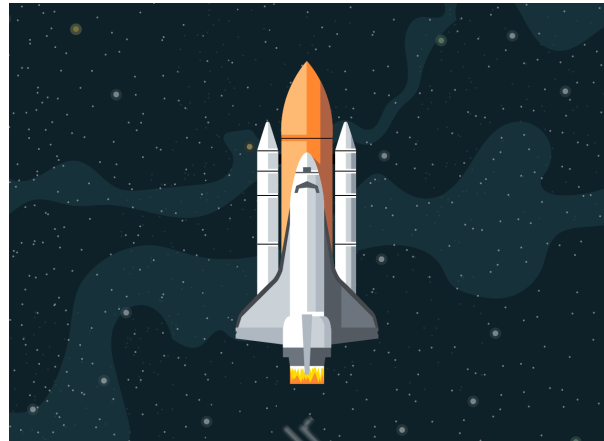**WhiteHat Jr**
Live Online Coding for Kids

A-FRAME DOM STRUCTURE & JAVASCRIPT EVENT LISTENERS

What is our GOAL for this MODULE?

The goal of this module is to create a simulation with the help of components and also triggering a window event.

What did we ACHIEVE in the class TODAY?

- We learned about the A-Frame DOM structure.
- We learned about the javascript event listener.
- We learned how to control A-Frame entities based on the events fired on the entity.

Which CONCEPTS/CODING BLOCKS did we cover today?

- Used AFRAME.registerComponent (name, definition)
- Used <a-entity>,<a-triangle>,<a-cylinder>,< a-sphere>,<a-camera> etc tags
- window.addEventListener()

How did we DO the activities?

1. We learned how to create a 3D-Rocket using A-Frame DOM.

```
<!--Part 1-->
<a-cone  id="part1"  position="0 1.5 0" color="tomato" radius-bottom="0.5" radius-top="0.1" >
</a-cone>

<!--Part 2-->
<a-cylinder  id="part2"  position="0 -1 0" color="orange" radius="0.5" height="4" >
</a-cylinder>
```

```
<!--Part 3-->

<a-cylinder id="part3"  position="0 -3 0" radius="0.5" color="blue" height="1.5" >

  <a-triangle position="-0.93 -0.95 -0.94" scale="0.5 0.5 1" color="blue"
  vertex-a="1 1 1" vertex-b="1 3 1" vertex-c="-1 1 1"></a-triangle>

  <a-triangle position="-0.11 -0.026 -0.94" rotation="0 0 270" scale="0.5 0.5 1" color="blue"
  vertex-a="1 1 1" vertex-b="1 3 1" vertex-c="-1 1 1"></a-triangle>

</cylinder>
```

2. We learned how to write the component to move the rocket in the Y direction.

```
AFRAME.registerComponent("move", {
  schema: {
    moveY: { type: "number", default: 1 },
  },

  tick: function () {
    var pos = this.el.getAttribute("position");
    this.data.moveY = this.data.moveY + 0.01;

    pos.y = this.data.moveY;

    this.el.setAttribute("position", { x: pos.x, y: pos.y, z: pos.z });
  },
});
```

3. We learned how to make all parts of the rocket as the child of <a-entity> and add the "move" component.

```
<a-entity id="rocket" position="0 0 0" rotation="0 0 0" move>

  <!--Part 1-->
  <a-cone  id="part1"  position="0 1.5 0" color="tomato" radius-bottom="0.5" radius-top="0.1" >
  </a-cone>

  <!--Part 2-->
  <a-cylinder  id="part2"  position="0 -1 0" color="orange" radius="0.5" height="4" >
  </a-cylinder>

  <!--Part 3-->

  <a-cylinder id="part3"  position="0 -3 0" radius="0.5" color="blue" height="1.5" >

    <a-triangle position="-0.93 -0.95 -0.94" scale="0.5 0.5 1" color="blue"
    vertex-a="1 1 1" vertex-b="1 3 1" vertex-c="-1 1 1"></a-triangle>

    <a-triangle position="-0.11 -0.026 -0.94" rotation="0 0 270" scale="0.5 0.5 1" color="blue"
    vertex-a="1 1 1" vertex-b="1 3 1" vertex-c="-1 1 1"></a-triangle>

  </cylinder>

</a-entity>
```

4. We learned how to create the sphere entity for the earth view.

```
<!--Earth-->
<a-entity position="0 0 0" rotation="0 0 0"
  animation="property: rotation; to: 0 360 0;easing:linear; loop: true; dur: 1000000">
  <a-sphere position="0 -10 10" radius="10"
  src="https://cdn.glitch.com/850dd813-e5e9-4dd0-9751-38981ae74172%2Fearth.jpg?v=1604312404511">
  </a-sphere>
</a-entity>
```

5. We learned how to write the custom component to move the camera position.

```
AFRAME.registerComponent("camera-zoom-out", {
  schema: {
    moveZ: { type: "number", default: 10 },
  },

  tick: function () {
    this.data.moveZ = this.data.moveZ + 0.01;

    var pos = this.el.getAttribute("position");

    pos.z = this.data.moveZ;

    this.el.setAttribute("position", { x: pos.x, y: pos.y, z: pos.z });
  },
});
```

```
<a-camera wasd-controls-enabled="false" position="0 1.6 0" camera-zoom-out>
</a-camera>
```

6. We learned how to write a component to make the third part down on the window click event.

```
AFRAME.registerComponent("fall-down", {
  schema: {
    moveY: { type: "number", default: 0 },
  },
  tick: function () {

    window.addEventListener("click", (e) => {

      this.data.moveY = this.data.moveY - 0.001;

    });
    var pos = this.el.getAttribute("position");
    pos.y = pos.y + this.data.moveY;
    this.el.setAttribute("position", { x: pos.x, y: pos.y, z: pos.z });
  }
});
```
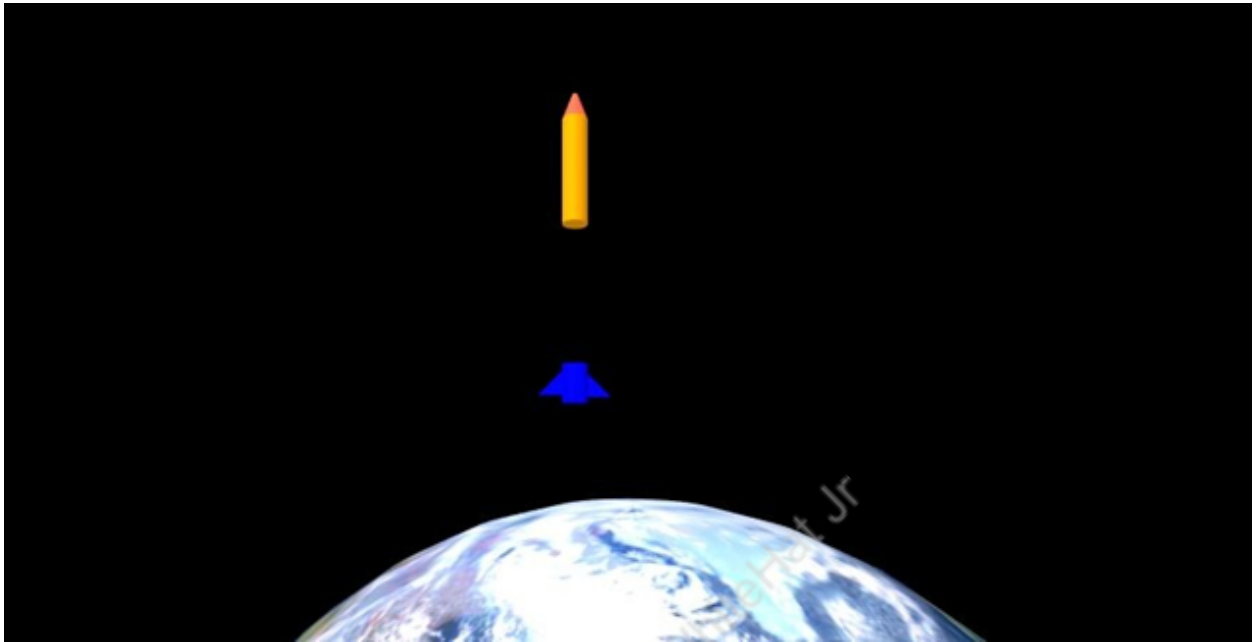
```
<!--Part 3-->

<a-cylinder id="part3"  position="0 -3 0" radius="0.5" color="blue" height="1.5" fall-down>

  <a-triangle position="-0.93 -0.95 -0.94" scale="0.5 0.5 1" color="blue"
  vertex-a="1 1 1" vertex-b="1 3 1" vertex-c="-1 1 1"></a-triangle>

  <a-triangle position="-0.11 -0.026 -0.94" rotation="0 0 270" scale="0.5 0.5 1" color="blue"
  vertex-a="1 1 1" vertex-b="1 3 1" vertex-c="-1 1 1"></a-triangle>

</cylinder>
```

We have successfully created a very simple simulation with the help of components upon triggering a window event

What's NEXT?
In the next class, we start with a flight simulation scene and control the scene with help of event listeners.

EXTEND YOUR KNOWLEDGE:
1. You can refer to the below link to explore more about A-Frame:
    https://aframe.io/docs/1.1.0/introduction