



Removing Bomb



Main goal

Use hamster robot to remove obstacles



Story

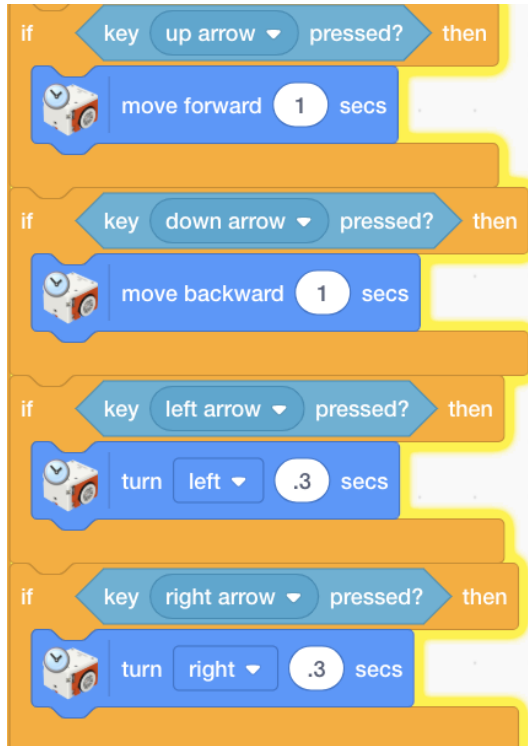
We are removing the bombs placed on the airport

Since it is too dangerous for people to remove it, we are going to use a robot to remove it

The robot is going to remove the bomb with gripper

When the bomb is removed from the airport, the bomb is disabled

Step 1: make a remote



We are going to make our robot move using arrow button

Turn left/right 1 sec turns the hamster approximately 90 degrees. 30 degrees seem to be easier to control robots precisely so it's better to turn for .3 sec when left/right arrow is pressed

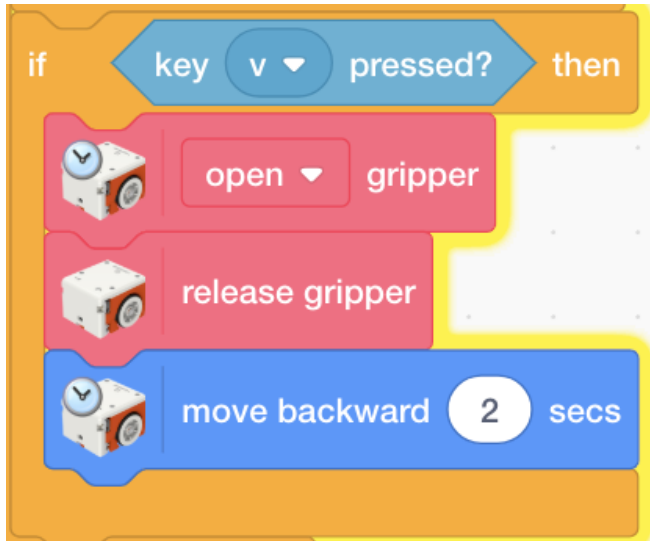
Step 2: grabbing a cup



If an obstacle is found, the gripper closes

If there is no move forward 1 secs function, the gripper might close without catching the cup

Step 3: releasing a cup



After pressing certain button, the cup is released

If there is no move backward 2 secs, the hamster will move forward because of the function we made in step 2

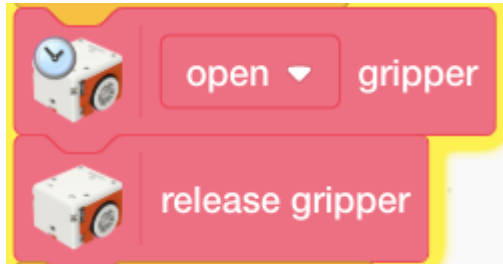
Step 4: making the function smoother

To make the releasing the block smoother, follow white line until front intersection makes the hamster align to the parallel line which requires only moving forward to smoothly release the cup outside of the square

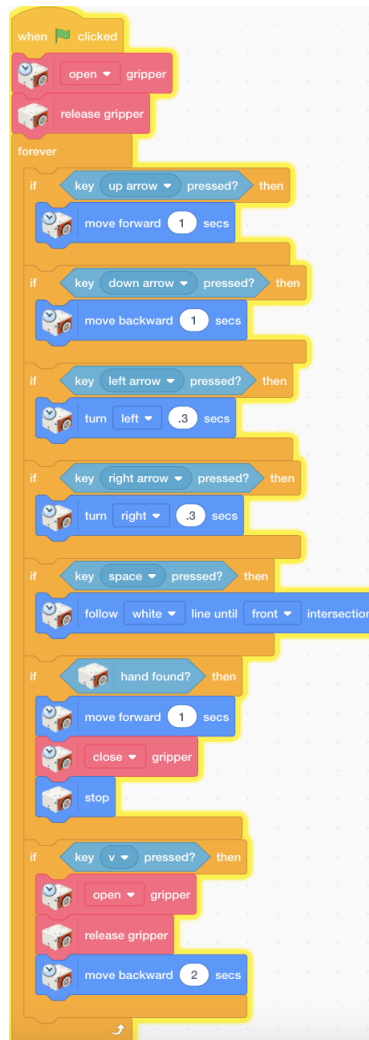


Common mistakes

If you do not open gripper at the start of the coding, the gripper can not hold onto the cups.



Final code



```
when clicked
  open gripper
  release gripper
  forever
    if key up arrow pressed? then
      move forward 1 secs
    if key down arrow pressed? then
      move backward 1 secs
    if key left arrow pressed? then
      turn left .3 secs
    if key right arrow pressed? then
      turn right .3 secs
    if key space pressed? then
      follow white line until front intersection
    if hand found? then
      move forward 1 secs
      close gripper
      stop
    if key v pressed? then
      open gripper
      release gripper
      move backward 2 secs
```

The image shows a Scratch script for a robot gripper. It starts with a 'when clicked' event block. The first two blocks are 'open gripper' and 'release gripper'. This is followed by a 'forever' loop containing several conditional blocks. The first four are 'if key [up/down/left/right arrow] pressed? then' blocks, each followed by a corresponding movement or turn block: 'move forward 1 secs', 'move backward 1 secs', 'turn left .3 secs', and 'turn right .3 secs'. The fifth is an 'if key [space] pressed? then' block followed by 'follow white line until front intersection'. The sixth is an 'if hand found? then' block followed by 'move forward 1 secs', 'close gripper', and 'stop'. The seventh is an 'if key [v] pressed? then' block followed by 'open gripper', 'release gripper', and 'move backward 2 secs'. The script ends with a small arrow icon at the bottom of the loop.



