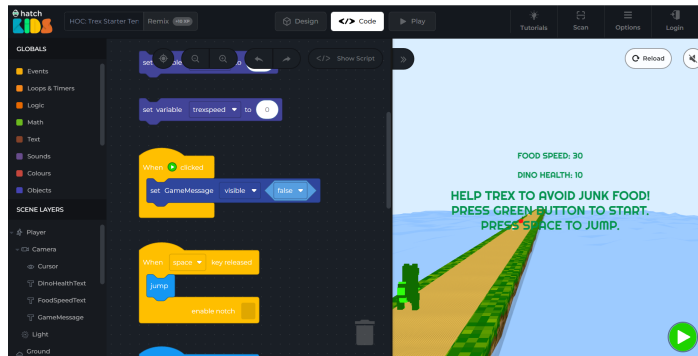


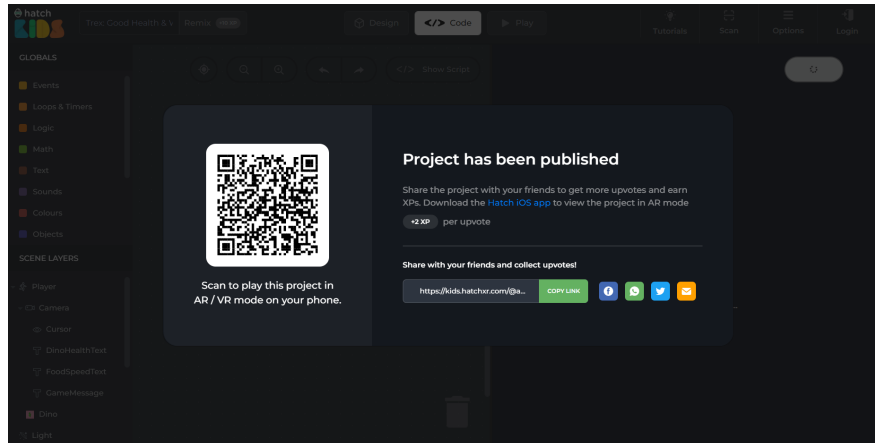


Course	Hour of Code
Workspace	<a href="#">Hatch Kids</a>
Coding Concept	<ol style="list-style-type: none"><li>1. Creating animation effects</li><li>2. Understanding Conditional statements</li><li>3. Using variables.</li></ol>
AR/VR/Concept	<ol style="list-style-type: none"><li>1. Creating custom animation using blocks</li><li>2. Collision in the 3D environment.</li></ol>
Project Link	<a href="#">Good Health &amp; Well Being</a>
Learning Outcomes	<ol style="list-style-type: none"><li>1. Create a script that uses timer blocks to design animation.</li><li>2. Create a script that modifies the visibility property of an object.</li><li>3. Create a script that uses conditional to express ideas or problems.</li></ol>



**Share the default code and design link with students. Ask them to login into their hatch account and open the link. [Default Code & Design Components](#)**

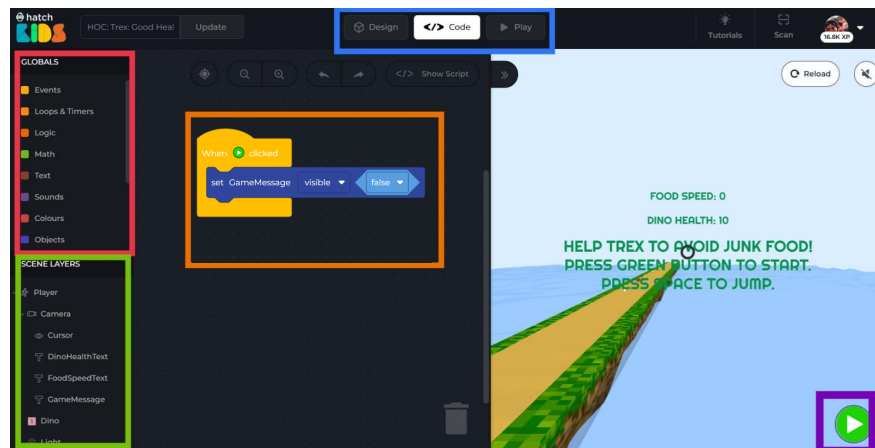
On the platform, you will be able to see your hatch workspace that looks like this. We have already added all components required for this activity. But the code blocks are not added yet. We will learn how to add code blocks to this project and complete the activity.



**Step 1:** Click on the Remix option to create a copy of the project in your workspace.

**If the published project screen appears, ask students to click anywhere on empty space.**

This is what your Hatch workspace looks like. Let me quickly take you through all the important components of this workspace.



1. On the left-hand side, the section highlighted with pink color is called the "Global" section. You will find all the coding blocks in this section.
2. Below the "Global" section, highlighted with green color is called "Scene Layer". You will find all the design components such as the player, camera, characters etc in this section.
3. On top, highlighted with blue color is called "Tab". Tabs help you to switch between design, code and play sections.
4. In the center, highlighted in orange, is the coding workspace. This is where we place the code blocks.
5. On the right, you will see the output area and a green button.

Now, you know all about your hatch workspace. Let's start with coding.



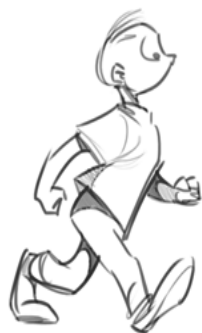
Let's understand what animation is.



**Definition: Animation is the art and science of making pictures, or images, that appear to move. An example of animation is a flip book.**

To repeat the clips again and again, we will be creating a timer so that we can specify after how many seconds we want to repeat the task. This allows us to increase or decrease the speed of the animation clip.

**ASK: Have you ever watched any animated movies?**  
Screen share and show the following image to students.

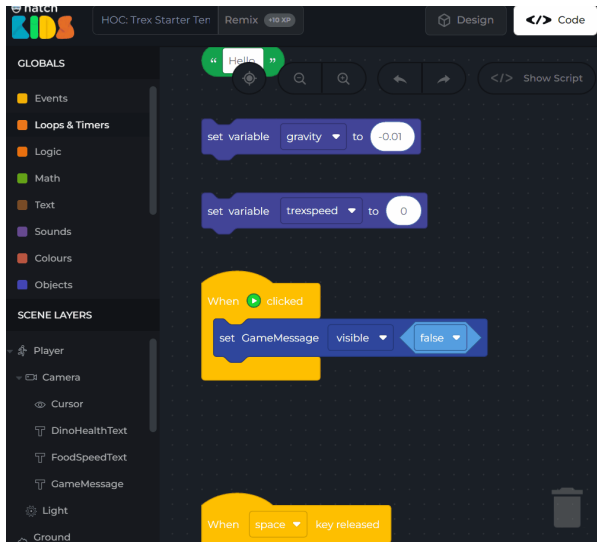


**ASK: What do you observe?**

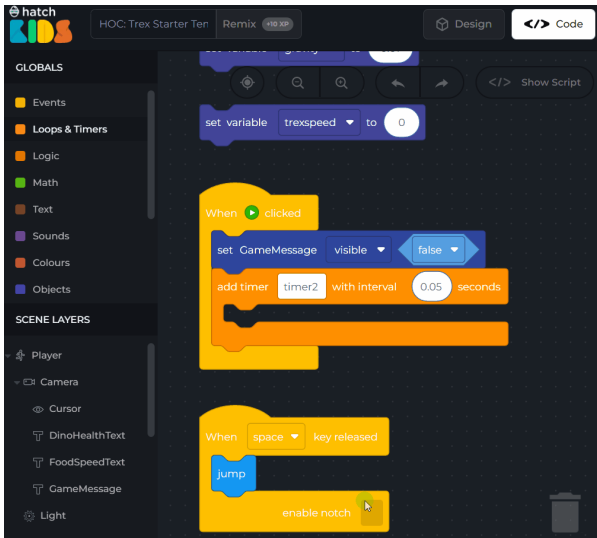
ESR: A person is walking in this image. Here each of his movements is drawn separately and then we play it as a clip to see how the drawings overlap.

Excellent, now that we know what animation means, let's discuss the game. In our game, we want the healthy and junk foods to move towards the T-Rex(Dino). Let's use code blocks to achieve this.

**Share your screen and login into Hatch workspace to perform the next steps.**



**Step 1:** Select the **"add timer"** block from the Loops & Timer blocks. Place this block inside the **"When green play button clicked"** block and set its interval to 0.05 seconds.



**Step 2:** Scroll down to the "Carrot" component and select the **"change Carrot x by"** block. Place this block inside the **"add timer"** block. Click on the drop-down menu present on this block and set it to the **z** position.

*Let's test our game after performing step 2 in the play window.*



Amazing! The carrot moves towards T-rex. Congratulations, you have created the first animation.

**Guide students to test their activity in the Play tab. Help them to place code blocks correctly as shown in the image.**

You would observe that the carrot is moving very quickly towards the T-Rex. Let's control the speed of carrot movement by using variables.

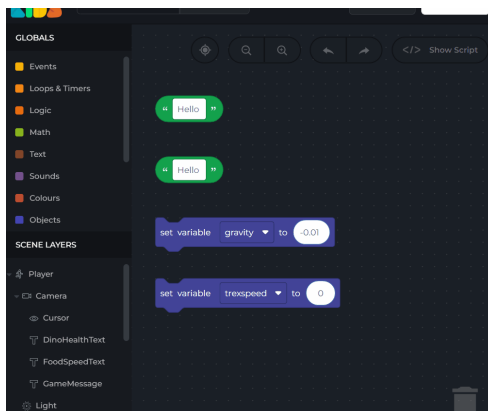
**ASK: Do you remember what a variable is?**

ESR: A Variable is like a container that stores information. The information stored in a variable is called a Value.

Here's a small challenge for you. You have 2 minutes to complete this challenge.

### **Challenge 1:**

**Create the variable "speed" and set its value to 0.3.**

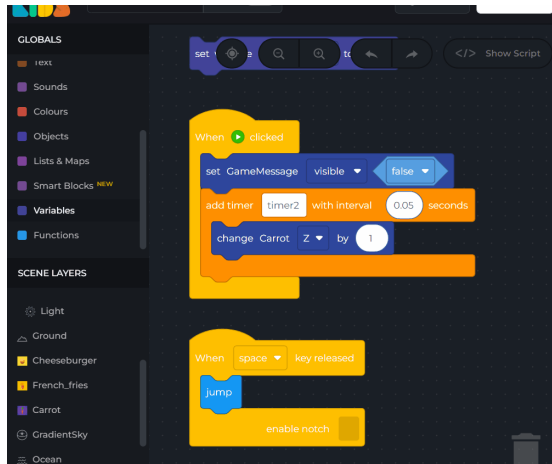


### **Solution:**

Step 1.1: Goto variable blocks. Create a new variable speed.

Step 1.2: Goto variable blocks. Select the **"set speed"** block and place it in the code area.

Step 1.3: Goto math blocks and select the **"0" number** block. Place the number block inside the speed block and set the value to 0.3.



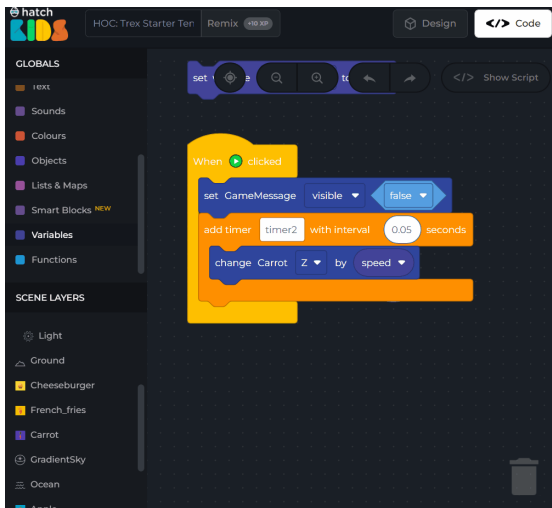
**Step 3:** Goto variable blocks. Select the **"speed"** block. Place this block inside the **"change carrot z by"** block.

*Test your game in the play tab after performing the steps.*

Now, you know how to create an animation effect using speed block, here's a small challenge for you. You have 3 minutes to complete this challenge.

### **Challenge 2:**

**Make "Apple", "Cheeseburger" and "French\_fries" move towards the T-Rex(Dino) when the game starts.**



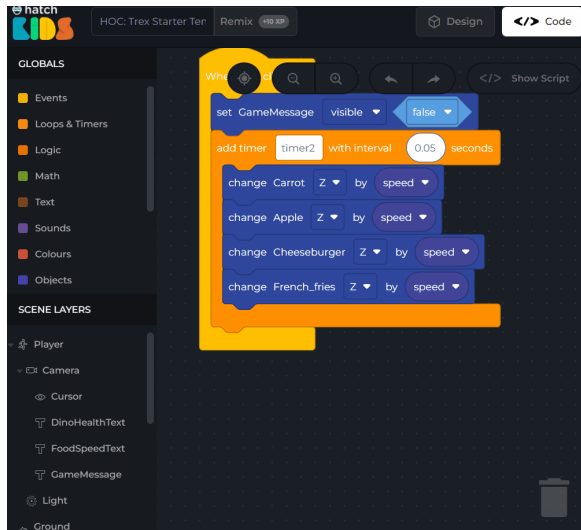
### **Solution:**

Step 2.1: Click on the Apple option and select the **"change Apple x by"** block. Click on the drop-down menu present on this block and set it to the **z** position. Select the **"speed"** block from the variables and place it inside the **"change Apple z by"** block.

Step 2.2: Repeat step 2.1 for the **"Cheeseburger"** option.

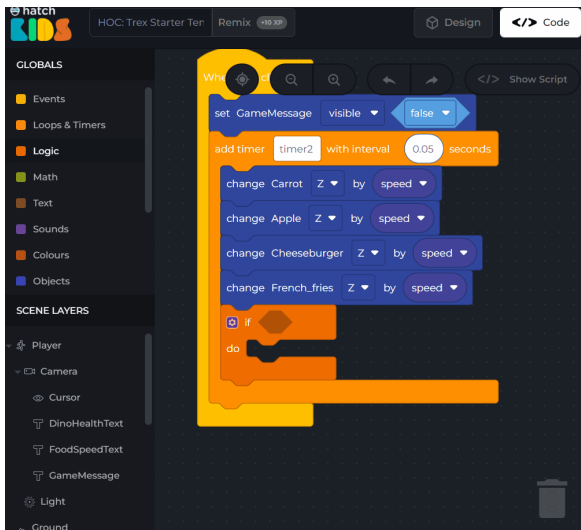
Step 2.3: Repeat step 2.1 for the **"French\_fries"** option.

*Test the game after performing the above step.*



**Step 4:** Goto the Logic blocks. Select the **"if do"** block and place it inside the **"add timer"** block.

Now, we need to specify the condition inside the if do block. Let's learn how to check for a condition.



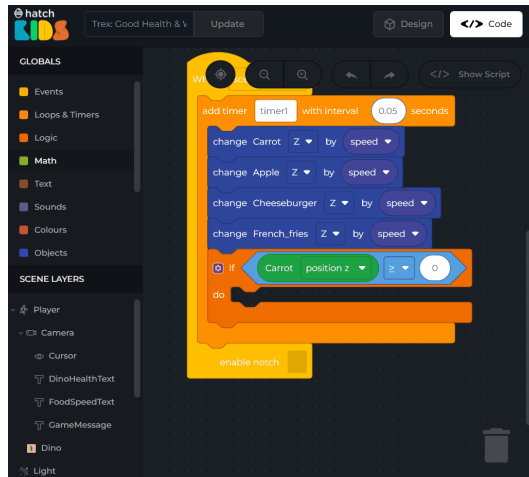
**Step 5:** Goto the Logic blocks. Select the **"="** block and place it inside the **"if do"** block. Click on the drop-down menu present in the **"="** block and change it to **">="**.

Then go to the **"Carrot"** option and select the **"Carrot position x"** block. Place this block inside the first part of the **">="** block. Click on the drop-down menu to change it to **"position z"**.

Go to math blocks and select the **"0 number"** block. Place the number block inside the second part of the **">="** block.

Now, let's specify the action that should happen when the condition is true. We will simply reset the position of the carrot to its default position.

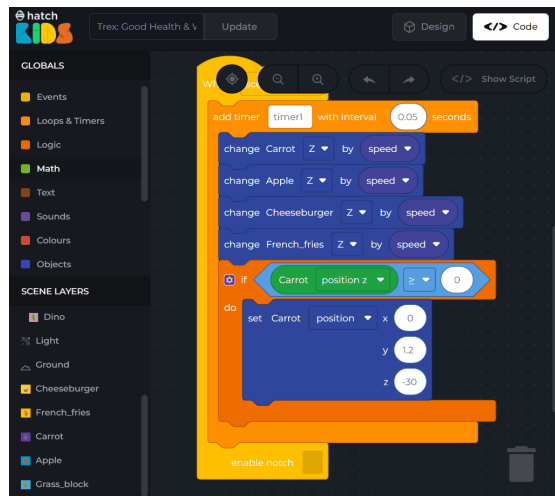




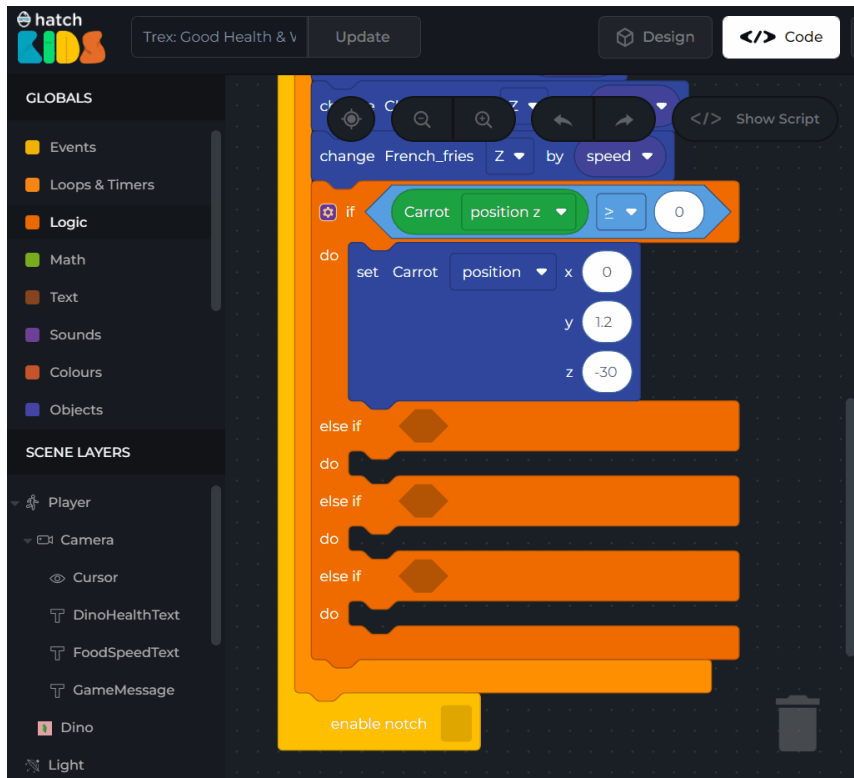
**Step 6:** Goto the “Carrot” option and select the “set Carrot position” block. Place this block inside the “if do” block. Set the x, y, and z values to 0, 1.2 and Negative 30 (-30).

*Test your game in the play tab after performing this step.*

You would observe that only the “carrot” is repeatedly moving towards the T-Rex(Dino). Let’s learn how to make other food items move closer towards the T-Rex(Dino).



**Step 7:** Click on the “Settings” icon present in the “if do” block. Select the “else if” block and place it after the “if” block. Place the “else if” block three times after the “if” block. You would observe a change in the “if do” block.



**Step 8:** Goto the Logic blocks. Select the “=” block and place it inside the “**else if do**” block. Click on the drop-down menu present in the “=” block and change it to “>=”.

Then go to the “**Cheeseburger**” option and select the “**Cheeseburger position x**” block. Place this block inside the first part of the “>=” block. Click on the drop-down menu to change it to “**position z**”.

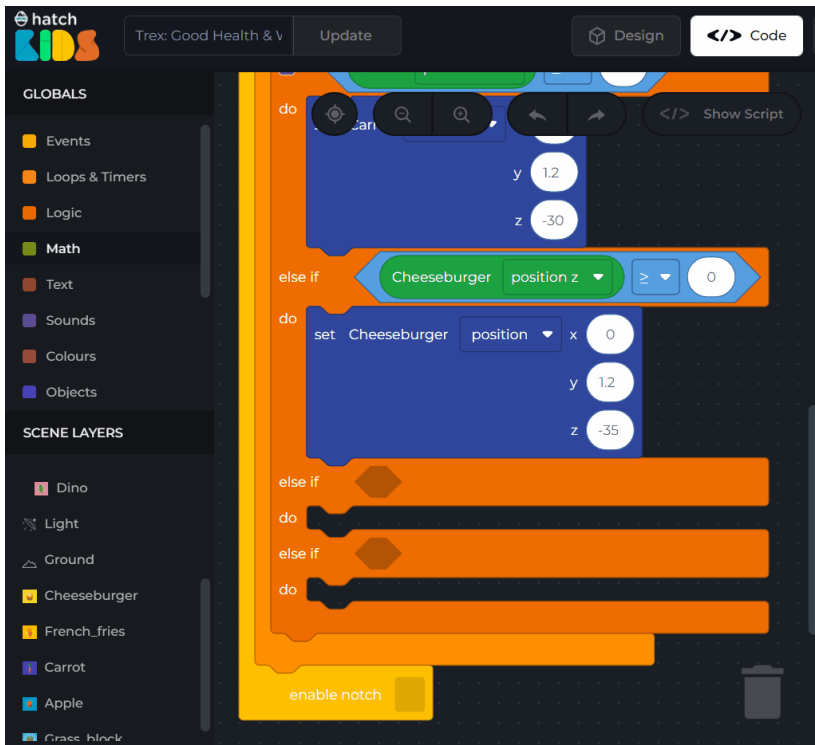
Go to math blocks and select the “**0 number**” block. Place the number block inside the second part of the “>=” block.

Go to the “**Cheeseburger**” option and select the “**set Cheeseburger position**” block. Place this block inside the “**if do**” block. Set the x, y, and z values to 0, 1.2 and Negative 35 (-35).

Now, you know how to repeat the movement of the food items, here’s a small challenge for you. You have 4 minutes to complete this challenge.

### **Challenge 3:**

**Make "Apple" and "French\_fries" move towards the T-Rex(Dino) again and again when the game starts.**



### **Solution:**

Step 3.1: Repeat step 9 for the **"Apple"** option and set the x, y and z values to 0, 1.2 and Negative 40 (-40).

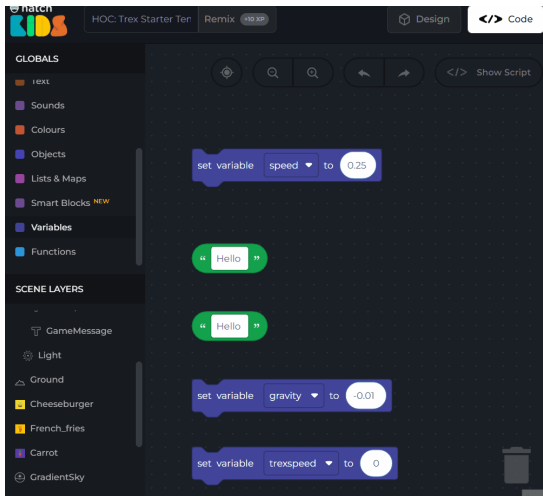
Step 3.2: Again repeat step 9 for the **"French\_fries"** option. Set the x, y and z values to 0, 1.2 and Negative 45 (-45).

*Test the game after performing the above step.*

Now, our code is working perfectly.



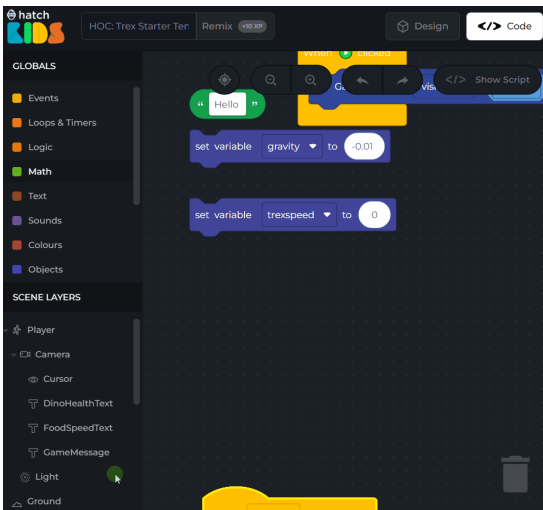
Let's learn how to increase the health of T-Rex(Dino) when he eats healthy food.



**Step 9:** Goto variable blocks. Create a new variable health.

Goto variable blocks. Select the **"set health"** block and place it in the code area.

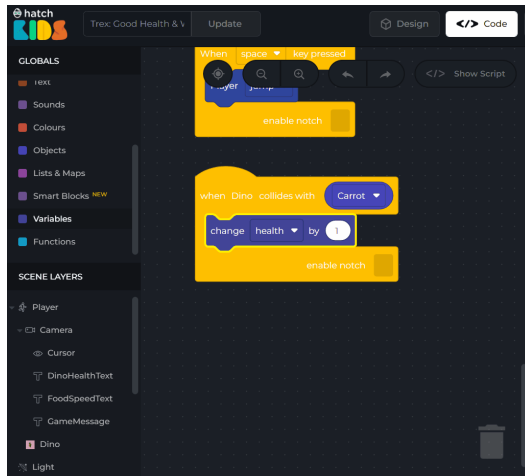
Then go to math blocks and select the **"0" number** block. Place the number block inside the speed block and set the value to 10.



**Step 10:** Click on Dino in the Scene Layer section, select "When Dino collides with" block, and place it on the code area.

Select the **"carrot"** block and place it in the empty space in the **"When Dino collides with"** block.

Go to variable blocks, select the **"change health"** block and place it below the **"When Dino collides with"** block as shown in the image.



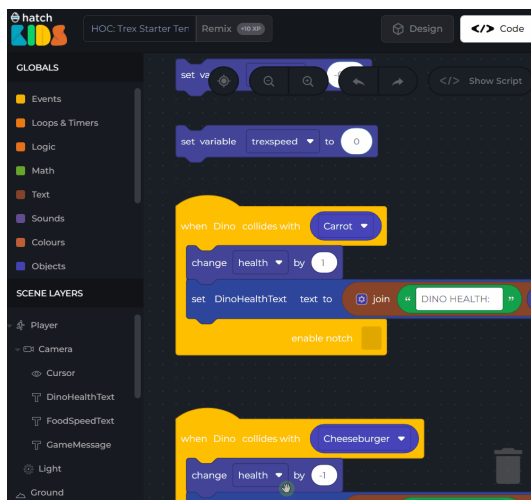
Let's update the text property with the new value of the "health" variable.

**Step 11:** Click on the DinoHealthText component on the left of the screen. Select the **"set DinoHealthText text to"** block and place it below the previous block.

Click on Text blocks and select the **"join"** block. Place it inside the **"DinoHealthText"** block. Select the **"empty text"** block and place it inside the join block.

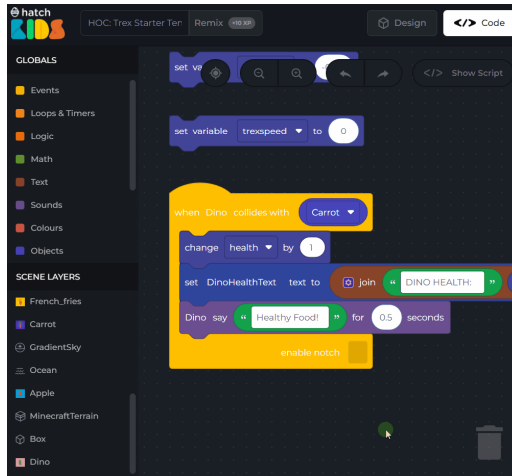
Type **"DINO HEALTH: "** in the empty text block. Goto Variables and select the **"health"** variable block and place it inside the join block.

Let's let the player know that the T-Rex(Dino) has eaten Healthy food by making the T-Rex(Dino) say this dialogue.



**Step 12:** Click on the Dino component on the left of the screen. Select the **"Dino say"** block and place it below the previous block.

Type the text value as **"Healthy food!"** and set its seconds value to **"0.5"** seconds.

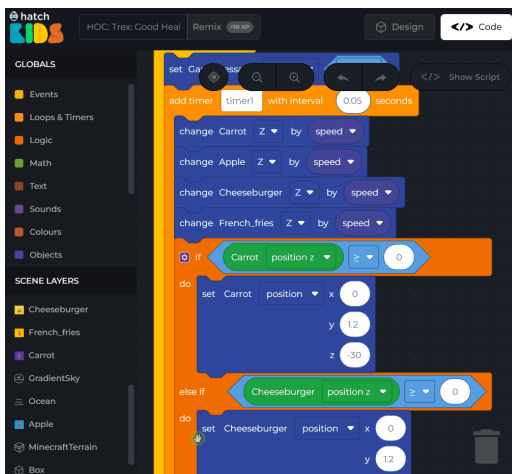


**Step 13:** Click on the Carrot component on the left of the screen. Select the **"set the Carrot visible to"** block and place it below the previous block.

Click on the **"true"** block and set its value to **"false"** block.

**Guide students to perform this step and help them if they are stuck.**

*Test the activity after performing the above steps.*

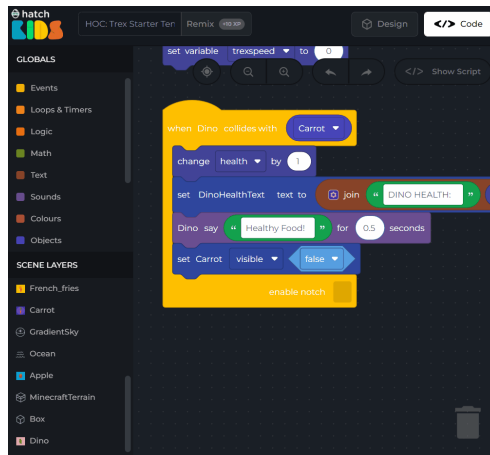


Let's learn when to make it visible so that the T-Rex(Dino) can eat the Carrot again.

**Step 14:** Click on the Carrot component on the left of the screen. Select the **"set Carrot visible to"** block and place it inside the **"if do"** block wherein we set the **"Carrot"** component's starting position.

*Test the activity after performing the above step.*

Let's first implement the decreasing health on collision between T-Rex(Dino) and Cheeseburger. When we want to use a repetitive block, we can use the Duplicate feature. Let's learn how to use it.



**Step 15:** Right-click on the **"when Dino collides with Carrot"** block and select the **"Duplicate"** option.

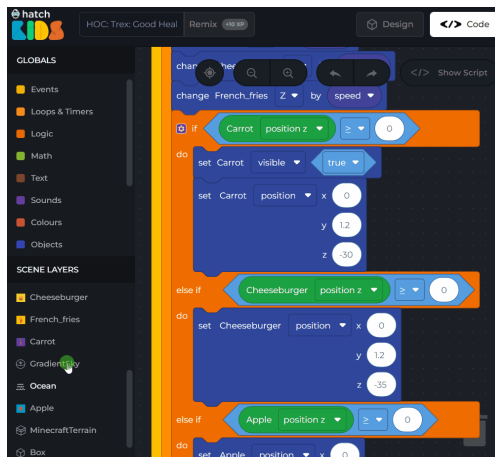
Click on the **"Carrot"** block and select the **"Cheeseburger"** option.

Change the health value by **-1** and the text value to **"Junk Food!"**.

Drag the **"set the Carrot visible to"** block and throw it in the dustbin and replace it with the **"set Cheeseburger visible to"** block and set its value to **"false"**.

**Guide students to perform this step and help them if they are stuck.**

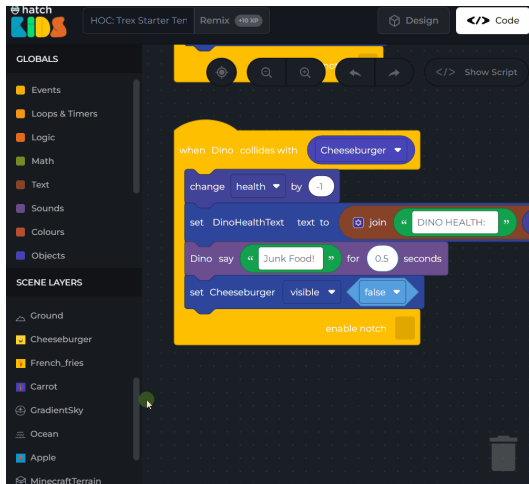
Let's make the Cheeseburger visible again to the T-Rex(Dino) so that he can eat the Cheeseburger again.



**Step 16:** Click on the Cheeseburger component on the left of the screen. Select the **"set Cheeseburger visible to"** block and place it inside the **"if do"** block wherein we set the **"Cheeseburger"** component's starting position.

*Test the activity after performing the above step.*

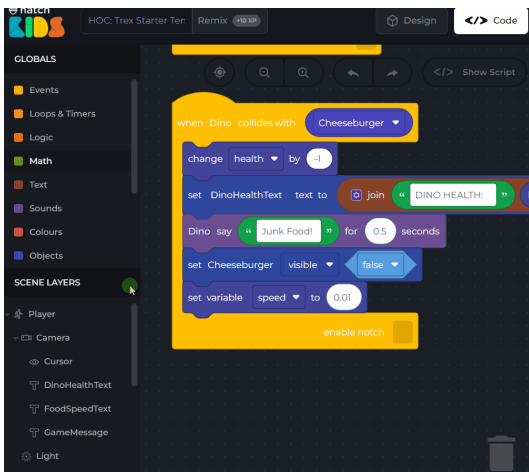
Let's now increase the speed of the food items on collision with T-Rex(Dino) and Cheeseburger.



**Step 17:** Go to the variables blocks, select the **"change health"** block and place it below the **"When Dino collides with"** block.

Click on the drop-down menu present in this block and change the variable to **speed** and set its value to **0.01**.

Let's update the text property with the new value of the "speed" variable.



**Step 18:** Click on the FoodSpeedText component on the left of the screen. Select the **"set FoodSpeedText text to"** block and place it below the previous block.

Click on Text blocks and select the **"join"** block. Place it inside the **"FoodSpeedText "** block. Select the **"empty text"** block and place it inside the join block. Type "FOOD SPEED: " in the empty text block.

Go to the Math blocks and select the **"+"** block, place it inside the join block and change it to **"\*"**.

Then go to Variables and select the **"speed"** variable block place



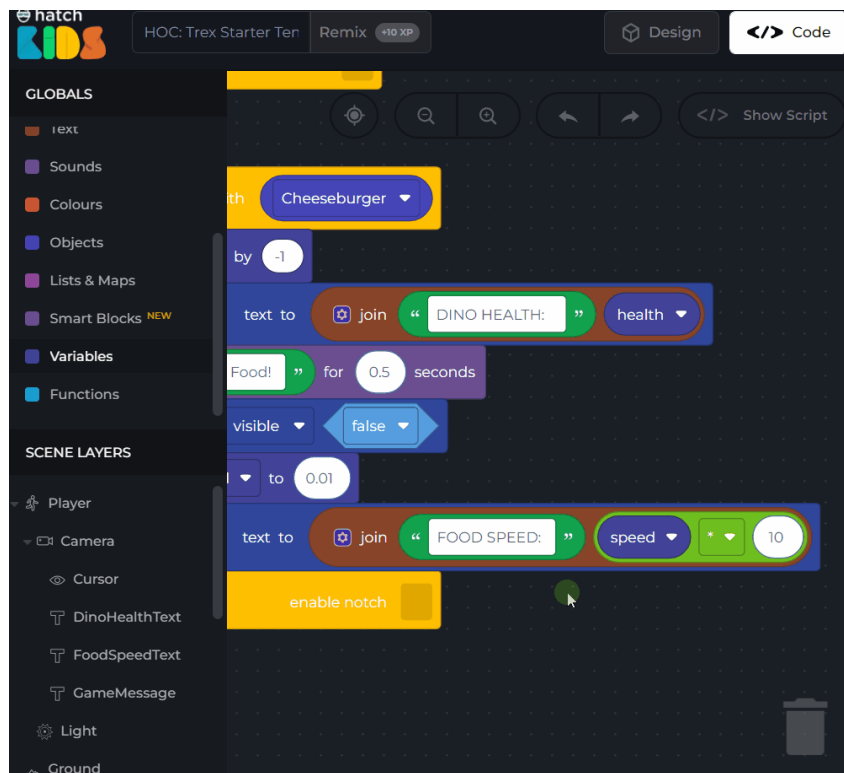


it inside the "\*" block and multiply it by 10.

**Guide students to perform this step and help them if they are stuck.**

*Test the activity after performing the above steps. After 2 minutes.*

Let's remove the decimal point and round off the number by using the round up block.



**Step 19:** Goto the Math blocks and select the "round" block. Click on the drop-down menu present in the block and choose the "round up" option.

Then drag the "\*" block from the "join" block and place it inside the "round up" block.

Place this block inside the "join" block.

*Test the activity after performing the above step.*

Congratulations, you have successfully completed the activity. Now let's go ahead and perform the same steps to detect



collision between T-Rex(Dino) with Apple and French\_fries and also make them visible when they are set back to their starting positions.