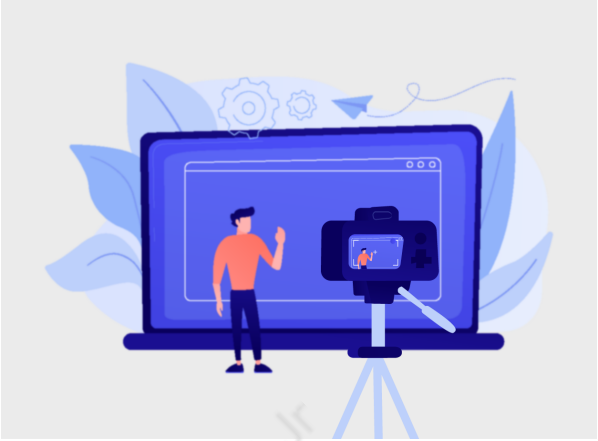
PRO-C162

REMOVING ELEMENTS



What is our GOAL for this MODULE?

We learned to remove elements from the A-Frame scene. We also learned to use methods from the physics library in the A-Frame scene.

What did we ACHIEVE in the class TODAY?

- Learned to remove elements from the scene.
- Learned to remove event listeners from the entity.
- Learned to apply impulse using the physics library.

Which CONCEPTS/CODING BLOCKS did we cover today?

- document.querySelector('#camera').object3D
- Cannon.js applyImpulse(impulse, worldPoint)
- .addEventListener(), setAttribute(),getAttribute(), .registerComponent() methods

How did we DO the activities?

1. Write the code to add the “collide” event and “removeBullet” function.

```
        var scene = document.querySelector("#scene");

        //add the collide event listener to the bullet
        bullet.addEventListener("collide", this.removeBullet);

        scene.appendChild(bullet);
      }
    });
  },
  removeBullet: function (e) {

  },
```

2. Write the code to add the dynamic-body attribute of the bullet element, using setAttribute().

```
//set the bullet as the dynamic entity
bullet.setAttribute("dynamic-body", {
  shape: "sphere",
  mass: "0",
});
```

3. Write the code to add id and the static-body attribute to all the box elements in the index.html file.

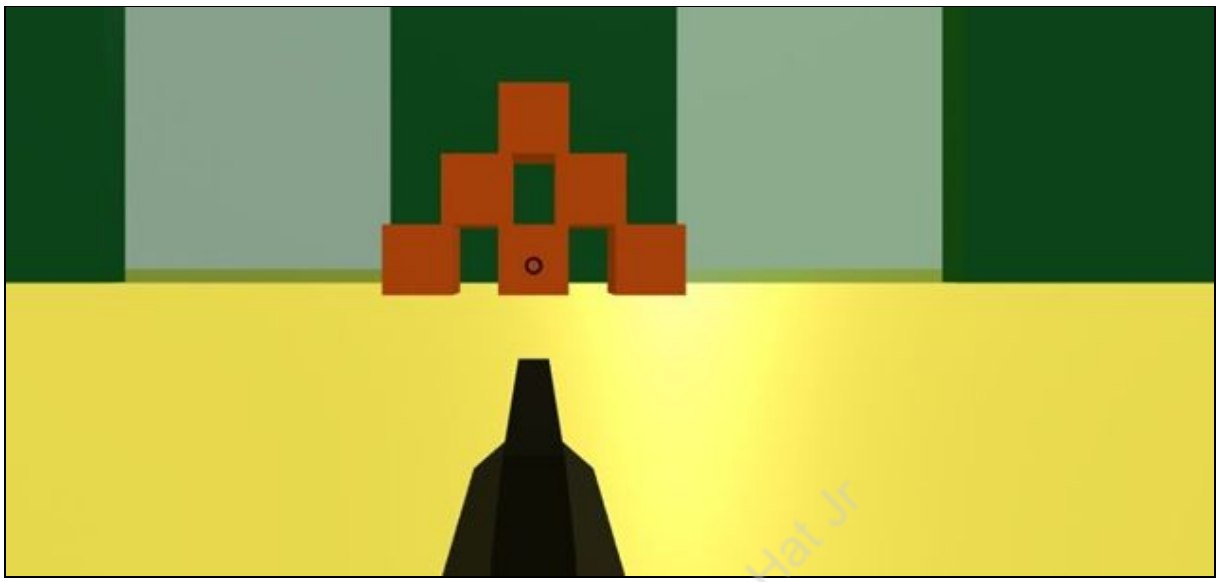
```
<!--Boxes-->
<a-box id="box1" position="-2 1.5 -10" color="tomato" depth="1" height="1" width="1" static-body></a-box>

<a-box id="box2" position="0 1.5 -10" color="tomato" depth="1" height="1" width="1" static-body></a-box>

<a-box id="box3" position="2 1.5 -10" color="tomato" depth="1" height="1" width="1" static-body></a-box>

<a-box id="box4" position="-1 2.5 -10" color="tomato" depth="1" height="1" width="1" static-body></a-box>

<a-box id="box5" position="1 2.5 -10" color="tomato" depth="1" height="1" width="1" static-body></a-box>

<a-box id="box6" position="0 3.5 -10" color="tomato" depth="1" height="1" width="1" static-body></a-box>
```

4. Use .removeChild() method to remove the child from the scene once the bullet hits the boxes.

```
removeBullet: function (e) {
  //Original entity (bullet)
  console.log(e.detail.target.el);

  //Other entity, which bullet touched.
  console.log(e.detail.body.el);

  //bullet element
  var element=e.detail.target.el

  //element which is hit
  var elementHit = e.detail.body.el;

  if (elementHit.id.includes("box")) {
    elementHit.setAttribute("material", {
      opacity: 0.6,
      transparent: true,
    });

    //remove event listener
    element.removeEventListener("collide", this.shoot);

    //remove the bullets from the scene
    var scene = document.querySelector("#scene");
    scene.removeChild(element);
  }
},
```

5. Add the code to create the walls using <a-box> and set their color, position, depth, width,static-body, and opacity.

```
<!--Walls-->
<a-box color="#1469C9" id="wall1" position="-20 1.5 -20"  depth="1" height="50" width="10" static-body></a-box>

<a-box color="#1469C9" id="wall2" position="0 1.5 -20"  depth="1" height="50" width="10" static-body></a-box>

<a-box color="#1469C9" id="wall3" position="20 1.5 -20"  depth="1" height="50" width="10" static-body></a-box>

<a-box color="#1469C9" id="wall4" position="-10 1.5 -20"  depth="1" height="50" width="10" opacity="0.5"></a-box>

<a-box color="#2889DF" id="wall5" position="10 1.5 -20"  depth="1" height="50" width="10" opacity="0.5" ></a-box>

<a-box color="#2889DF" id="wall6" position="-30 1.5 -20"  depth="1" height="50" width="10" opacity="0.5"></a-box>

<a-box color="#2889DF" id="wall7" position="30 1.5 -20"  depth="1" height="50" width="10" opacity="0.5" ></a-box>
```



6. Code to add the var impulse and the worldPoint and set the CANNON.Vec3().

```
//impulse and point vector
var impulse = new CANNON.Vec3(-2, 2, 1);
var worldPoint = new CANNON.Vec3().copy(elementHit.getAttribute("position"));

elementHit.body.applyImpulse(impulse, worldPoint);
```

7. Increase the width of the boxes and make the boxes as dynamic-body.

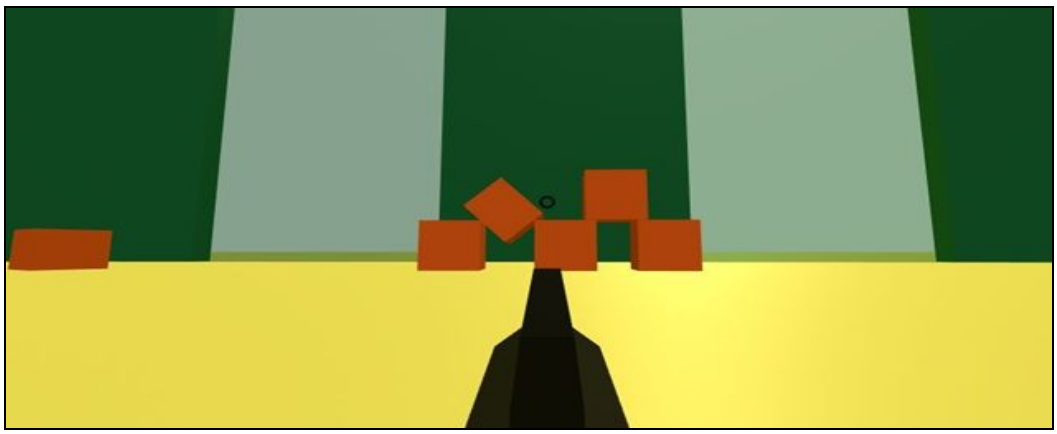
```
<!--Boxes-->
<a-box id="box1" position="-2 1.5 -10" color="tomato" depth="1" height="1.2" width="1.2" dynamic-body></a-box>

<a-box id="box2" position="0 1.5 -10" color="tomato" depth="1" height="1.2" width="1.2" dynamic-body></a-box>

<a-box id="box3" position="2 1.5 -10" color="tomato" depth="1" height="1.2" width="1.2" dynamic-body></a-box>

<a-box id="box4" position="-1 2.5 -10" color="tomato" depth="1" height="1.2" width="1.2" dynamic-body></a-box>

<a-box id="box5" position="1 2.5 -10" color="tomato" depth="1" height="1.2" width="1.2" dynamic-body></a-box>

<a-box id="box6" position="0 3.5 -10" color="tomato" depth="1" height="1.2" width="1.2" dynamic-body></a-box>
</a-scene>
```

8. Add the condition to remove the event listener and then remove the bullet as the child entity from the scene when it collides with the boxes.

```
if (elementHit.id.includes("box")) {
  elementHit.setAttribute("material", {
    opacity: 0.6,
    transparent: true,
  });

  //remove event listener
  element.removeEventListener("collide", this.shoot);

  //remove the bullets from the scene
  var scene = document.querySelector("#scene");
  scene.removeChild(element);
}
```

9. Apply impulse on the boxes and test the final output.

```
if (elementHit.id.includes("box")) {
  elementHit.setAttribute("material", {
    opacity: 1,
    transparent: true,
  });

  //impulse and point vector
  var impulse = new CANNON.Vec3(-2, 2, 1);
  var worldPoint = new CANNON.Vec3().copy(
    elementHit.getAttribute("position")
  );

  elementHit.body.applyImpulse(impulse, worldPoint);

  //remove event listener
  element.removeEventListener("collide", this.shoot);

  //remove the bullets from the scene
  var scene = document.querySelector("#scene");
  scene.removeChild(element);
}
```



We have successfully learned to remove elements from the A-Frame scene and apply force using Cannon.js library method.

What's NEXT?

In the next class, we will be learning about A-Frame environments and audio assets.

EXTEND YOUR KNOWLEDGE:

- Explore more about A-Frame.
- Explore more about Cannon.js.
- Explore more about Three.js Camera.