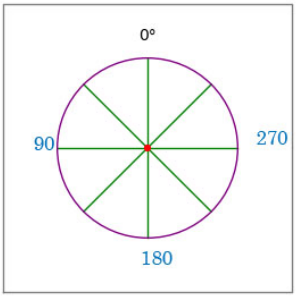
Using First Person

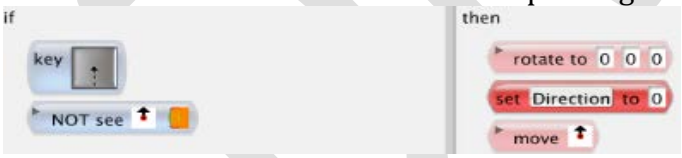
The first person control, the movie camera on the top bar of the AgentCubes window, switches the player's perspective from bird's eye (looking down from above) to first person so the player feels as if he or she is inside the game. First person also makes a game more challenging to play! To play a game in first person, the player selects an agent, usually one that is controlled by keys, and then clicks on the camera. An agent's movement in first person is different than the keyboard-controlled movement in the bird's eye perspective. In first person, the up-arrow means "move forward in the direction that the agent is facing". The other 3 arrow keys rotate the agent left, right or to face the opposite direction.



To program this, we must use an agent attribute, which is a piece of information attached to the agent, to keep track of the agent's Direction. We must make a set of move rules for bird's eye view and a second set for first person. Directions are named as in this diagram of a circle: up is 0 degrees, left is 90 degrees, down is 180 degrees and right is 270 degrees.

To make the bird's eye view move rules: In the agent's when-creating-new–agent method, **set** the agent's Direction to 0 and put 0 into the first number of the **rotate to** action, which will turn the agent to face upwards. Make sure to erase and redraw the agent on the world so it has the Direction set correctly, then save the world.

Edit the agent's key-controlled **move** rules by adding a **rotate to** action and a **set** Direction action to each rule. Make the Direction and the rotation match the arrow key. If the up-arrow is typed, set the Direction to 0 and put 0 in the first box of **rotate to.** All other boxes in **rotate to** should be set to 0. For the left-arrow, type 90 in both places, for the down-arrow type in 180 in both places, and for the right arrow, type 270. Add a **NOT see** condition to these rules in order to keep the agent from climbing walls.

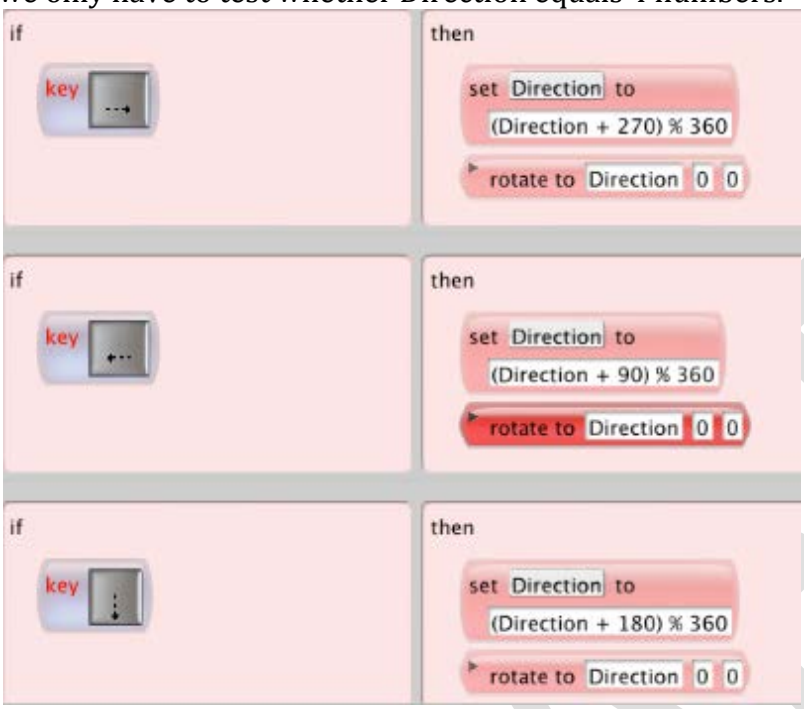


To make the first person move rules add this rule to the agent's while-running method BEFORE the cursor control rules for bird's eye view :

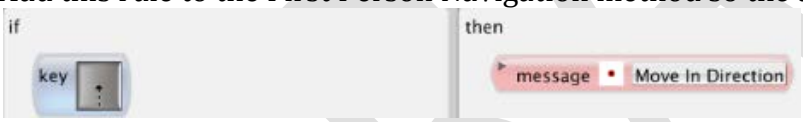
All other rules that apply regardless of first person or bird's-eye view must also precede this new rule. Otherwise, those rules will not be examined when the agent is operating in first person mode.

Then create a new method for the agent and name it First Person Navigation. Add the 3 rules below to this method. Each of these rules makes the agent rotate in the direction of the arrow. The % 360 means "modulo 360". The modulo math operation means that no

matter how many times you add 90 or 180 or 270 to Direction, it will always be less than 360 because we are dividing Direction by 360 and taking the remainder. We do this so that we only have to test whether Direction equals 4 numbers.



Add this rule to the First Person Navigation method so the agent moves the way it faces.



Create a new method and name it Move in Direction. Move in Direction needs these 4 rules:

Add the **Not see** a wall to these rules too. Test your rules by selecting your agent and clicking on the first person control. Move the world around with the rotate, pan and zoom tools so that you are looking over your agent's head in the direction that your agent is facing. Then you will always start out in first person looking the same way as the agent.
(Note that you do not need to save the world when adjusting the camera position. It becomes part of the "definition" – like a permanent attribute -- of the agent.)