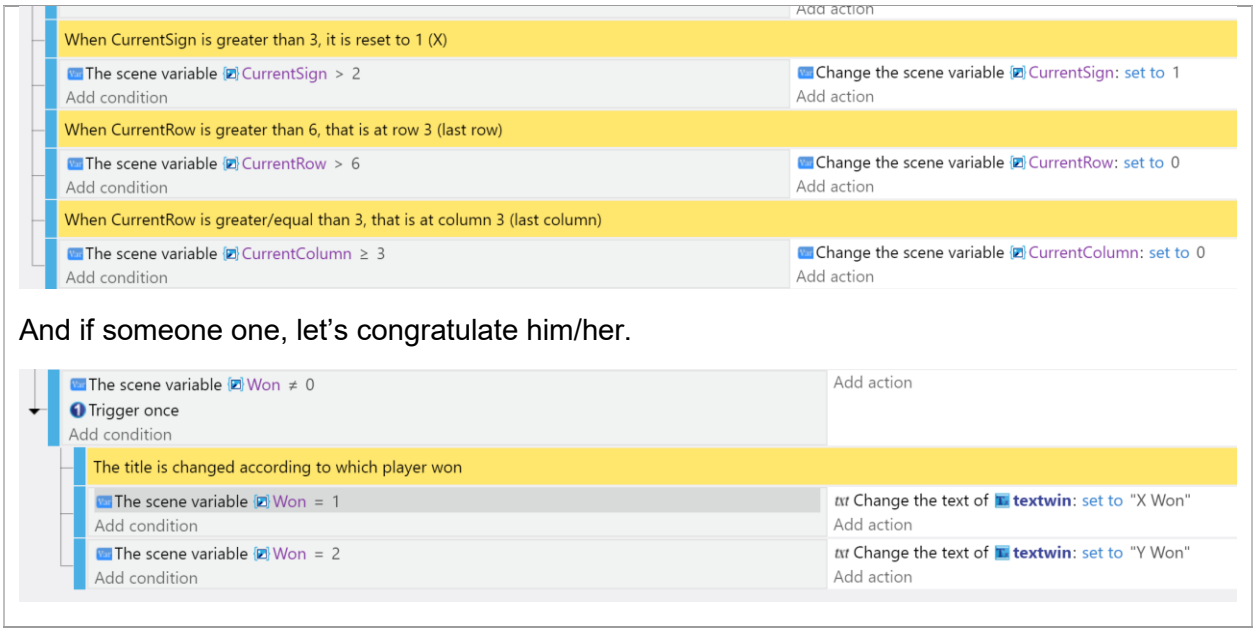
Now, for the vertical lines.



And finally for the diagonal ones.



We now need to deal with the change of turn to the next player.



And if someone one, let's congratulate him/her.

RESOURCES

Challenge 28 (Basic)