



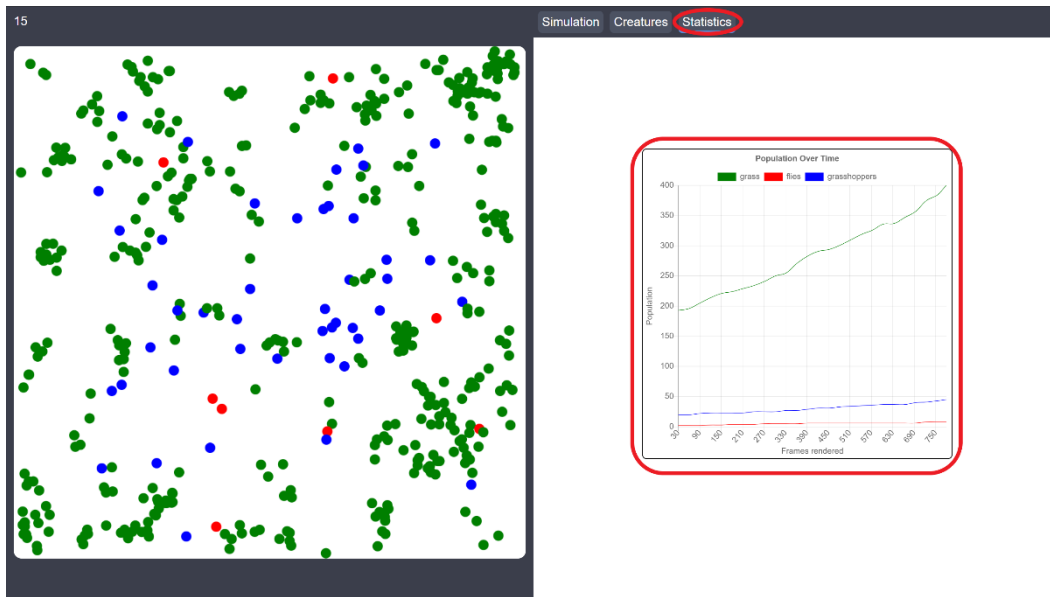
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Year 7-8**

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Code explanation

Files

Simulating Ecosystems uses three files: `index.html`, `engine.js` and `chart.js`. `index.html` contains the markup code responsible for the user interface. `engine.js` contains the backend JavaScript code responsible for making the user interface interactive and calculating the creature's behaviour. `chart.js` contains the JavaScript code for graphing the data in the 'Statistics' tab. The `chart.js` code is an external library licenced under MIT available at <https://www.chartjs.org/>.

Sections

There are four main sets of functions in the `engine.js` code: initialisation, user interface interaction, creature modification and rendering/calculations.

The initialisation section defines global variables and set initial values for variables.

The user interface section contains functions such as `changeTab`, `setCanvasStyle`, `showTabCre`. The `changeTab` function swaps between the Simulation, Creatures and Statistics tabs. The `setCanvasStyle` function resizes the area where the dots are drawn when the window is resized. The `showTabCre` function switches the creature that is being edited when in the 'Creatures' tab.

The creature modification section has five main functions: `addCreature`, `updateCreature`, `deleteCreature`, `deleteCreatureCode` and `restartSimulation`. The `addCreature` function creates a creature and initialises the creature's properties. The `updateCreature` function changes the creature properties. The `deleteCreature` function tells the program to pause next frame and call the `deleteCreatureCode` function, this is because removing creatures while the main render function is executing can cause confusing semantics. The `deleteCreatureCode` function hides the creature from the editing lists and deletes all copies of it in the simulation but saves its properties, so the creature can be recovered using `addCreature`.

The rendering/calculations section has one long function called 'main'. This function draws and calculates the behaviour of the creatures. The function draws the dots on the left half of the screen,

