

# StepByStep SUbingDOKU®

# Coding a Mars (Ingenuity) Helicopter – Part Two



by Bob Gnibus (11-March-2023)

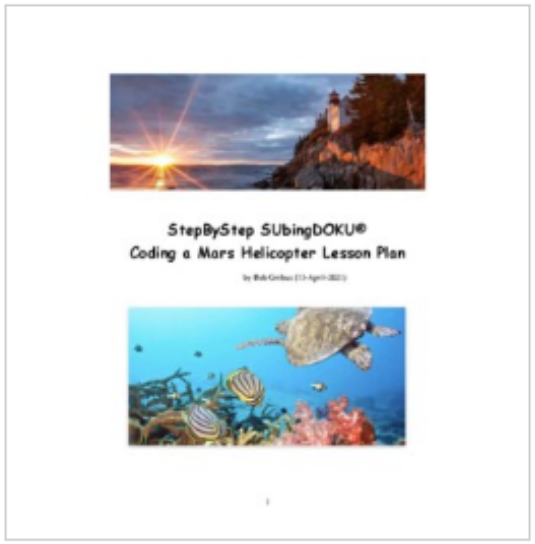
Free Resource on TPT – Teachers Pay Teachers

See below for the original free instructions on how to Code a Mars Helicopter (Ingenuity) Video Game using the “Scratch” programming method

# Lesson Plan: Code a Mars Helicopter Video Game - Ingenuity

★★★★★ 1 Rating

90 Downloads






GRADE LEVELS

4th - 6th

SUBJECTS

Computer Science - Technology, Critical Thinking, Engineering

RESOURCE TYPE

Activities, Games

FORMATS INCLUDED

✓ PDF

PAGES

36 pages

FREE

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Wish List

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# Introduction

Part Two has also been created as a free resource to provide an additional STEM exercise on expanding the helicopter video game using multiple backdrops using “Scratch” programming. Students should be familiar with Part One (the original) before moving on to the techniques used in Part Two.

Why?

As of 11-March-2023, the NASA/JPL-Caltech Mars “Ingenuity” Helicopter has completed 46-Flights

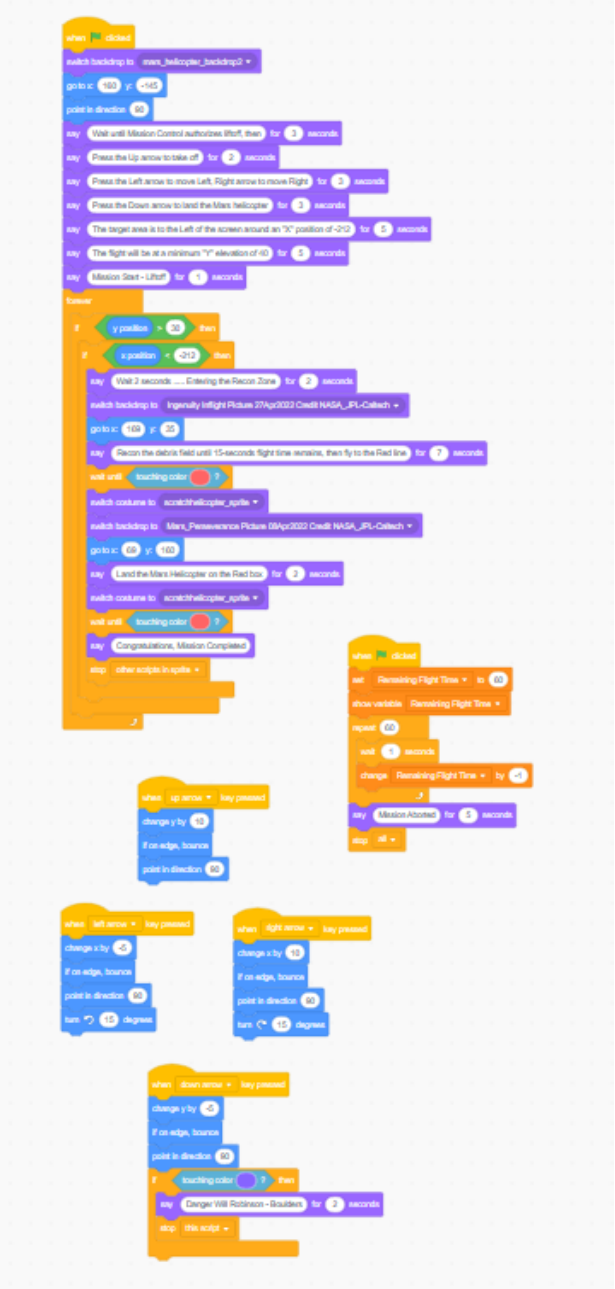
and

My original “Lesson Plan – Code a Mars Helicopter (Ingenuity) Video Game” has been downloaded 90 times

and

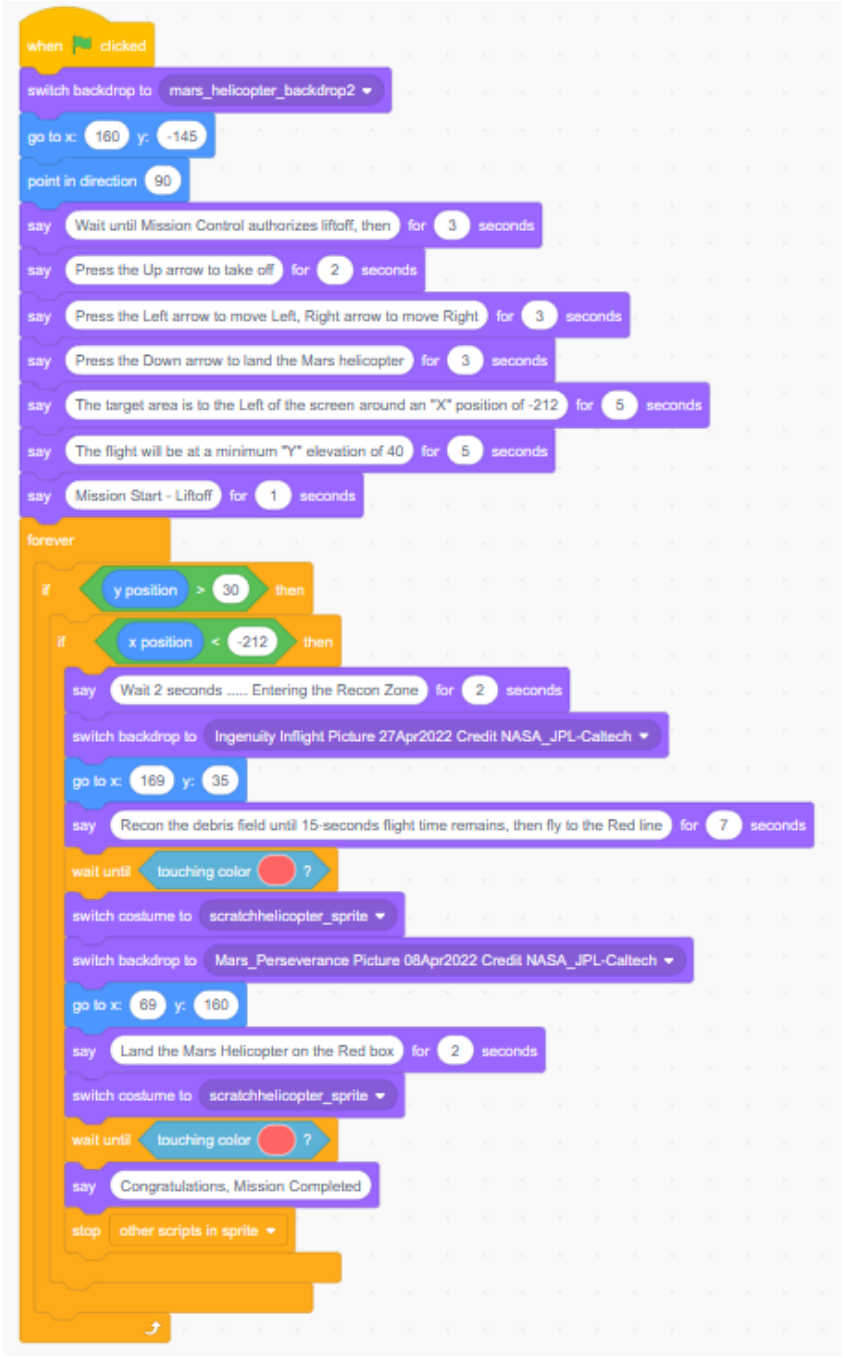
Hopefully these resources create an interest in STEM activities

Comments, corrections and/or improvement suggestions would be appreciated for the current resources and ideas for future STEM exercises using “Scratch” programming.



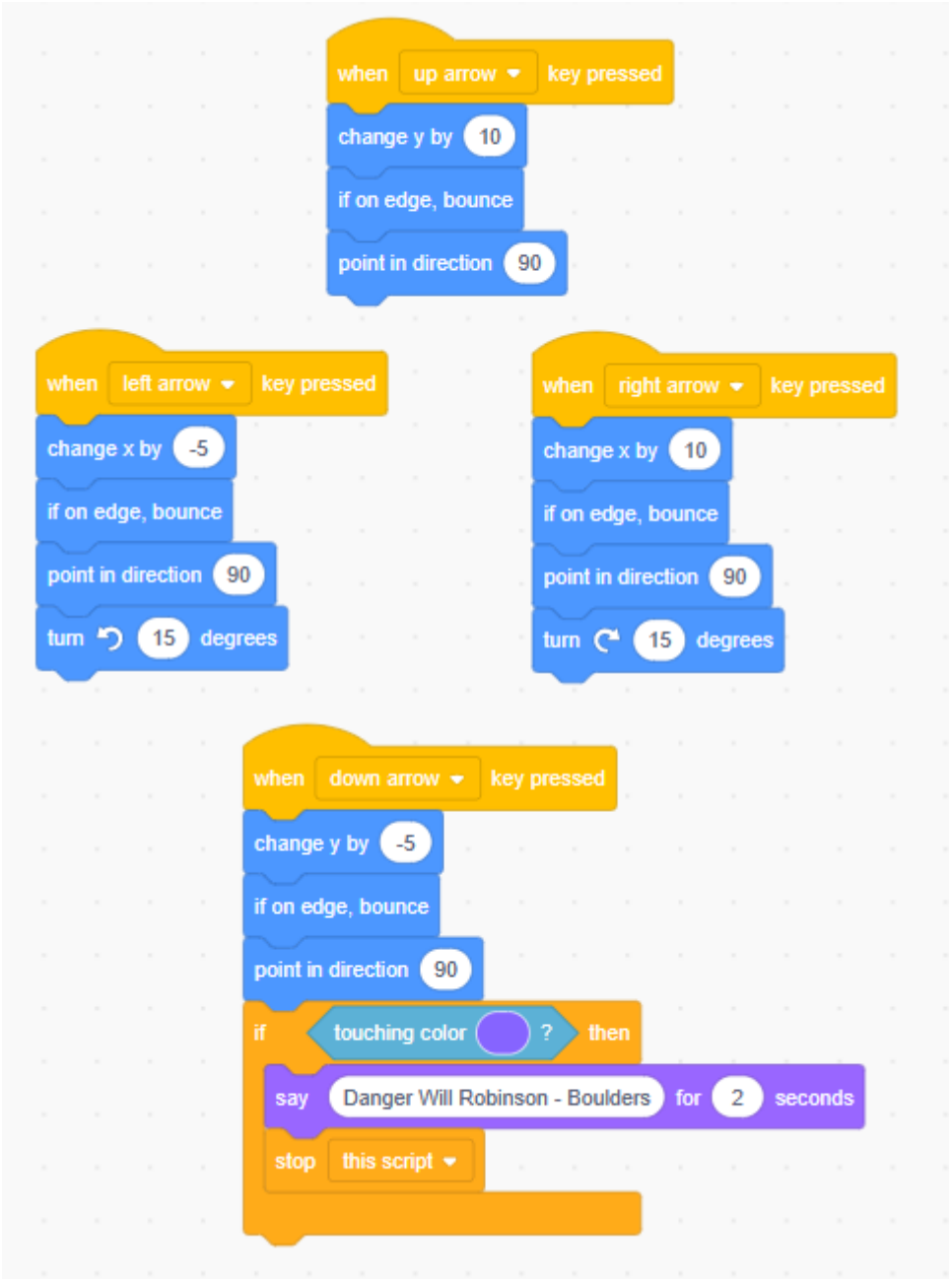
# The “Scratch” Program – Part 2

- Here is what the complete program will look like at the end of the exercise.
- A note of Caution! Save your work on a regular basis as you create and revise your program.



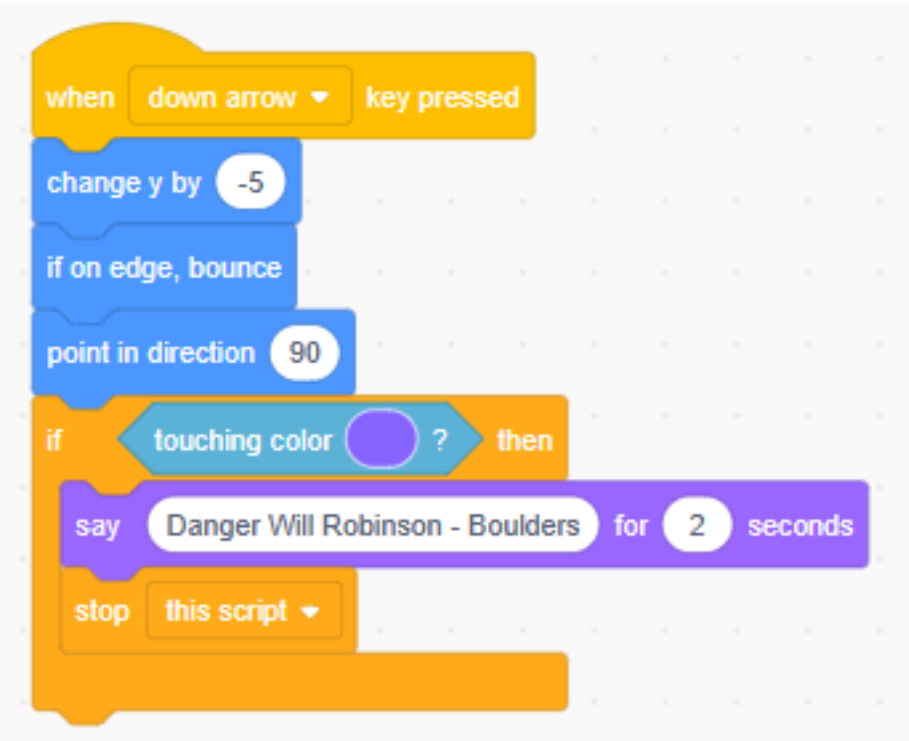

# Overview

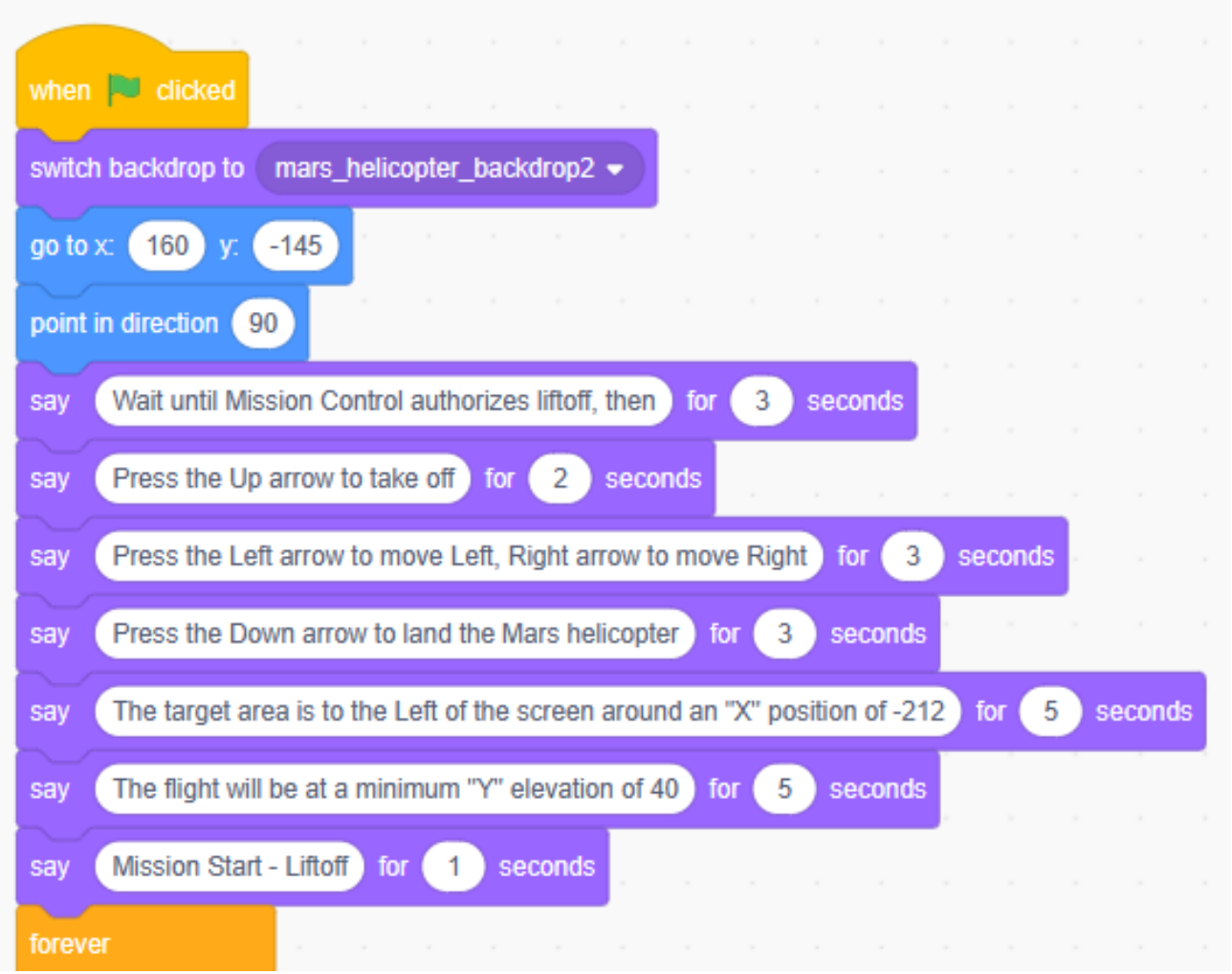
- Here is what the main section of the program will look like at the end of the exercise
- See expanded views on the next couple of slides
- Detailed instructions will be provided for each step in the program




# Flight School

Movement of the Helicopter is controlled by these four standalone blocks of instructions in the program (i.e., Up, Left, Right, Down)
The Mars Helicopter will fly around the screen with only these programmed instructions



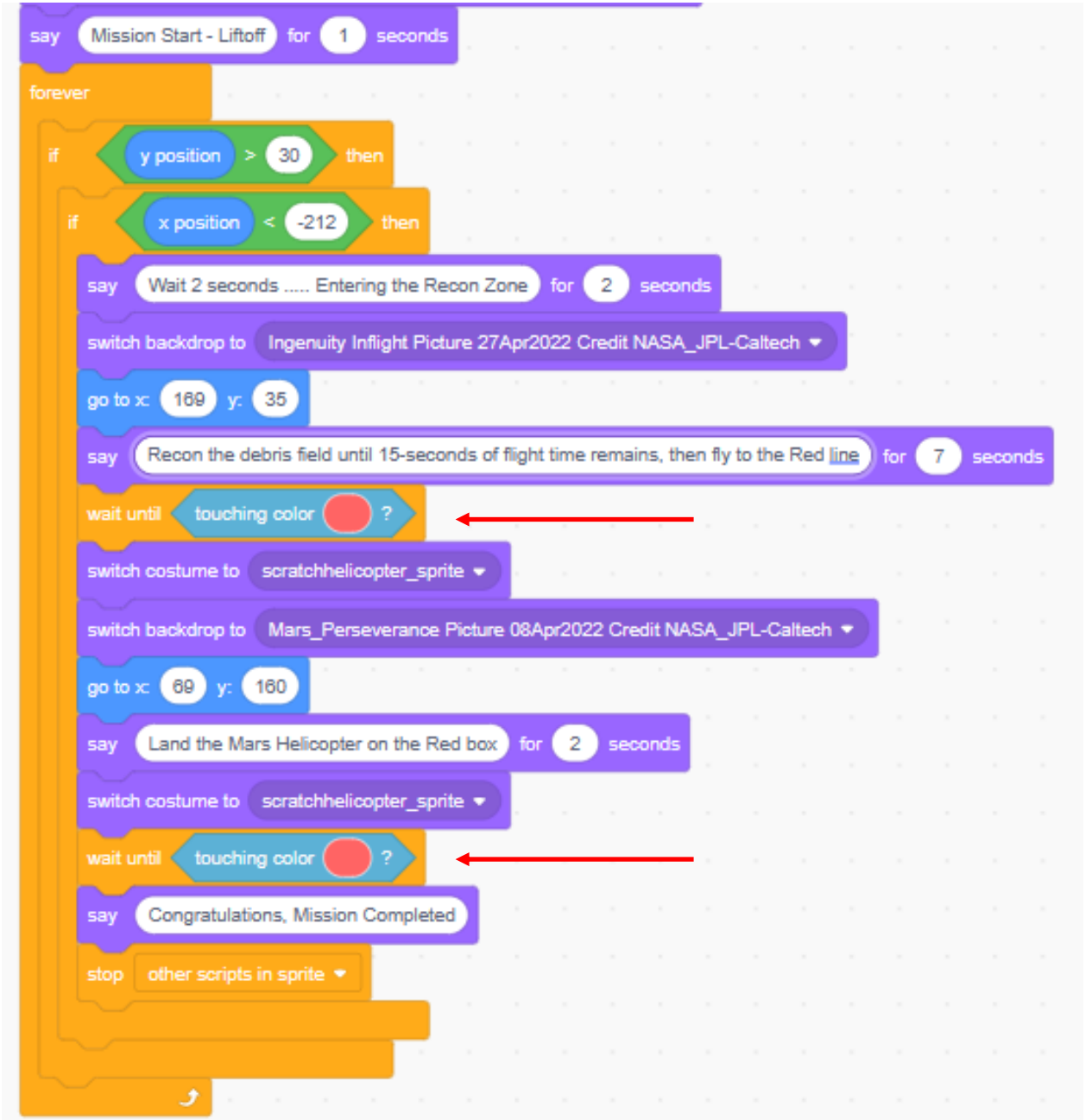


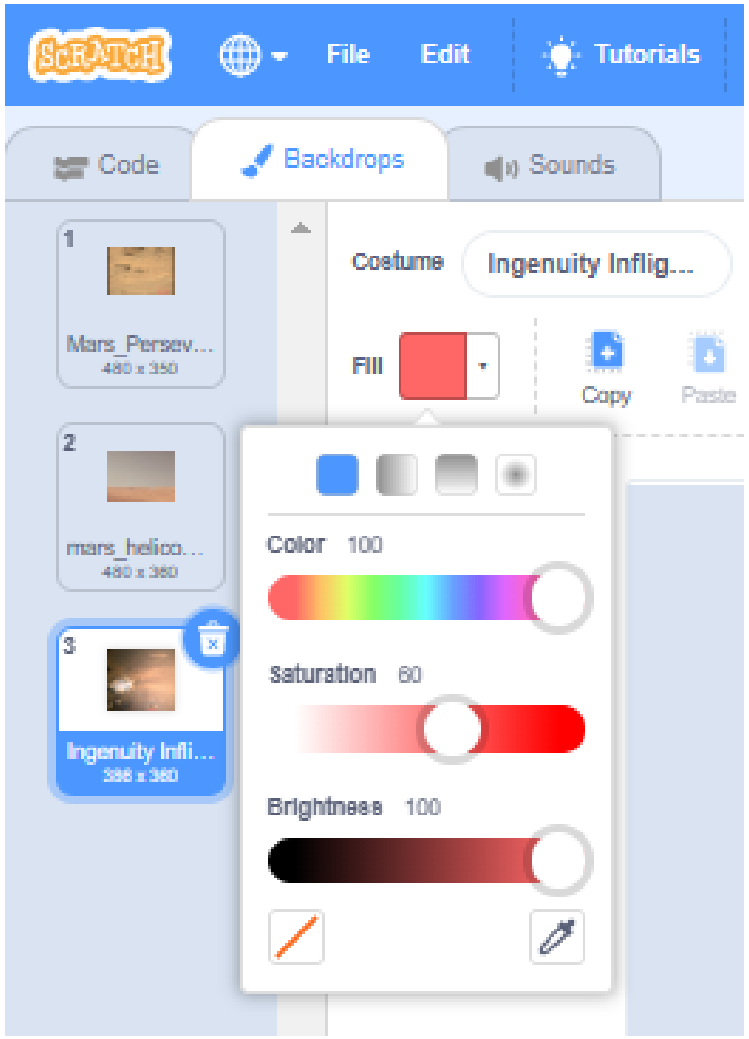

# Mission Preflight Briefing

This section of the programming code provides Preflight Briefing instructions.

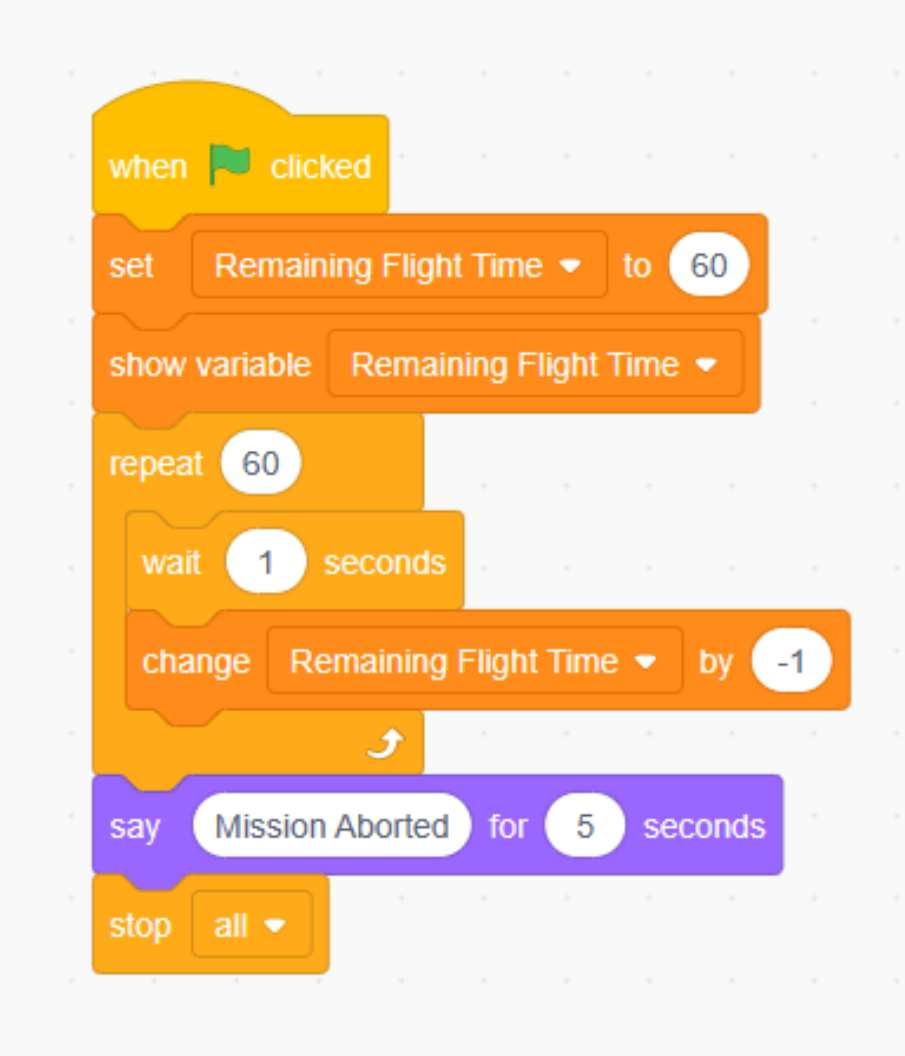
The Mars Helicopter has been programmed to permit early takeoff before Mission Start. The Pilot, however, will not be able to enter the “Recon Zone” until the Mission Start line of the program has been completed.

Step-by-Step instructions on how to create this section and other sections of the program start on Slide # 16




The code for the “touching color” Sensing function in the program must exactly match all of the elements (i.e., Color, Saturation, Brightness)




# Mission Countdown Clock

This is an additional standalone block of instructions in the program, just to make the game and program a little more challenging!

(just like the flight limitations placed on the Mars Ingenuity Helicopter)