

Space Adventures Computing Unit 2

Lesson 2 – Booster Separation

Curriculum Mapping (Computing KS2)

- ◆ use sequencing, selection and repetition in programs; work with various forms of input and output
- ◆ use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Learning Objective

Code a simulation of Tazz's rocket separating from its booster sections.

Prior Learning

Good knowledge of most KS2 coding techniques, familiarity with Scratch.

Introduction

Explain that **multi-stage rockets** use multiple booster sections to launch a spaceship or satellite. Show pupils the **U2L2 introduction.mp4 video**. Using the prompts in the video, ask pupils to identify how each part of the rocket separates and how it behaves. (This can be done orally or written in rough, and is known as the algorithm).

Main Activity

Pupils use Scratch to create their own simulation of a rocket separating into sections. Show the class the **U2L2 demonstration.mp4 video** or how to access it on their own computers. Hand out the **U2L2 step by step.pdf** guide or show pupils how to access it on their computers. (Opening a second tab in the browser will allow pupils to switch between the help guide/video and their own work).

Extension Activity

Show pupils the activities on the **U2L2 going further.pdf** document. These include experimenting with aspects of the code and adding a flame animation to the rocket sections.

Plenary

Show pupils the algorithm from the introduction video. Show them the completed code in Scratch (**U2L2 code - booster separation.sb2**). Choose one of the steps from the algorithm (eg *when button 1 is pressed the bottom stage is released*) and ask them to identify where this is represented in code in Scratch (code starting *repeat until button 1 is pressed..*).

Notes

This program relies on their being 3 sprites, correctly positioned to make it work. The first section of code for each sprite positions them at the bottom of the screen, at the correct size.

Initially the three sprites move together up the screen.

Pressing 1 on the keyboard makes the bottom section of rocket run some different code. This moves the section of rocket down the screen, until it hits the edge.

Pressing 2 on the keyboard makes the middle section of rocket jump to some different code. This loop moves the section of rocket down the screen, until it hits the edge.

The top section keeps moving until it hits the top of the screen.