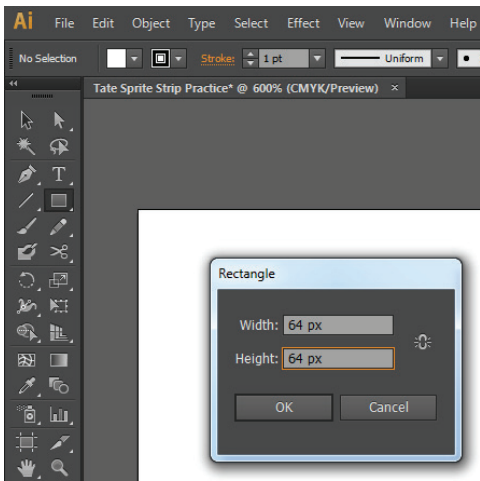


Making Animated Sprites

Making the Sprite Strip

1. Start by launching Adobe Illustrator.
2. Make a new document, but in the documents setup dialogue box change the units to pixels and the size to the typical room size in GameMaker... 640 x 480. Name the file your last name Sprite Strip Practice. Then click ok.
3. Select the Rectangle Tool from the tool bar along the left.



4. With the rectangle tool selected, click once anywhere on the page. In the new dialogue box that appears type 64 x 64 and press ok.

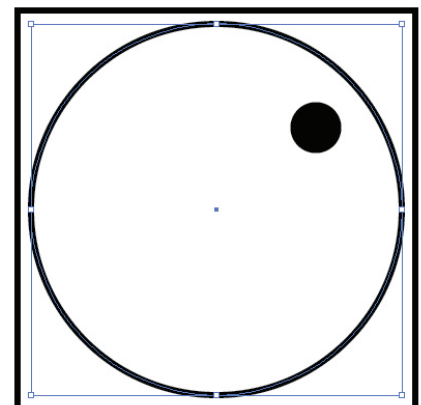
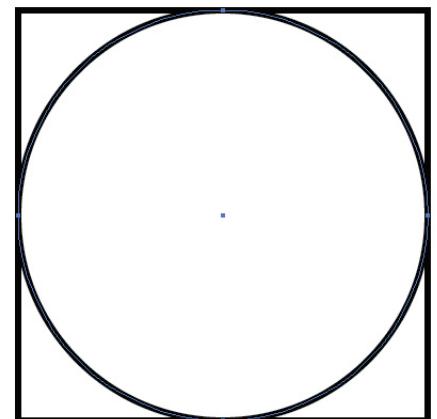
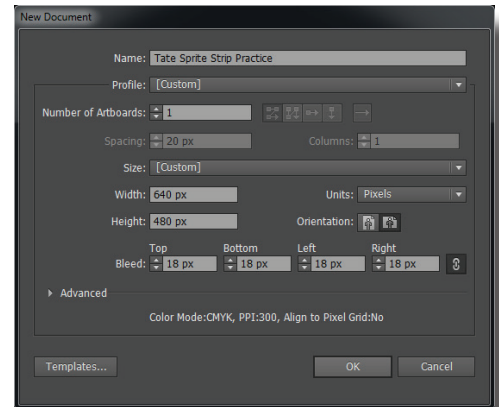
5. A new box should appear. This box is the size of four tiles in your game room. From breakout, going with small, at 32 x 32 caused a lot of detail in the image to be lost. Going with a bigger size sprite should help.

6. To check the size choose View>Rulers>Show Rulers. Using the rulers as a gauge it should appear 64 x 64.

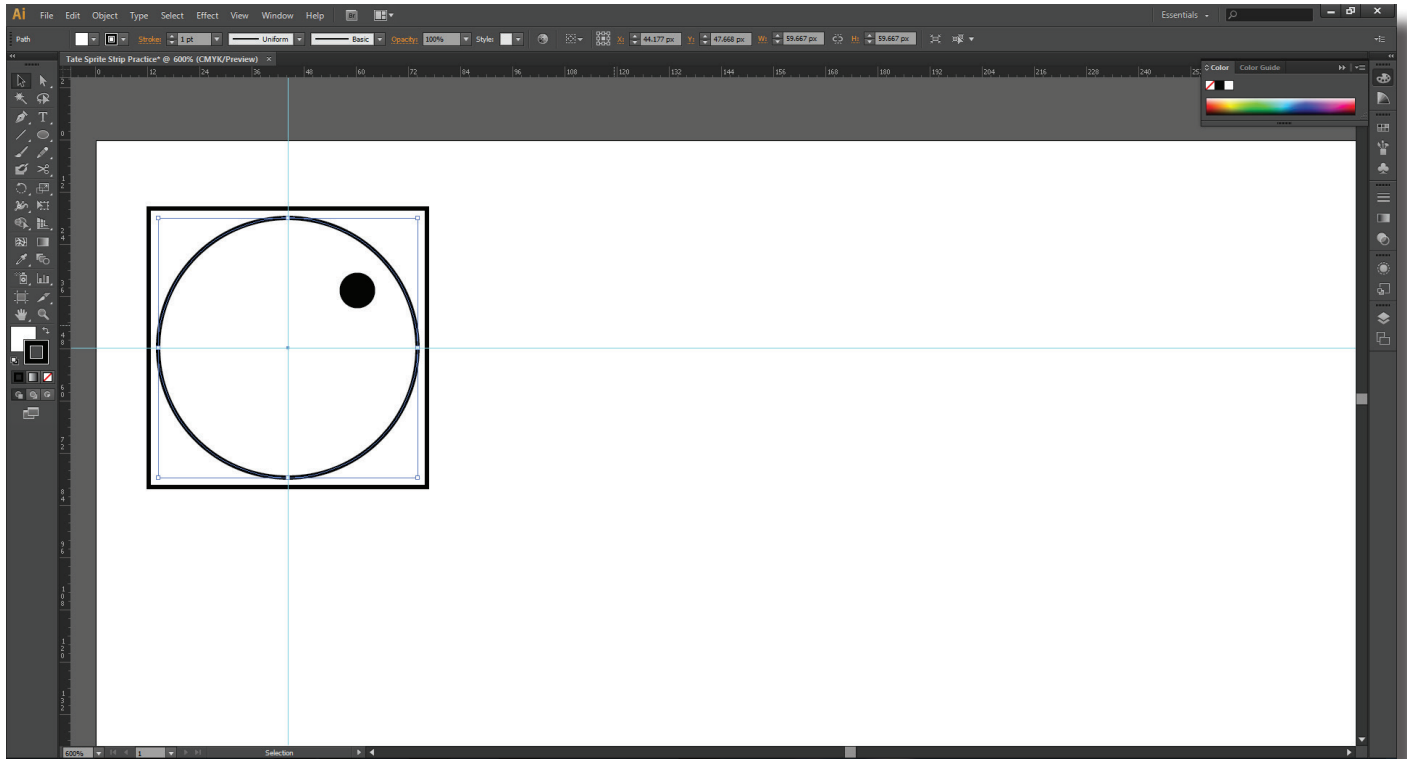
7. Since the next game is Pacman, and in the interest of keeping the practice simple, Pacman's mouth opening and closing will be

the animation that is made.

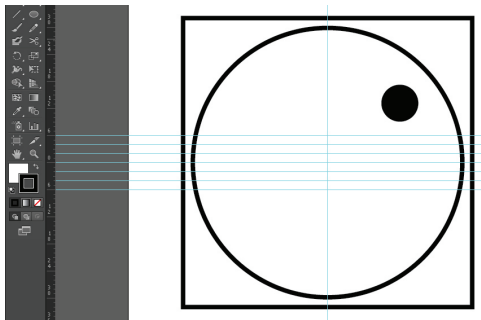
8. Start by selecting the Ellipse Tool from the tool bar along the left. It should be hidden under the rectangle tool so click and hold on the rectangle tool until the tool panel opens. Now select the Ellipse Tool.
9. With the Ellipse Tool selected, click and drag a circle that fits just right inside of the rectangle that was previously drawn. Remember to hold shift though so that the ellipse becomes a perfect circle.
10. Just to be safe and make sure that Pacman isn't too big to fit through the openings in the game room, lets scale him down just a bit. With the Selection Tool, click on the circle. Holding Alt and Shift on the keyboard drag the edge of the circle so that it's just a tiny amount smaller than the box.
11. The head is made, but Pacman needs an eye; just one though since this is a side profile of his head. Use the Ellipse Tool again but this time drag a small circle to make the eye. Remember that holding shift will make it a perfect circle. Without holding shift it can be a longer ellipse.
12. Now that the head and eye is made, a little bit of planning and preparation must be done before making the mouth. Guides can be used to keep the mouth opening the same size through the sprite strip. The guides will not show up on the final animation but they will be visible for on screen prep work. This makes them perfect for planning.
13. First, select the ellipse with the Selection Tool. When the ellipse is selected, there should be a node at the midpoint horizontally and



vertically. From the top that measures left to right, click somewhere inside of it and drag a guide down to the midpoint node. Then from the vertical ruler click inside of it and drag a guide out to the other midpoint node. This should make a light blue cross hair over the center of Pacman. Remember that these lines will not print or be visible on the animation but have just helped point out the center of Pacman!

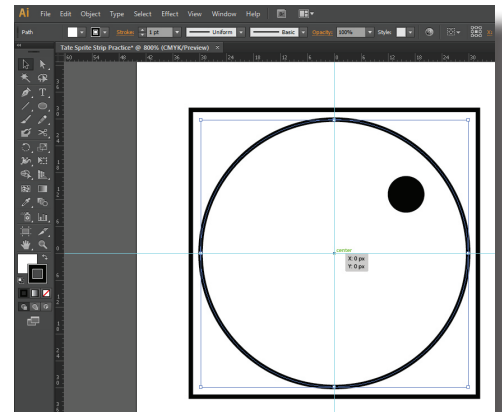


14. Now change the ruler's origin to Pacman's center. Click on the square in the top left corner where the rulers meet and drag it to the center of Pacman. Make sure the two points align just right and drop the point. The rulers each now start to measure from this point.



15. Now drag a guide out from the horizontal ruler and drop it at 2, 4, 6, 8 and -2, -4, -6, -8. These will aid in opening the mouth incrementally.

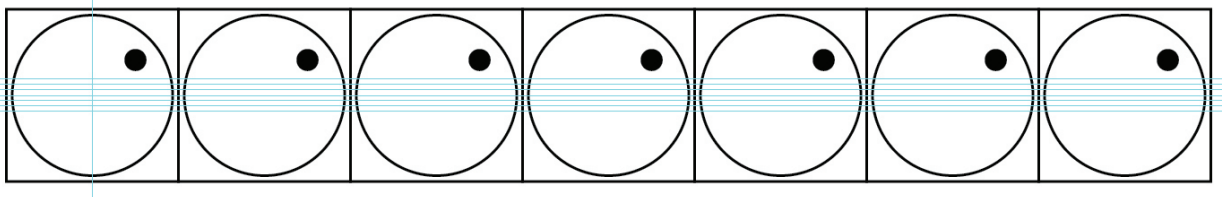
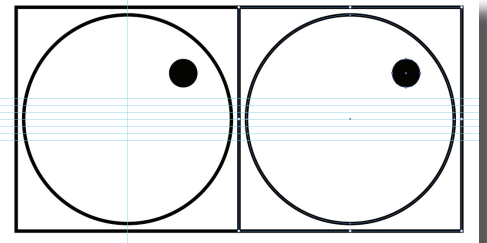
16. Now choose View>Guides>Lock Guides. This will make the guides unselectable and unable to move.



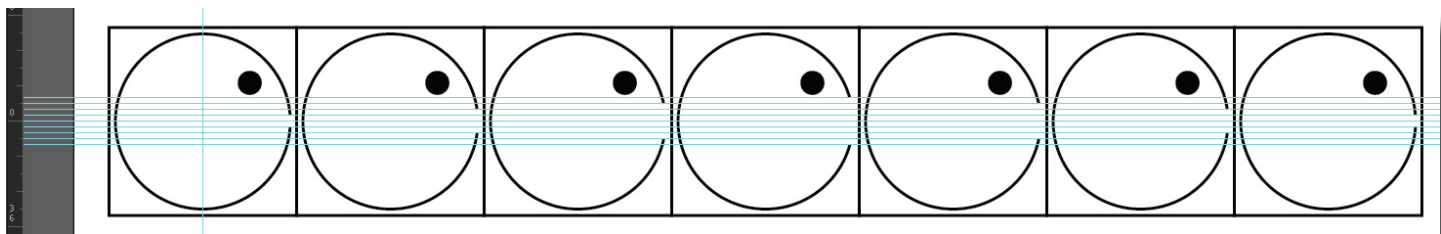
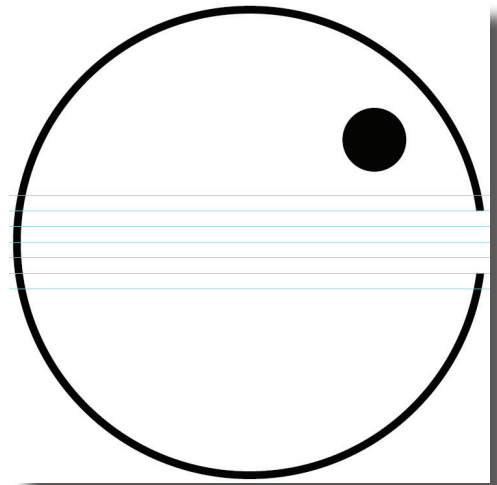
17. Hold the Shift key and select the box, eye, and circle that form Pac-Man.

18. Hold Alt and Shift and click and drag the shapes over to the right over the original drawing. Make sure that the box lines up with the original boxes edge with no gaps between them.

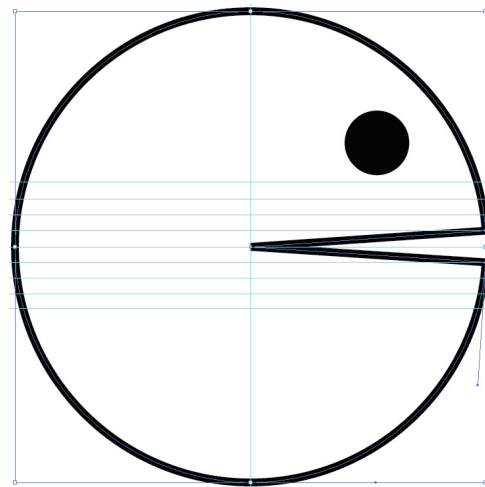
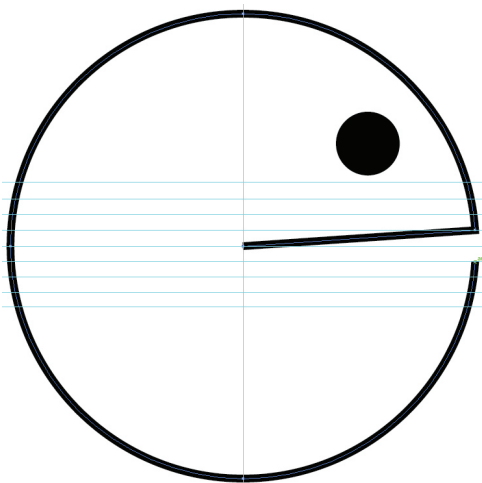
19. With all of the second drawing still selected, hold Alt and Shift and drag to the right again. Again make sure that the new one lines up with the second and first one. Repeat this process until there are 7 instances of Pacman all side by side.



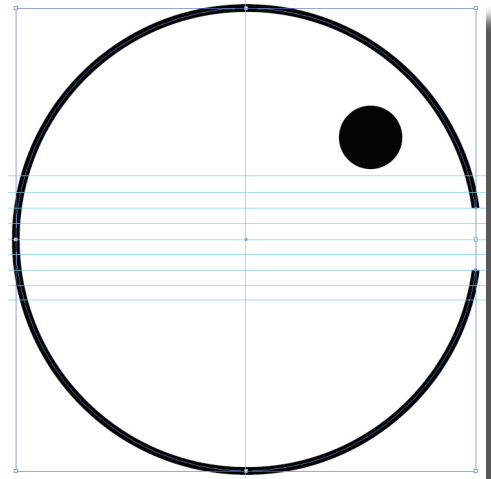
20. Zoom in on the first Pacman instance in the strip and select the circle with the Selection Tool.
21. Now that all the sprites are made it's time to open his mouth. Choose the Scissors Tool form the tool bar. It may be under the Eraser Tool. If this is the case, click and hold on the Eraser Tool until the drawer opens and then select the Scissors Tool.
22. Click once where the circle and guides at 2 meet and once where the circle and guide at -2 meet. This will cut out the section between these two guides. With the Selection Tool click on the line segment between these guides and delete it. Pacman's mouth is now open!
23. Zoom in on the second sprite in the strip and select the circle on this sprite. Choose the Scissors Tool again. This time click once at the intersection of the circle and 4 and again at the intersection of the circle and -4. Select that section that was just cut and delete it.
24. Move on to the third sprite and do the same thing as the first two times only at 6 and -6. Don't forget to delete the cut off line segment.
25. Cut the fourth sprite at 8 and -8. After the fourth his mouth will start to close again so the fifth should be 6, -6. The sixth should be 4, -4 and the seven should almost close at 2, -2.



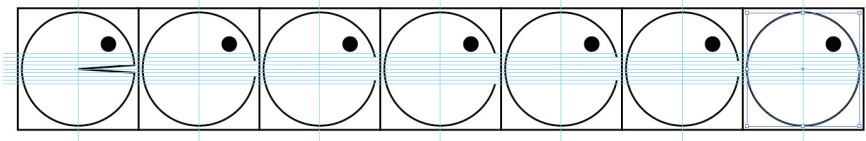
26. Now each sprite in the sprite strip should have an opening in the circle. There needs to be more than just an opening though, there actually needs to be a mouth; something that resembles a slice of pizza!
27. Since there is already a center found for the first sprite, this one will be easy zoom in on the first sprite and select the cut circle with the Selection Tool.
28. Choose the Pen Tool, hover over the point at the top of the opening until the slash appears and the click once. Now go over to the vertical line that divides Pacman into two pieces, find where it intersects with the middle line and single click again. Finally mouse over to the bottom opening point. Once over it a circle should show up beside it. Single click once it does. This closes the shape and finishes the head and mouth.



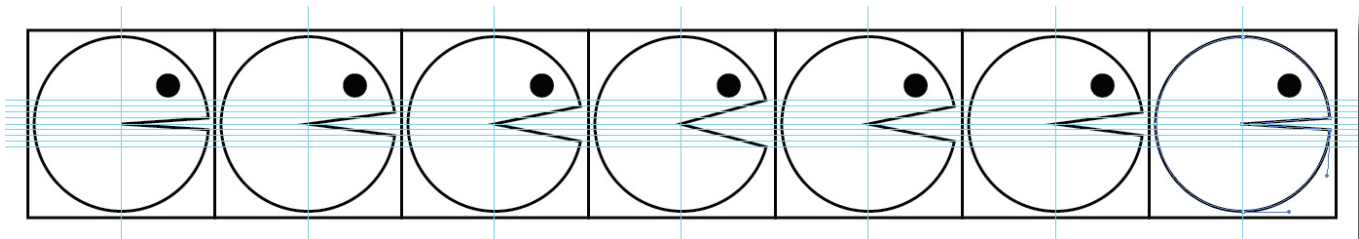
29. The other 6 sprites in the strip do not have this vertical line in them yet. Without these, there isn't a clear center. They need to have guides too. Select the circle that makes the head of the second sprite. From the vertical ruler, click and drag a guide out to the midpoint node and drop it.



30. Repeat the same process for sprites 3-7.



31. Now it's quite simple. For each of the sprites in the strip, select the circle, choose the Pen Tool, click once at the top opening point once the slash shows up, click once at the very middle point of the circle, and again at the last point in the head (but only if the circle is showing up over the point). Repeat these steps to finish each of the remaining six sprites.



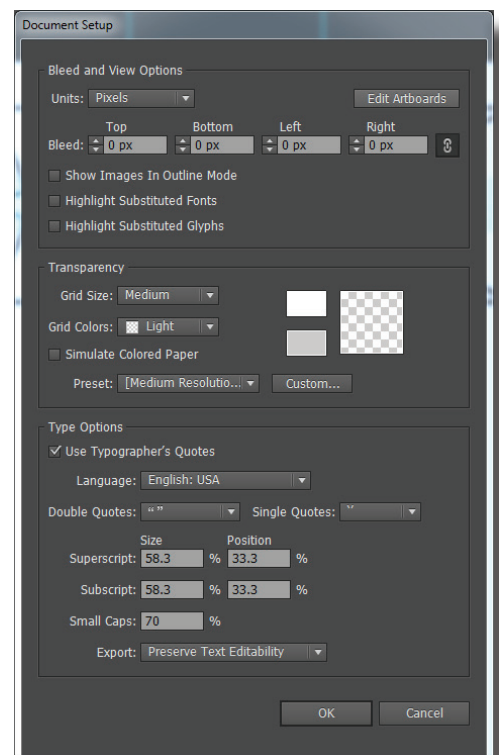
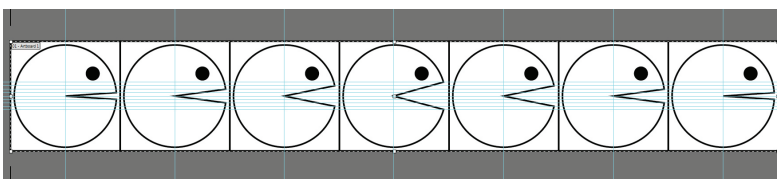
32. The sprite strip is made! It was pretty technical, but to make sure that they are lined up the same spot without moving, this is how it had to be done!

33. Click on File and choose Save As. Name the file Your Name Sprite Strip Practice.

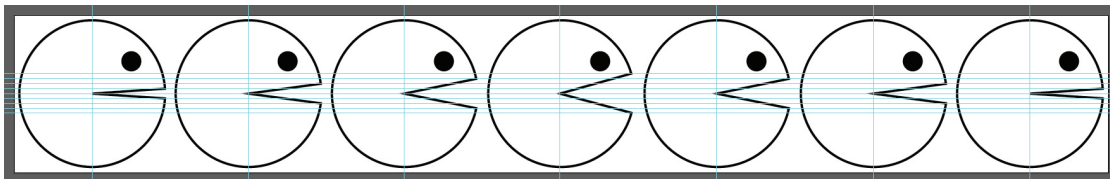
Prepping for Export

34. The strip needs to be prepped a little before it can be exported. As it stands right now, the sprite would include a huge empty area the size of the white box or document in Illustrator and the strip would have a box around each sprite. These are two things to fix before it can be exported properly.

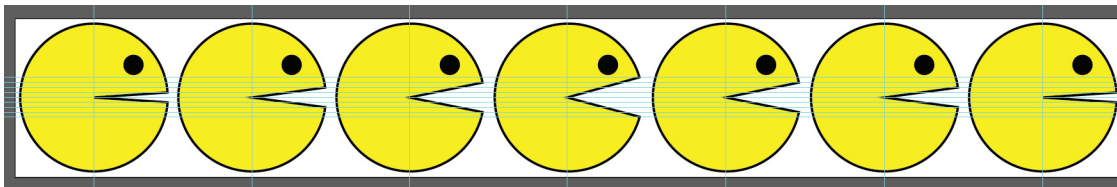
35. Choose File>Document Setup. When the new dialogue box appears, click the Edit Artboard button in the top right corner of the dialogue box. This will put nodes around the artboard. Click on the corner node and drag the corner nodes to resize the document so that the sprite strip just fits in. Once the document is resized, clicking on any tool will exit the artboard editing mode.



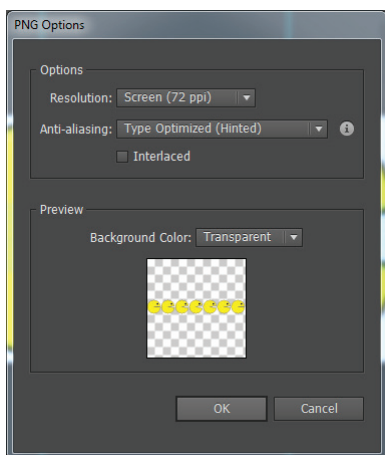
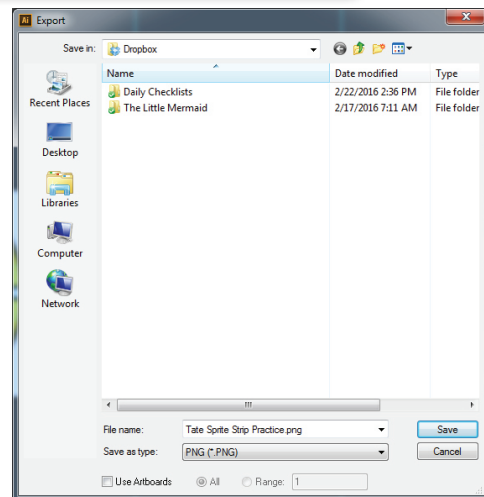
36. Now select and delete each of the sprite boxes so that they won't appear in the game.



37. Before exporting the sprite strip, add some color to Pacman's body so it isn't quite so boring looking. The strip is



now ready to be exported. Choose File>Export. When the new dialogue box appears, change the Save as Type to PNG, choose the server as the saving location, and name the file your name Sprite Strip and then click Save.



38. Another new dialogue box will appear. On this box change the resolution to screen (72 ppi) and the background contents to transparent. Finally, with both of these set, choose OK to close the dialogue box.

39. Before closing Illustrator, click on File>Save As and save the document as Your Name Final Sprite Strip Practice. This will make a second version of the sprite strip. The first one has the boxes and can be used to determine the size of the sprite and the second is ready to go to GameMaker.

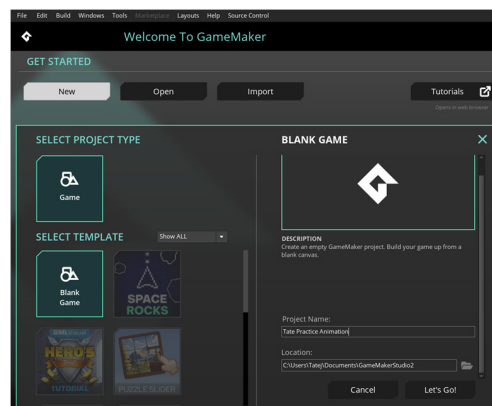
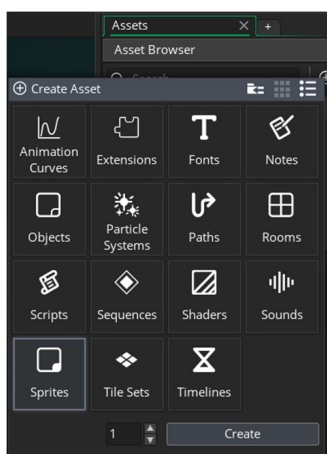
40. The sprite strip is complete!

Adding the Sprite Strip to GameMaker

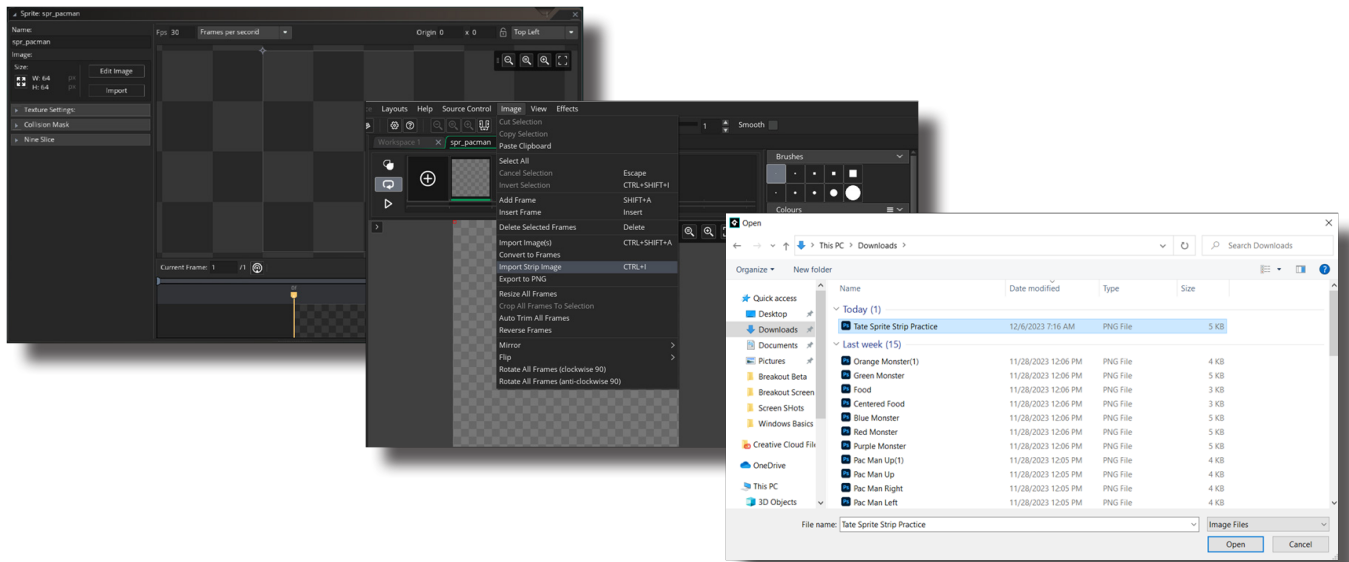
41. Launch GameMaker Studio.

42. Make a New>Game>Blank Game. Name the Project Your Name Practrice Animation and choose a familiar location to save the game to and press Let's Go!

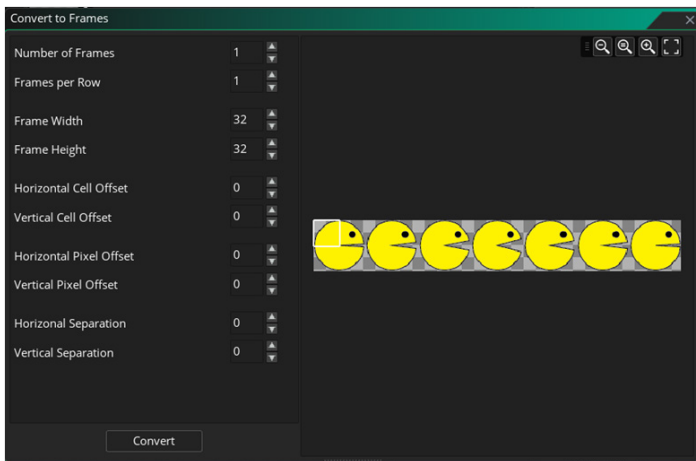
43. In the Asset Browser, press the Create Asset icon and choose Sprite, 1 and then press create.



44. When the new dialogue box appears, name the sprite `spr_pacman` and then click on the Edit Image button. Now from the menu bar across the top of GameMaker Choose Image>Import Strip Image. Here find and select the strip and then press Open.



45. A dialogue box called Convert to Frames will open with settings along the left side and the strip showing along the right. The white box over the strip indicates a frame for the animation. By default there is just one and it is probably too small for the entire sprite to fit. This will need to change.



46. Change the Number of Frames to seven, the number of boxes and pacman versions that were made in Illustrator. Frames per Row should also be seven because the strip runs left to right not up and down. Frame Width and Frame Height should each be 64, just like in Illustrator. The strip was not designed with any space between the sprites so the Offsets and Separations should remain 0. If Pacman is not fitting correctly, click, drag and reposition the grid of boxes so that it fits better. If everything is set properly and it looks good on the strip, press the Convert button at the bottom of the dialogue box. A window may appear asking to confirm the Import, click Yes.

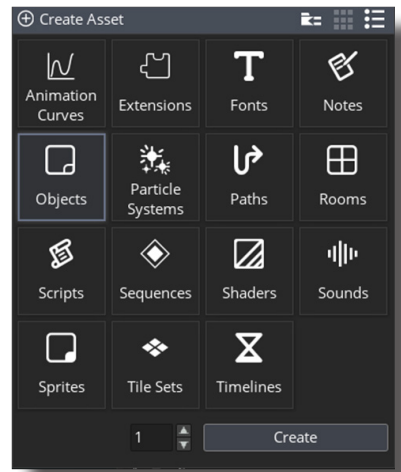
47. In the Sprite Editor all seven sprites should appear in sequence across the top with a large preview (probably pixelated though) just below it. Press the Play icon to the left of the row of sprites. This will preview the animation. If Pacman's butt is cut off or maybe head, etc. are cut off, delete the sprite and make a new one that isn't. Close the Sprites tab to exit out of the editor and then close the Sprites properties box too.

48. Congratulations! The sprite is made and animated!

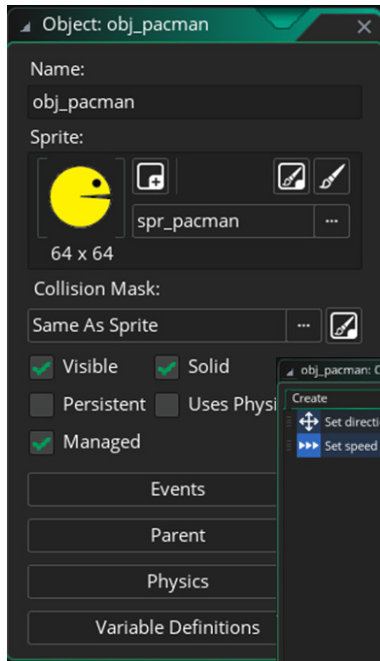


Creating an Animated Object and Room

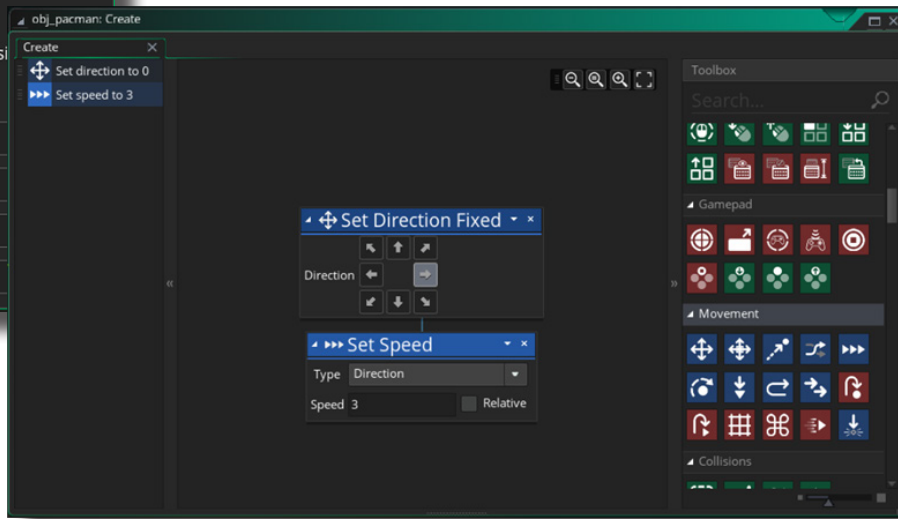
49. Next press the Create Asset button in the Asset Browser. Choose Object, 1, and press Create.



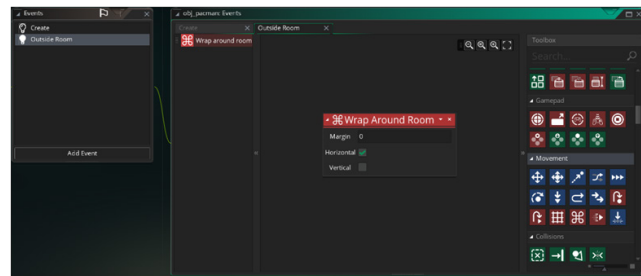
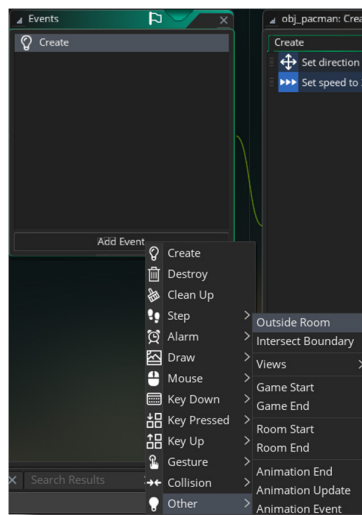
50. Name the object `obj_pacman` and choose `spr_pacman` for the sprite.



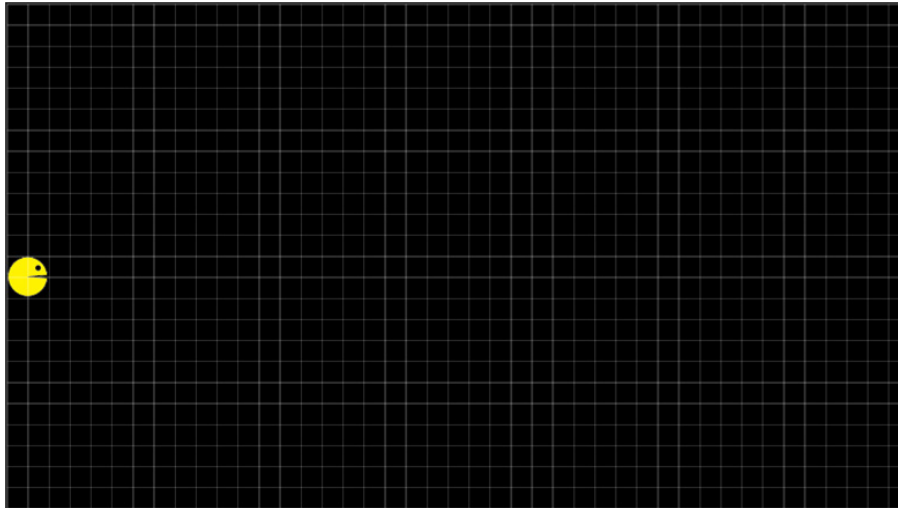
51. Add a create event for the new object. Then from the Movement section of the Toolbox, add a Set Direction Fixed block to the actions and set the direction to right. Next add a Set Speed and make the Speed 3.



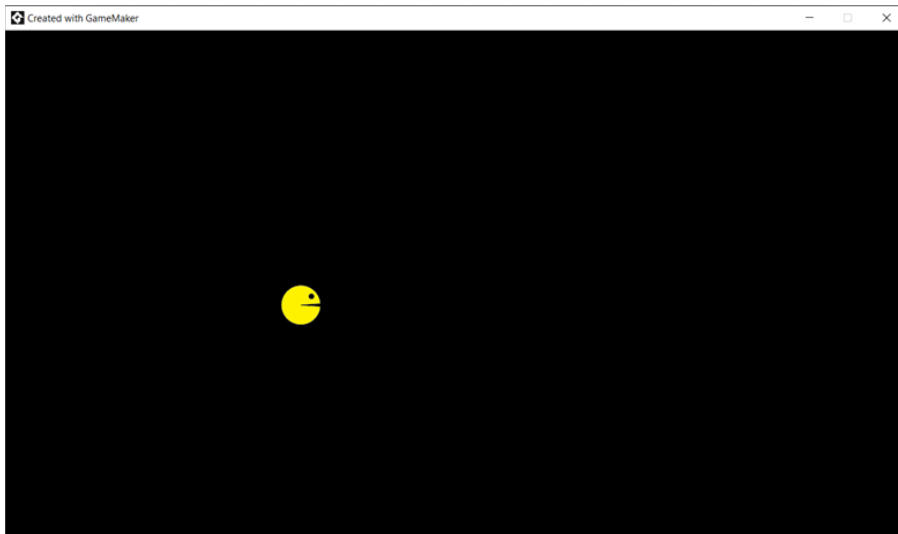
52. Finally, press Add Event again and choose Other>Outside Room. As it existed, Pacman would leave the room at the right side and just keep going, never to be seen again. With this action we are telling the program what to do when Pacman exits the room. From the Movements section of the Toolbox, Drag a Wrap Around Room block into the Actions area. Here choose Horizontal and leave the Margin at 0. Close the `obj_pacman`'s properties.



53. Open the Room 1 and drag obj_pacman into the room on the left side.



54. Save and run the game. It's a simple program but if done correctly, Pacman should be animated, move from the left to the right and then reappear at the left when he disappears on the right.



55. If everything works correctly, press File>Export Project>YYZ. Upload the file to Schoology and it's done!

