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COMP_SCI_351 Introduction to Computer Graphics
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Project A: Harry Potter World

This project demonstrates animated objects from the Harry Potter Series which includes the flying snitch and the flying car. Each part in the project is individually designed and it contains multiple shapes like trapezoids and cylinders whose vertices are calculated separately. As we can see in the demo, each shape is made up of 2 colors, viz. black and yellow and is rasterized from vertex to vertex.

When we open the 'RutujaKajave_ProjA.html' file in a browser that supports WebGL, we get the following display on our screens:

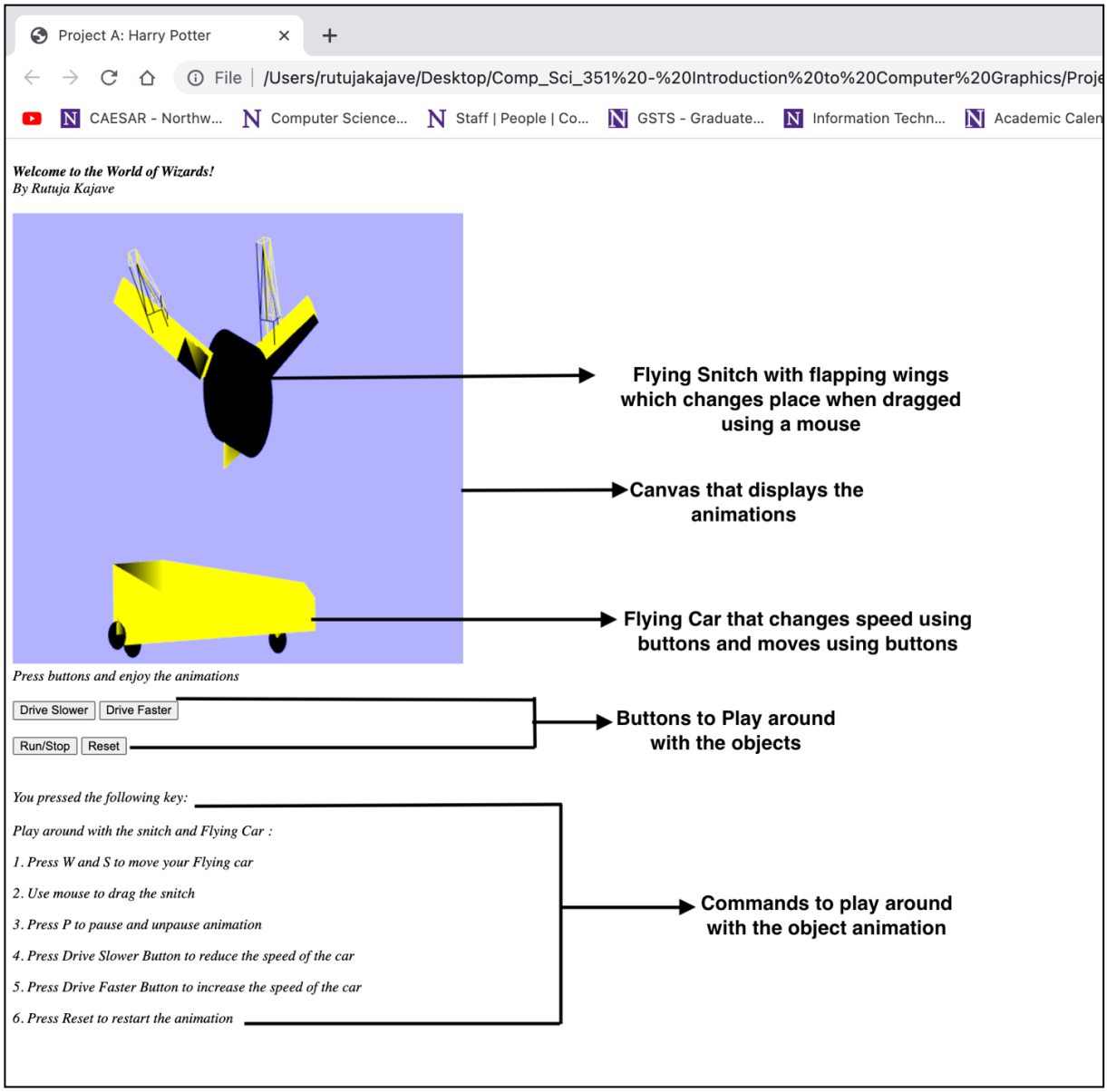

Fig 1. Initial display when you open html file

1. **Flying Snitch:**

   As seen on the canvas, the snitch is flying continuously, and the user can change the position of the snitch by dragging it anywhere on the canvas. The snitch has a cylindrical body which is oriented in the +z facing direction therefore, the circular face of the snitch is visible when looked at it perpendicularly whereas the cylindrical body is visible when the snitch is in motion. The snitch consists of two wings which are each made up of 2 parts, one solid colored joint and the other is a meshed joint. Both the joints are rotating at different rates as seen on the screen.

2. **Flying Car:**

   The Flying car is originally flying in a horizontal direction in a back-and-forth motion at a constant speed. The car consists of 3 wheels which are connected to the base. The two wheels at the back are rotating along the z axis whereas the front wheel rotates around z and y axis.

Multiple tasks can be performed on the objects on the canvas as mentioned below:

1. User can change the position of the snitch by dragging it anywhere on the screen using a mouse.

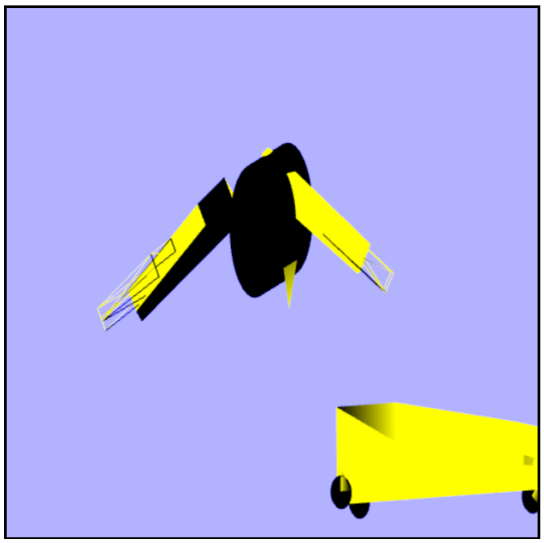

Fig 2. Initial Position of the snitch

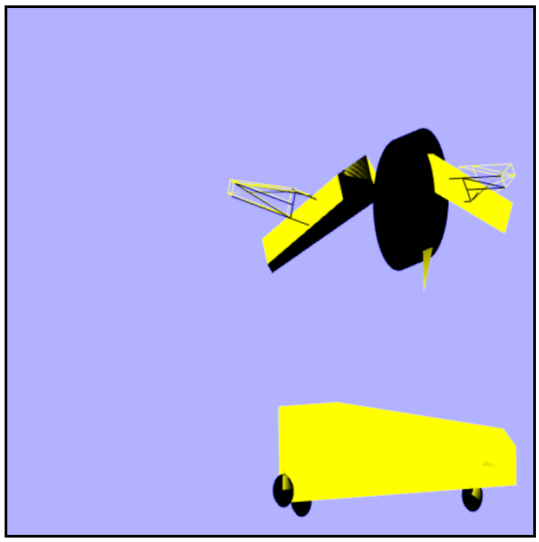

Fig 3. Changed Position of the snitch

2. User can press the keys "W" and "S" to apply an upward or downward force to the flying car. When the user presses the "W" button the car flies upwards and when "S" is pressed the car lowers down. If

user presses both the buttons together, then there is no change in the motion of the car as the forces will cancel each other and the speed will be zero again.

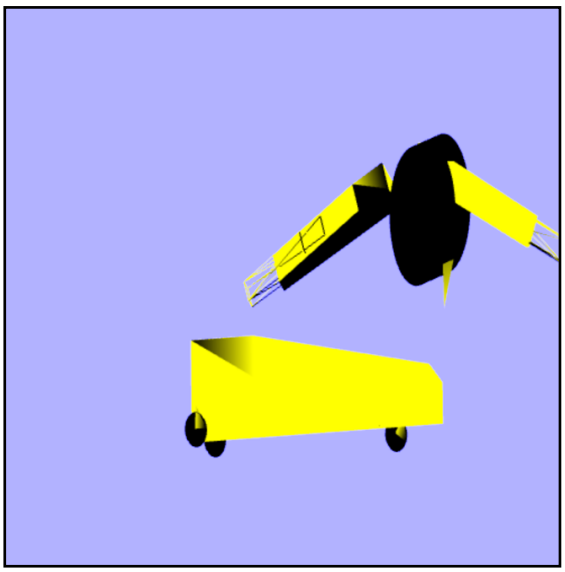

Fig 4. Press "W", car flies Upwards

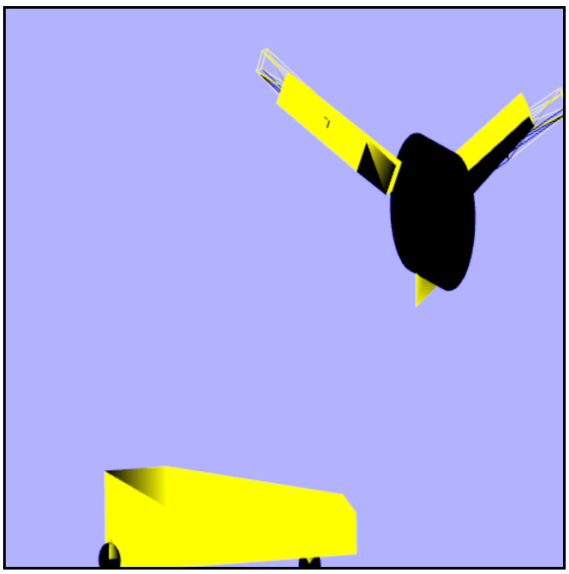

Fig 5. Press "S", car flies Downwards

3. The "Drive Faster" and "Drive Slower" buttons are used to manipulate the speed of the car in the latitudinal direction. The "Drive Faster" button will increase the speed of the car whereas the "Drive Slower" button will decrease the speed.

4. User can press "P" on the keyboard or the "Run/Stop" button on the screen to pause and play the animation.

5. "Reset" button is used to reset the positions and speeds of both the flying car and the flying snitch to default.

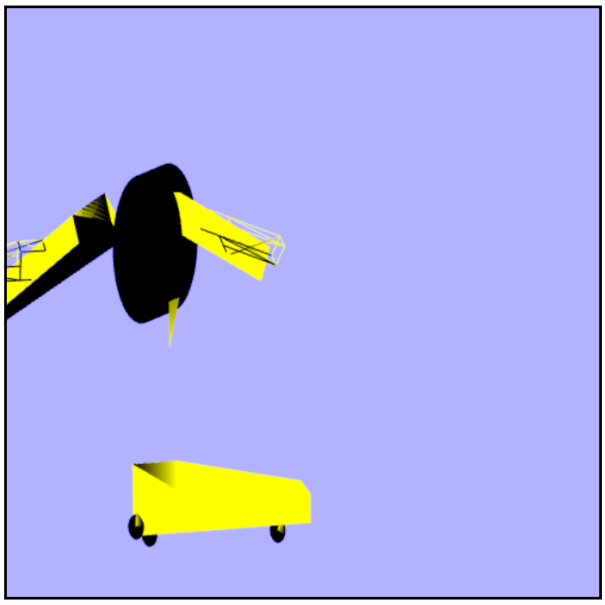

Fig 6. Press “Reset”, both Snitch and car go to default position

This the overall working and demonstration of Project A.
