Hour of Code 2021 - Activity Guide

Hockey

Workshop Outline

The objective is to build a Hockey game in Scratch where one Player plays against the computer and tries to score a goal.

Learning Objectives:

- Familiarity with the Scratch environment: sprite, stage and scripts
- Motion: Using the **keys** to control the main character movements
- Interaction: Sensing a specific color and sprite
- Use of variables to keep track of different values
- Optional: Costume creation and manipulation

Materials and resources:

- Scratch Account (Recommended)- Scratch info link - Account info link
- Scratch starter project - LINK
- Scratch completed project - LINK
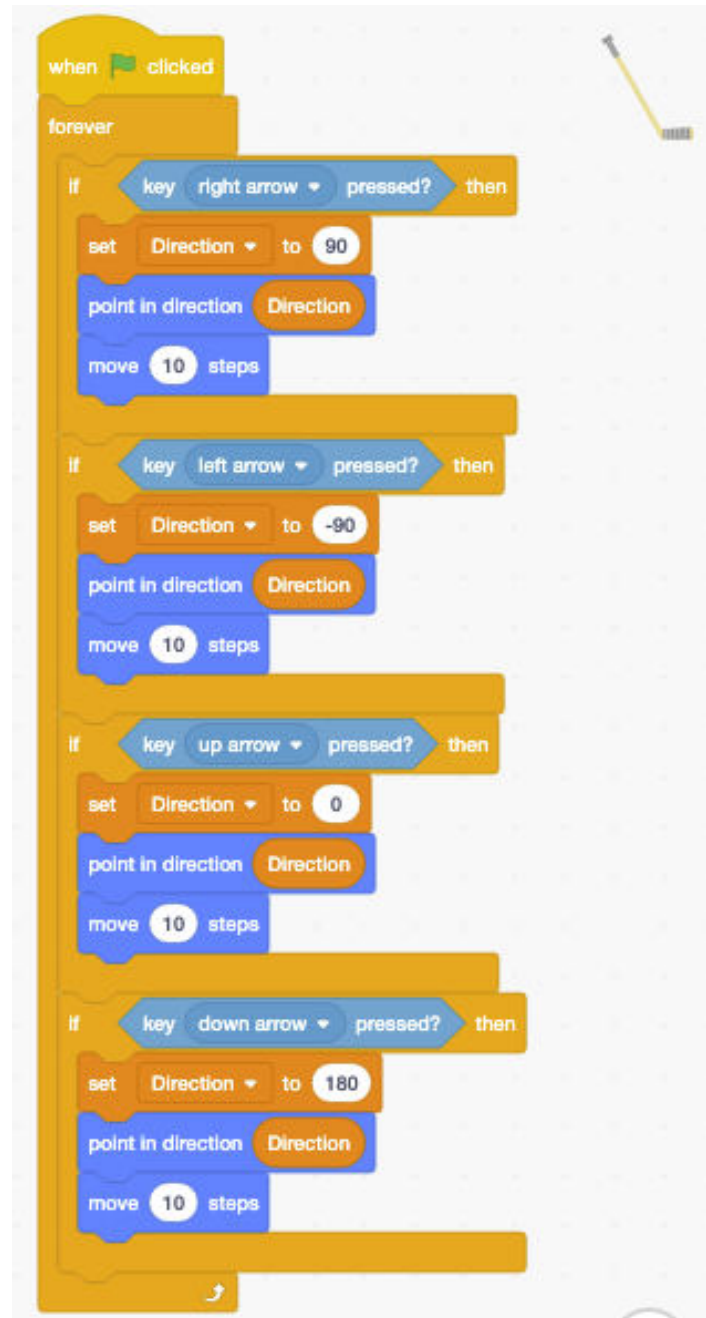
Let's Code

We have provided for you in the starter project a background, hockey stick, puck and goalie. Once you are done coding the project with the provided items, change the way they look or replace them with some items of your choice.
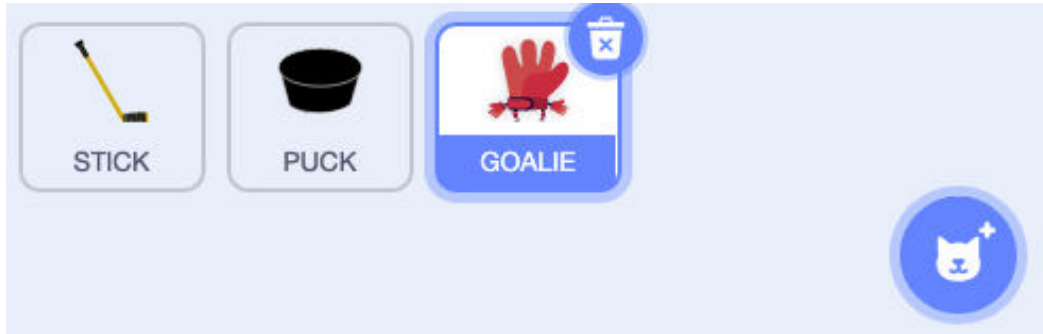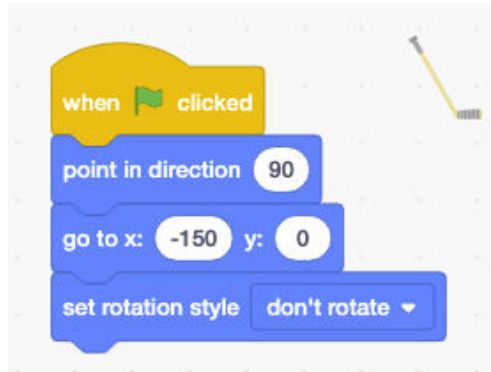
Coding the Hockey Stick Sprite

This Sprite needs two sets of blocks, one to set the initial position and the other to react to arrow key presses by the player.

1. Move the Sprite using the arrow keys. This way of controlling the Sprite allows for a smooth and fast response. An interesting piece of this code is that we are creating a variable **Direction** that will tell the **Stick** and **Puck** Sprites where to move.

```
when  clicked
forever
    if  key  right arrow ▼  pressed?  then
        set  Direction ▼  to  90
        point in direction  Direction
        move  10  steps

    if  key  left arrow ▼  pressed?  then
        set  Direction ▼  to  -90
        point in direction  Direction
        move  10  steps

    if  key  up arrow ▼  pressed?  then
        set  Direction ▼  to  0
        point in direction  Direction
        move  10  steps

    if  key  down arrow ▼  pressed?  then
        set  Direction ▼  to  180
        point in direction  Direction
        move  10  steps
```

2. Set the initial position and direction of the Sprite on the Stage. The **set rotation style** block prevents the Sprite from flipping upside down.

Coding the Hockey Puck Sprite

We'll add three sets of blocks to this Sprite to control initial position, reaction to touching the net and reaction to touching the Goalie or Stick.

1. First, we set the initial position. The second set of code detects and reacts to the Puck touching the colours on the net:
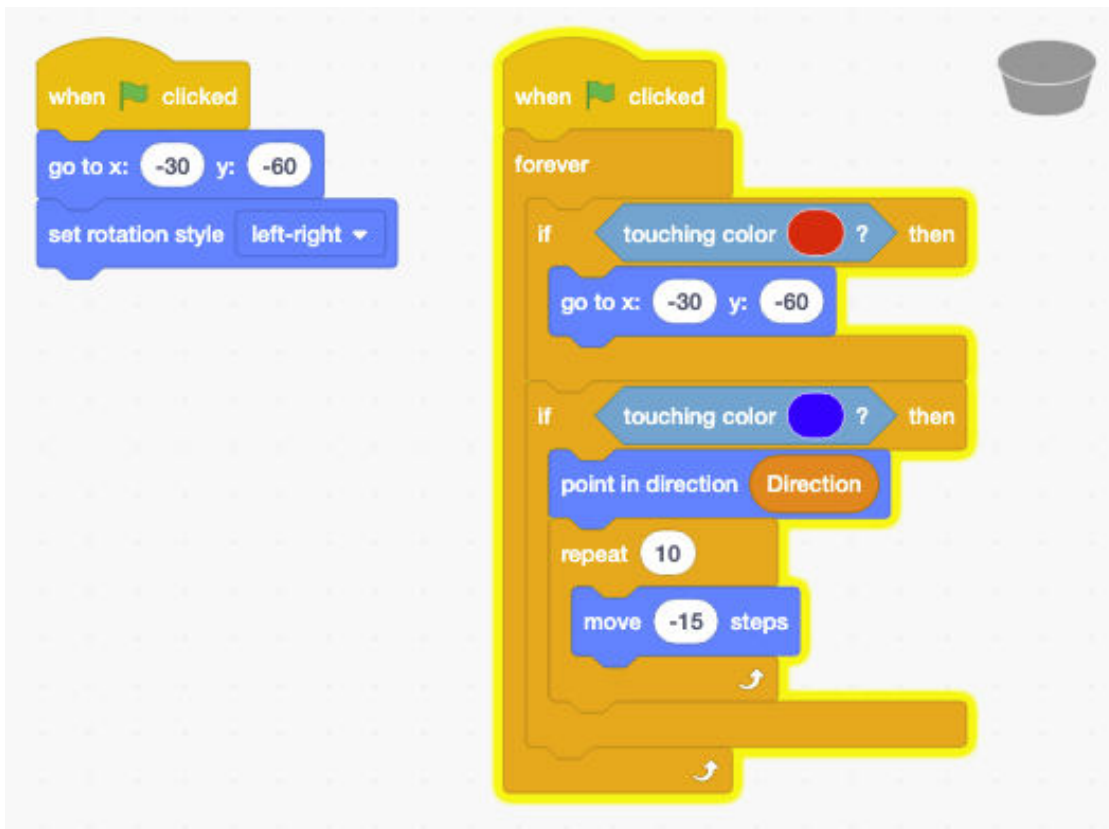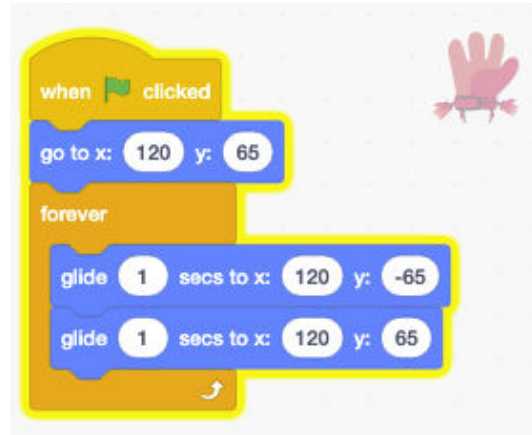
2. The third set of blocks are checking to see if the Puck is touching either the Hockey Stick or the Goalie and reacting to it.
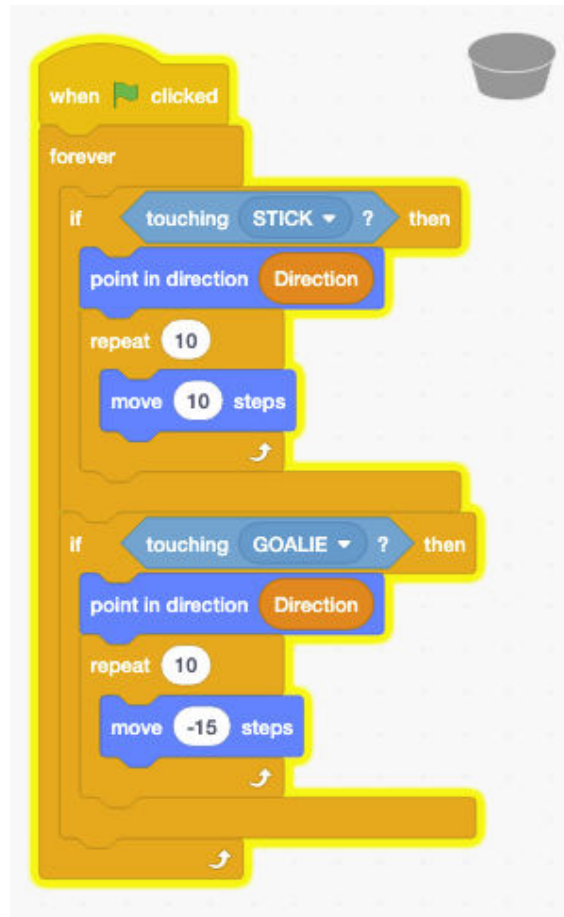

Coding the Goalie Sprite

The Goalie Sprite is quite simple compared to the previous ones. All we are doing is setting the initial position and then we make it move up and down (y axis) for as long as the game is running.

Adding Score

The game looks cool, but we can make it better by adding a score, as at this moment it is not easy to determine all the time if the Puck went in the net or if the Goalie saved it. To solve this problem, we'll add a few blocks to our Puck Sprite.

Modify (refactor) your Puck set of blocks in charge of sensing contact of the Puck with the net as follows:
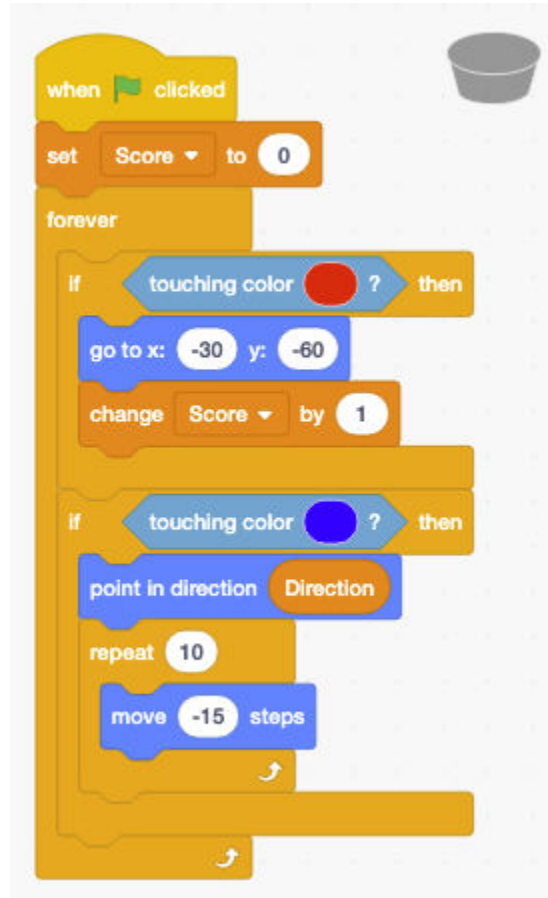
Great work! You have created a Hockey game using Scratch. Try some of these extensions:

Extensions

1. Add a timer that ends the game after 2 minutes
2. How would you have a friend play with you instead of the computer
3. Make the Goalie move in a random pattern