MECH 415

Final Project

Sean le Noble

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My project is a video game that simulated a rocket ship. The objective of the game is to land the rocket on top of the platform in order to proceed to the next level. The position of each platform is randomly generated.

The program works by creating an array of rocket and platform objects. Each platform is given a random location. When the rocket lands on a platform, both the rocket and platform are deleted and removed from memory. The program then draws the next rocket and platform. The program is currently set up to have 5 stages but the amount of stages can be increased or decreased by changing the value of the variable N.

The program used a collision map to detect when the rocket is in contact with the rocket. In order for a point to be awarded, the rocket must have made contact with the platform while in a up right position (within a few degrees of PI/2). There is a bug in the program, if the rocket does a complete revolution, the program will no longer award a point. This is because the angle will now be 2 PI + the new angle. This can be fixed by having the angle reset when ever a revolution is completed but I did not have time to implement this fix.

The simulation of the rocket is done using the following kinematic equations

x = x + vx \* dt;

y = y + vy \* dt;

q = q + w \* dt;

The velocity was split into 2 components in order to be able to apply gravity to the rocket in only the Y direction.

The score is displayed to the screen by using the text() function from the 2d\_graphics library. This function only accepts character arrays. A memory buffer is used in order to create the necessary output.

Please ensure the directX dimensions are set to width = 1500, height = 800;