



Coding A Simple Platformer

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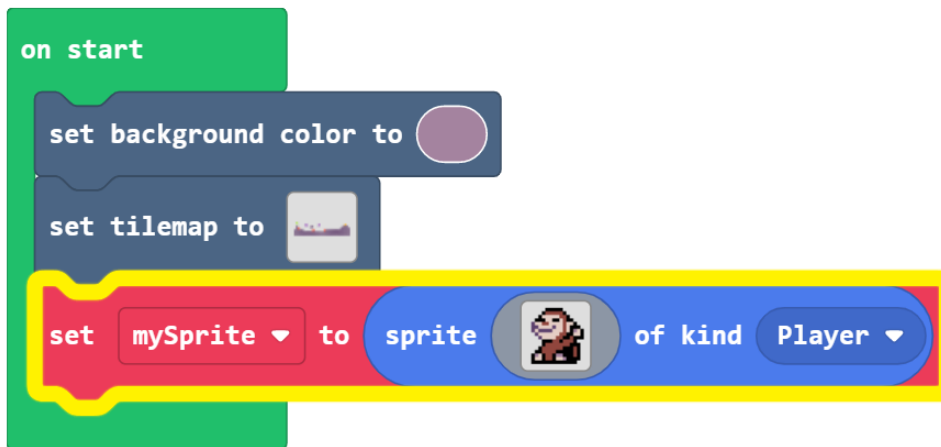
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This is a supporting document intended to be used in conjunction with attending SkillsXibition. Colors are used to indicate where specific blocks can be found.

1. Starting a Simple Platformer

1.1 Get Started

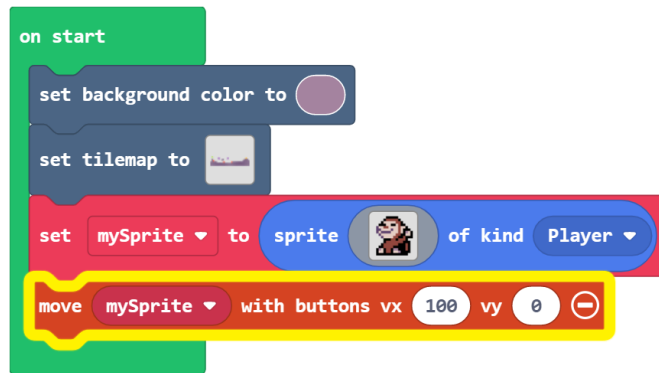
1. Visit aka.ms/SkillsCoding
2. Click Edit Code
3. From the "Sprites" category, drag the "set [mySprite] to sprite [] of kind [Player]" block to the end of the "on start" container.
4. Click on the grey box in the middle of your "set [mySprite] to sprite [] of kind [Player]" block to open the sprite editor.
 - a. From there, you can switch over to "Gallery" and choose a pre-drawn character.



*Code Example
for Get Started*

1.2 Get the Player Moving

1. From the "Controller" category, drag a "move [mySprite] with buttons ⊕" block to the end of the "on start" container
2. Press the ⊕ button on the new block and change the "vy" argument to "0" so that the player won't move up or down with the joypad.



Code Example for get the Player Moving

1.3 Adding Gravity

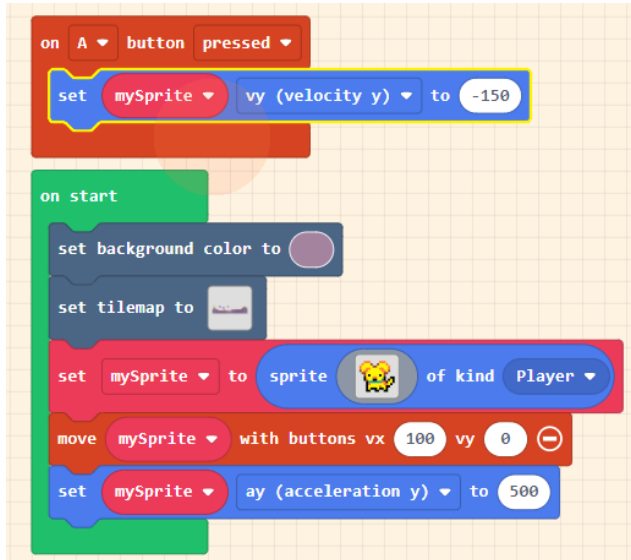
1. From the "Sprites" category, drag a "set [mySprite] [x] to [0]" block to the end of the "on start" container.
2. Click the dropdown to change "x" to ay (acceleration y). Replace "0" with "500".



Code Example for Adding Gravity

1.4 Adding Jumping

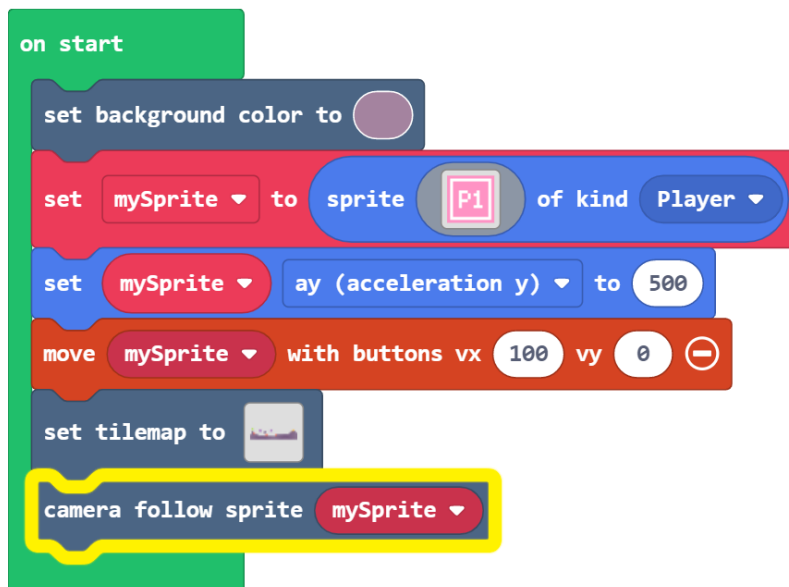
1. Start by dragging an "on [A] button [pressed]" block into the workspace from the "Controller" Category
2. Inside of that, add "set [mySprite] [x] to [0]" from the "Sprites" category.
3. To choose the attribute for the player's vertical velocity, click the dropdown menu and change "x" to vy (velocity y).
4. The player will jump upward if you change "0" to something smaller. Try "-150" or "-200".



Code Example for Adding Jumping

2. Camera and Tiles

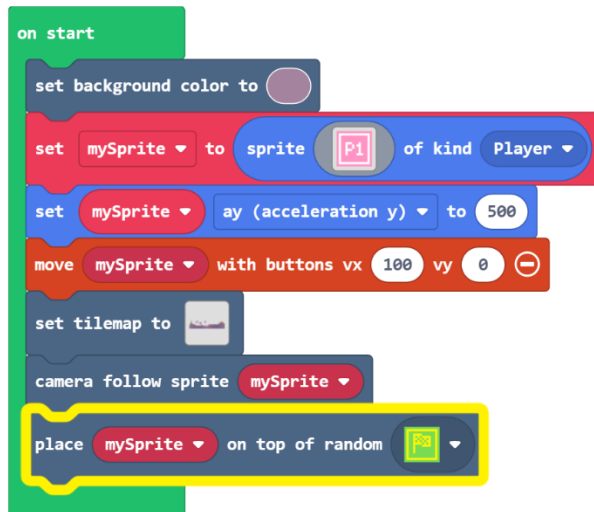
1. From the "Scene" category, drag "camera follow sprite [mySprite]" into the bottom of the "on start" container.



Code Example for adding Camera

2.1 Changing Starting Position

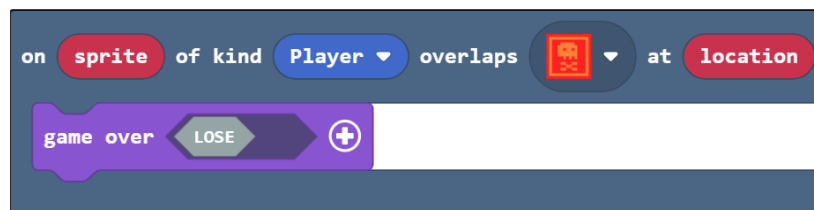
1. From the "Scene" category, snap a "place [mySprite] on top of random []" block into the bottom of the "on start" container.
2. Click the checkerboard tile and replace it with the green flag.



Code Example for Changing Starting Position

2.2 Adding DANGER for a Game Over

1. From the "Scene" category, drag the "on [sprite] of kind [Player] overlaps [] at [location]" container into the workspace.
2. Click the checkerboard image and change it to the skull tile.
3. From the "Game" category, snap a "game over <LOSE>" block into the new container.

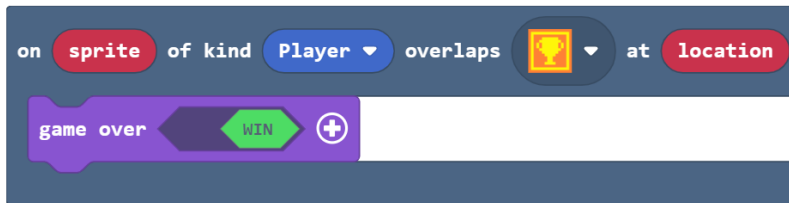


Code Example for Adding DANGER for a Game over

2.3 Adding a way to Win

1. From the "Scene" category, drag another "on [sprite] of kind [Player] overlaps [] at [location]" container into the workspace.
2. This time, change the checkerboard to the trophy tile.

- From the "Game" category, snap a "game over <LOSE>" block into the new container and toggle the <LOSE> switch to <WIN>!



Code Example for Adding a way to Win

3. Simple Enemies

3.1 Creating a Spawn Point

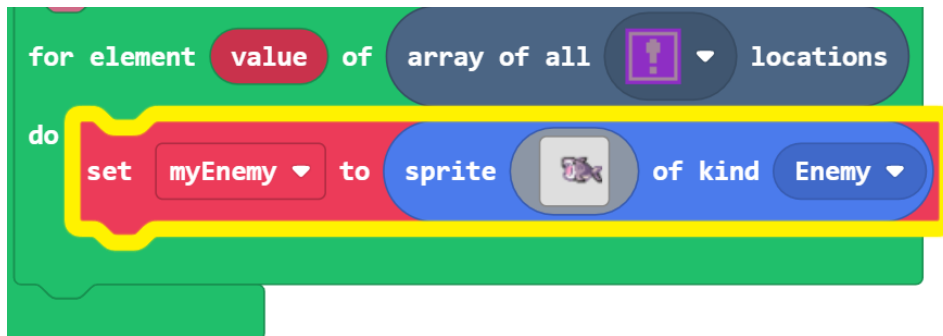
1. From the "Loops" category drag out a "for element [value] of [list]" "loop" and snap it into the bottom of the "onstart" container.
2. Find the "array of all [] locations" argument block in the "Scene" category and drag it into the header of the new loop where the "list" argument is.
3. Click on the checkerboard and change it to the [!] tile.



Code Example for Creating a Spawn Point

3.2 Spawning Enemies

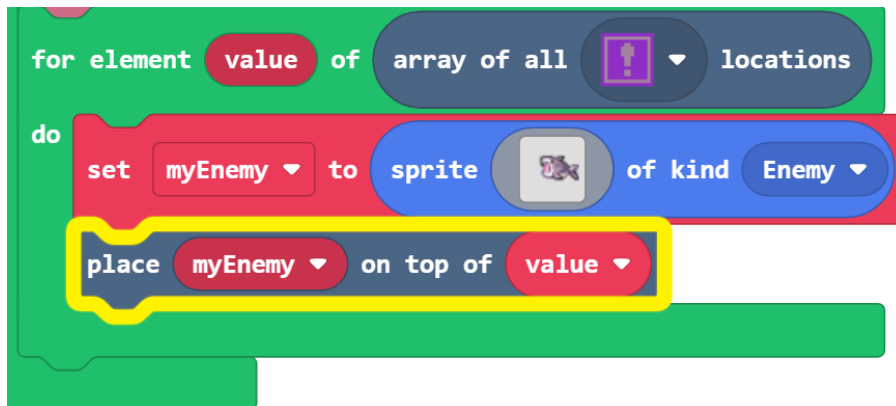
1. From the "Sprites" category, drag "set [mySprite2] to sprite [] of kind [player]" into the new loop.
2. Click the "mySprite2" "variable" and choose to create a new variable called "myEnemy".
3. Click the grey sprite rectangle inside the new block to draw an image for the enemy (or choose one from the gallery.)
4. Change the kind of this sprite from "Player" to "Enemy".



*Coding Example
Spawning Enemies*

3.3 Spawning from Multiple Locations

1. From the "Scene" category, drag a " place [mySprite] on top of tilemap col [0] row [0]" block to the bottom of the for element loop.
2. Change the sprite variable to "myEnemy" and replace the " tilemap col [0] row [0]" argument block with the " value" argument from the header of the for element loop.



*Coding Example
showing Spawning
from Multiple
Locations*

3.5 Making Enemies Move

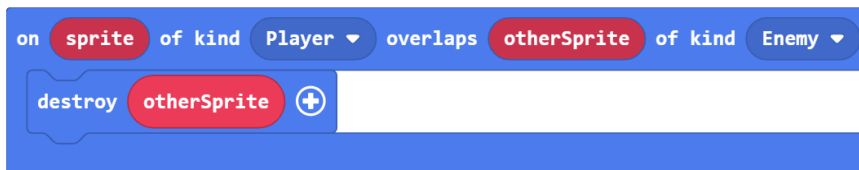
1. Snap a " set [myEnemy] follow [mySprite]" block, from the "Sprites" category into the bottom of the for-element loop.
2. Press the "⊕" on the new block and change the speed to "30".



Code Example for Making Enemies Move

3.6 Overlapping and Enemies- Destroy Enemy Sprite

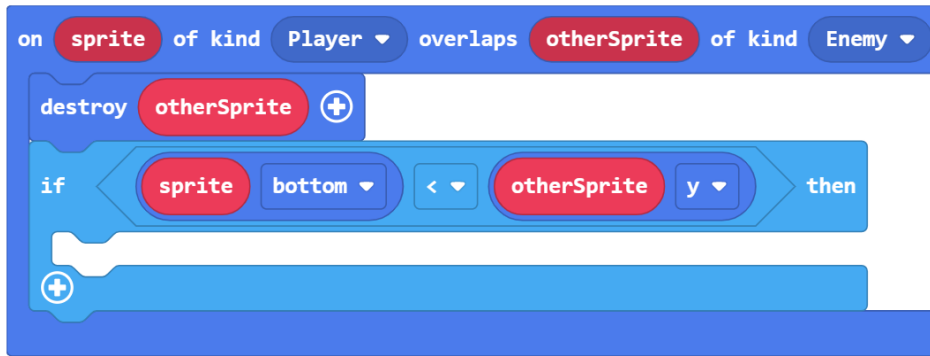
1. From the "Sprites" category, drag an "on [sprite] of kind [Player] overlaps [otherSprite] of kind [Player]" event container into the workspace.
2. Leave the first kind as "Player" and change the second kind to "Enemy".
3. Snap a "destroy [mySprite] ⊕" block into the new event container.
4. Drag the "otherSprite" argument from the on sprite overlaps event to replace the "mySprite" variable inside the destroy block.



Coding Example for Overlapping and Enemies- Destroy Enemy Sprite

3.7 Determining if you jumped on an Enemies Head.

1. Start by adding an "if `true` then" container, from the "Logic" category to the end of the newest on sprite overlaps container.
2. Drag out a "0 < 0" logic argument block and snap it into "if `true` then" to replace the ``true`` argument.
3. On the left-hand side of the "<", place a "[mySprite] [x]" block from the "Sprites" category and change the "x" to "bottom", and replace "mySprite" with the "sprite" variable from the on sprite overlaps header.
4. On the right-hand side of the "<", place a "[mySprite] [x]" block from the "Sprites" category and change the "x" to "y", and replace "mySprite" with the "otherSprite" variable from the on sprite overlaps header.



Code Example for Determining if you Jumped on an Enemies Head

3.8 Bouncing off an Enemies Head

1. From the "Sprites" category snap a "set [mySprite] [x] to " block into the empty "if/then" logic container and replace "mySprite" with "sprite".
2. Replace "x" with vy (velocity y) using the dropdown menu.
3. Change the value from "0" to "-100".



Code Example for Bouncing off an Enemies Head

3.9 An Else Clause

1. press the \oplus at the bottom-left corner of the **if/then** container and an else condition will appear.
2. To remove a life from the player under that condition, snap a "change life by [-1]" block from the "Info" category into the empty "else" clause.



Code Example for Adding an If clause

4. Adding Multiple Levels

4.1 Creating a Function

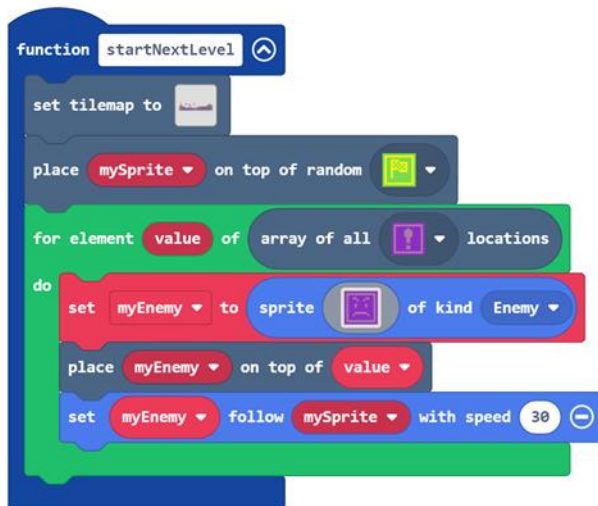
1. In the toolbox, expand the v Advanced tab and click on the "Functions" category.
2. Press the "Make a Function..." button to create your new function.
3. Click inside the textbox to name this function "startNextLevel", then click "Done".



Code Example for creating a function

4.2 Moving Code into the function

1. Pull the "set tilemap to []" block out of "on start".
2. Everything connected below should come along with it.
3. Snap the whole chunk of code into your new "startNextLevel" function container.



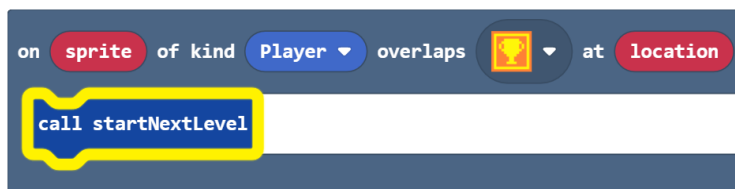
Code Example for Moving Code into the Function

4.3 Calling the function

1. From the "Functions" category, drag a "call startNextLevel" block and snap it into the end of the "on start" container.

4.4 Reaching the Trophy

1. Remove the "game over `WIN`" block from the on sprite overlaps event and replace it with a new "call startNextLevel" block.



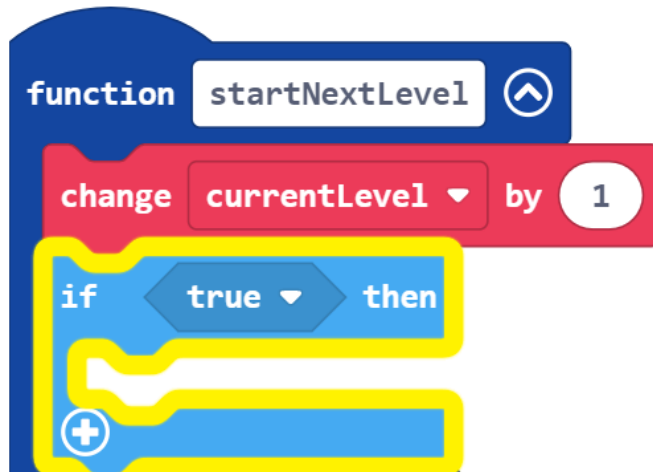
Code Example for Reaching the Trophy

4.5 Keeping Track of Your Current Level

1. To make a new variable, go to the "Variables" menu and click on "Make a Variable..."
2. Enter "currentLevel" in the textbox and click "OK".

4.6 Changing Your Level

1. Snap a "change [currentLevel] by [1]" block into the "top" of the "startNextLevel" function.
2. Connect a new "if `true` then" block near the "top" of the "startNextLevel" function container, just below the block to changecurrentLevel by 1 .



Code Example for Changing your Level

4.7 Checking If we are on Level 1

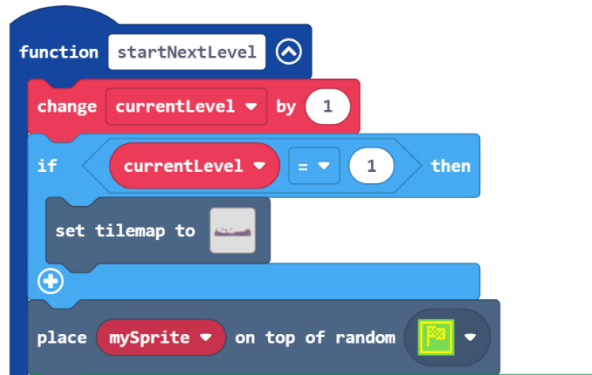
1. Find a "[0] [=]" block to replace "`true`" in the empty "if `true` then" container.
2. Replace the first "0" in the logic argument with "currentLevel".
3. Replace the second "0" of the logic argument with "1".



Code example for Checking if we are on level 1

4.8 Level 1s Tilemap

1. Move the "set tilemap to []" block from beneath the "if/then" and snap it inside the empty container. The connected code will travel with the "set tilemap to []" block, so once it has been connected, you'll need to grab the rest of the code and snap it back in place beneath the "if/then".



Code Example for Level 1s Tilemap

4.9 Readding in a Win Condition

1. Press the "⊕" button on the "if/then" container to add an "else" clause.
2. From the "Game" category, snap a "game over WIN" block inside.



Coding Example for Readding in a Win Condition

4.10 Adding in additional levels

1. Press the "⊕" button on the "if/then/else" container to add an else if clause.
2. Duplicate the "[currentLevel] [=] [1]" block and place the copy in the new else if condition slot. You can right click or press and hold on the block to get this option.
3. Change "1" to "2".
4. Duplicate the "set tilemap to []" block from level 1 and snap it into the empty else if container

5. Click assets in the top of the coding area. Here you can duplicate previous levels. Once you have duplicated a level, make any changes you want and name it in the bottom right for what level it is for.
6. When you click on a level's tilemap in the IF logic you can click assets to choose the corresponding level asset.



Code Example from Adding in Additional Levels

4.11 Get Creative

You can use the above step to add as many levels as you want. Make sure to change the current level number and to adjust the tile map by clicking on it. Here are some things to keep in mind:

1. Your Trophy tile is the end of the level. You can find this under my tiles and you will not be able to beat the level without one.
2. You can add in any other tiles you want. Feel free to add more enemy spawns or game over blocks.
3. Use the wall tool to make places the player sprite can not walk or fall through. It is right below the canvas pan tool which looks like a hand.

4.12 Cleaning up Enemies from level to Level

1. Snap a "for element [value] of [list]" loop into the very "top" of the "startNextLevel" function.
2. From the "Sprites" category, grab an "array of sprites of kind [Player]" argument and replace the "list" variable in the header of your new loop.
3. Change the array of sprites kind to "Enemy".

4. Drag a "destroy [mySprite]" block into the new for element loop.
5. Replace " mySprite" with the " value" attribute from the header of the for element loop



Code for clearing up enemies

5.0 Wrap up

Congratulations!

You have now finished the coding activity! You can share your project by hitting Share in the top left corner and then clicking publish. This will provide a link you can use to share with friends and family.

Continue your learning journey on <https://arcade.makecode.com>

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Contact MRS0071TRN@microsoft.com to inquire about free virtual field trips for your class.