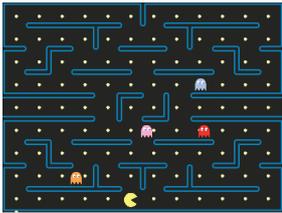# Pac-Man

- Re-create the fun of Namco's 1980 classic arcade game
- Simplified instructions, format and gameplay
- Add omitted features as stretch-and-challenge activities
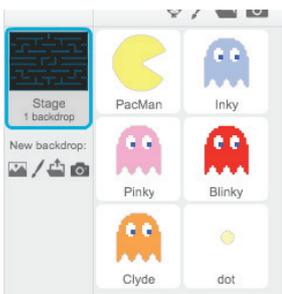
60 mins

1. Objective

You will create a simple Pac-Man game. Eat the dots, avoid the ghosts!

1. First, prepare Scratch. Delete the cat sprite.

2. Click the *stage* icon, then the *Backdrops* tab. Apply a black background to the whole stage, then draw your maze using the line tool. Alternatively, download our maze from www.mr.langford.co/downloads/pacman-maze.png

2. Create the sprites

1. Before you begin writing the scripts, create new sprites for Pac-Man; a ghost; and the dots that Pac-Man will eat. Just create one ghost and one dot.

2. Your graphics should be quite small, around 25 x 25 for the characters; around 5 x 5 for the dots

3. Pac-Man requires two costumes: one with his mouth open, the other closed.

3. Duplicate the dots
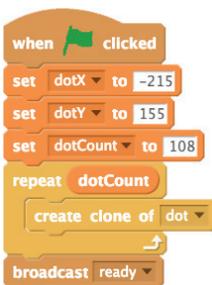
1. Using our maze, there are 108 dots, spaced 39 pixels apart. If you have drawn your own maze, there will probably be a different number of pixels with different spacing.

2. Rather than draw and place each one by hand, we will get the computer to do it for us. Each dot is a *clone* of the original. Add this script to the stage's *script* area. You will need to create variables for *dotX*, *dotY* and *dotCount*

3. The broadcast command will tell other scripts to start when the dots are ready.

4. Position the dots

1. Click on the dot sprite, and add the script to it.

2. As each dot is cloned, the dotX and dotY variables increase to the next dot position ready for the next dot to be cloned.

3. The forever loop contains code which checks if the clone has made contact with the Pac-Man sprite. If it has, the dot count is decreased and the clone deleted. Decreasing dotCount allows us to decide when you have won the game.

5. Control Pac-Man
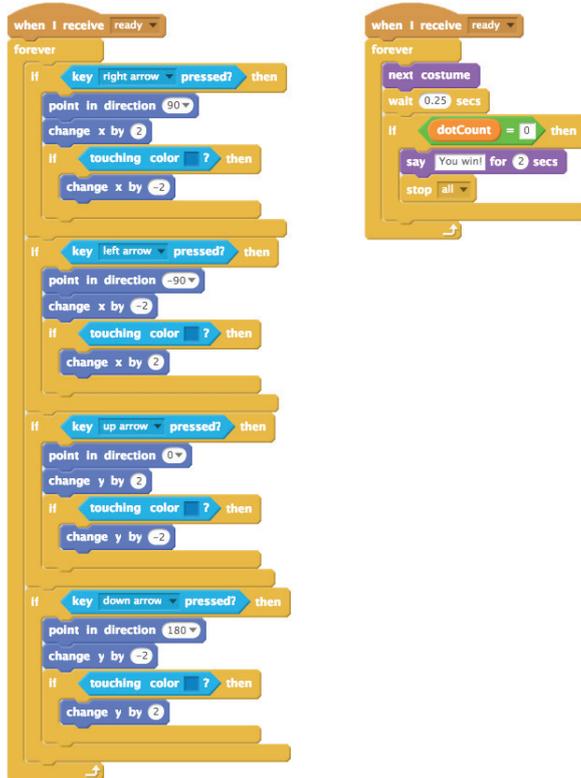
1. Click on the Pac-Man sprite and add these scripts

2. The script is big, but simple. It has been split into two sections for simplicity. It controls how the Pac-Man sprite looks, moves, and how to win the game.

3. The scripts start after the dots have been created and the "ready" message has been broadcast.

4. The first script defines which direction to move the sprite, and prevents the sprite moving through the maze walls

5. Remember to define the touching colour by clicking on the block, then clicking on one of the maze walls.

6. The second script alternates between Pac-Man's two costumes and ends the game when all of the dots have been eaten.

6. Moving the ghosts

1. Click on the ghost sprite and add this script.

2. It starts the ghost in the centre of the stage, and then moves it in a random direction.

3. If it touches the maze, it moves back slightly and randomly chooses a new direction. By moving the sprite back slightly, we prevent it getting stuck on the maze wall.

4. At the end of the script, we define what happens if the ghost and Pac-Man meet.

5. Once you have completed this, you can duplicate the ghost sprite. Change the colour of each ghost by using the paint bucket in the Costume tab.
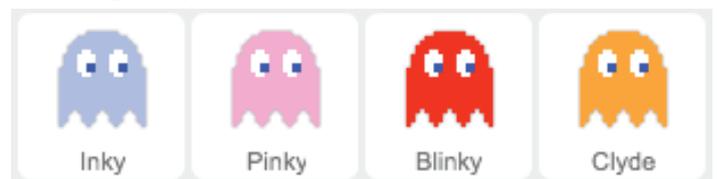
7. Challenge acivities

- Add power-ups! When Pac-Man eats one, all ghosts turn blue and can be eaten by him. Add a 10-second timer. Hint: use *broadcast*.

- Currently, a ghost cancan only change direction when hitting a maze wall. How could this be improved?