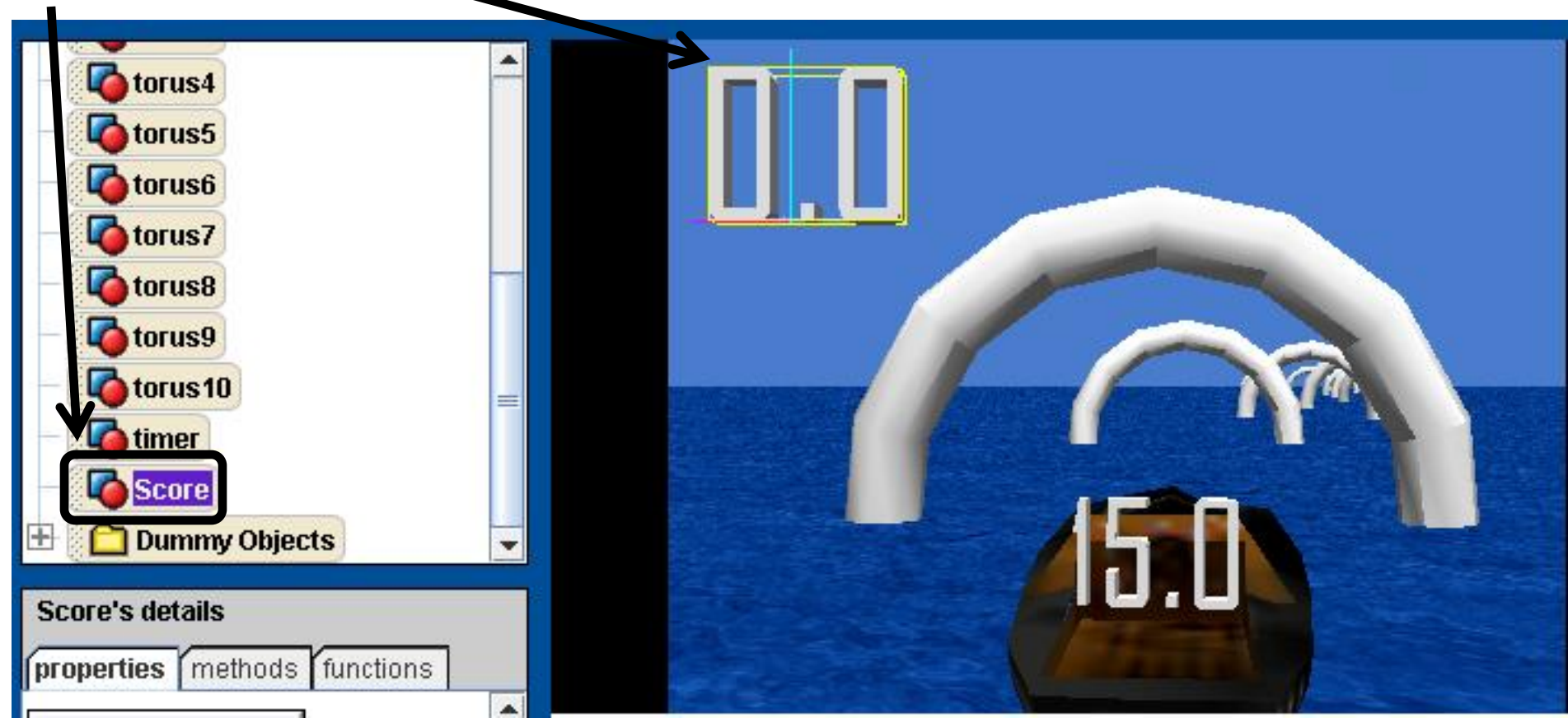


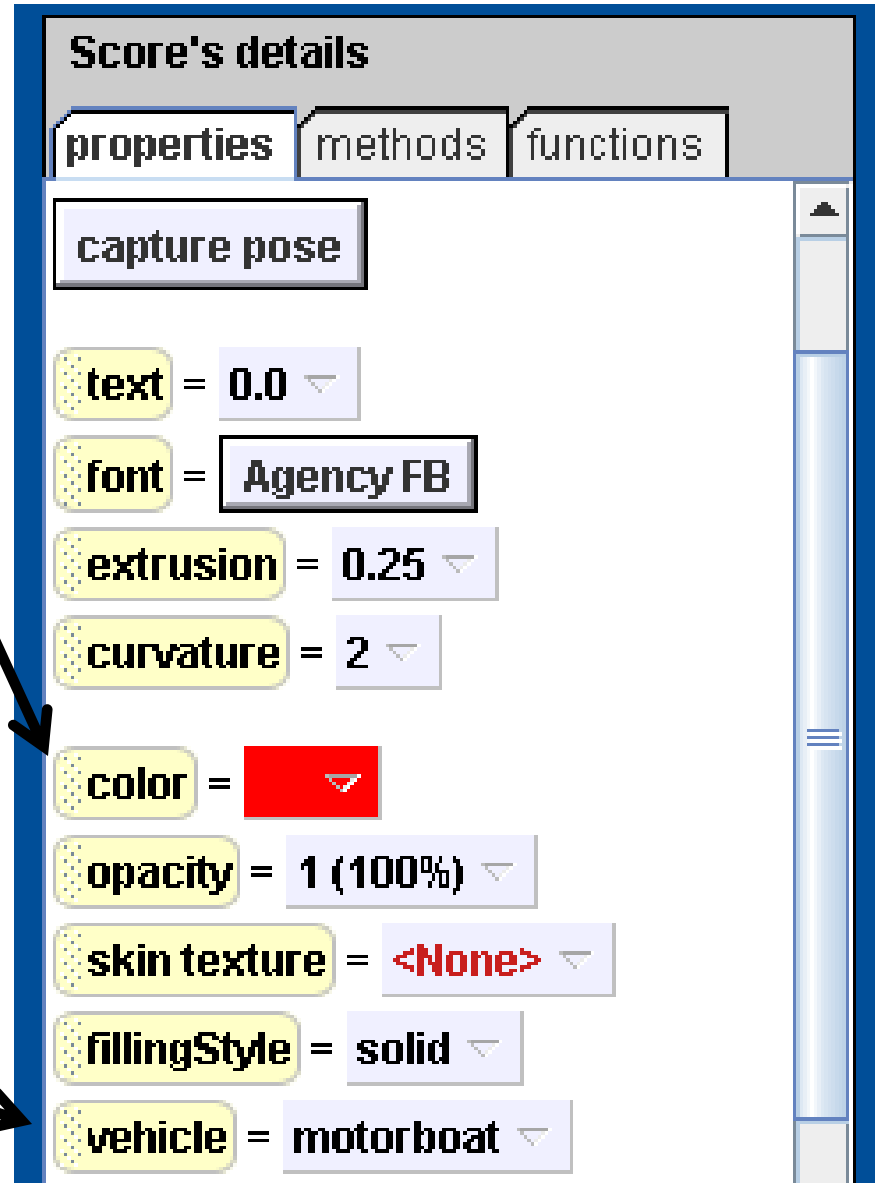
Making a Score

Now we need a scorekeeper to keep track of whether you drive through all the rings. Add another 3D-Text object into your world that says **0.0**, and name it **score** in the object tree. Now, position it so that its in the upper left hand corner of your screen.



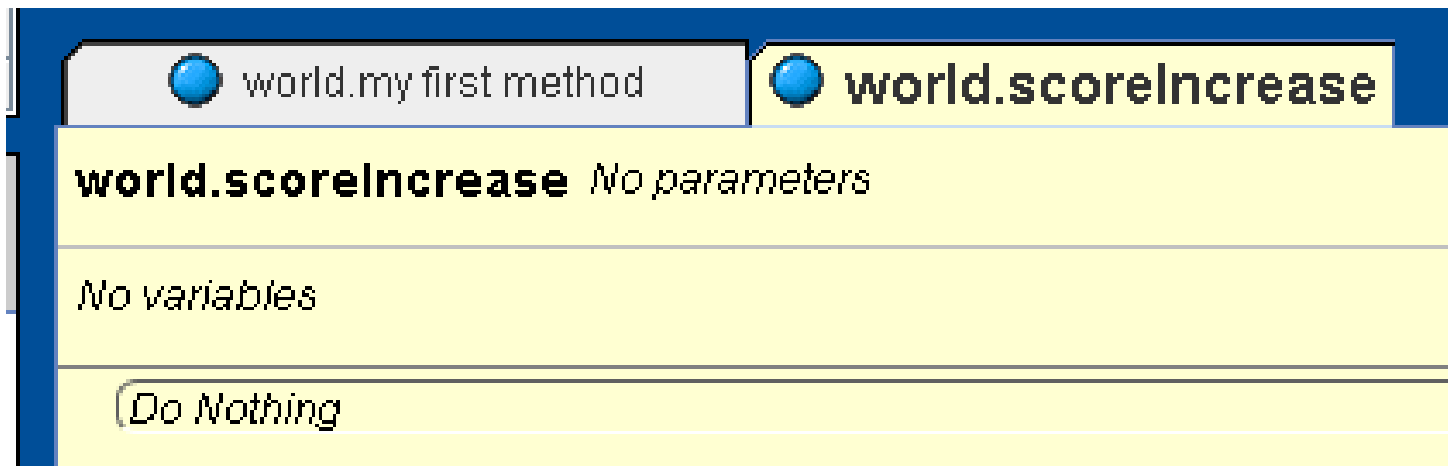
Making a Score

Next, go to the score's **Properties** tab and go to **color**. Change the color to red so that the score shows up against the white arches. Then, set the score's **vehicle** to **motorboat** so that we can always see it, even when we move the motorboat.



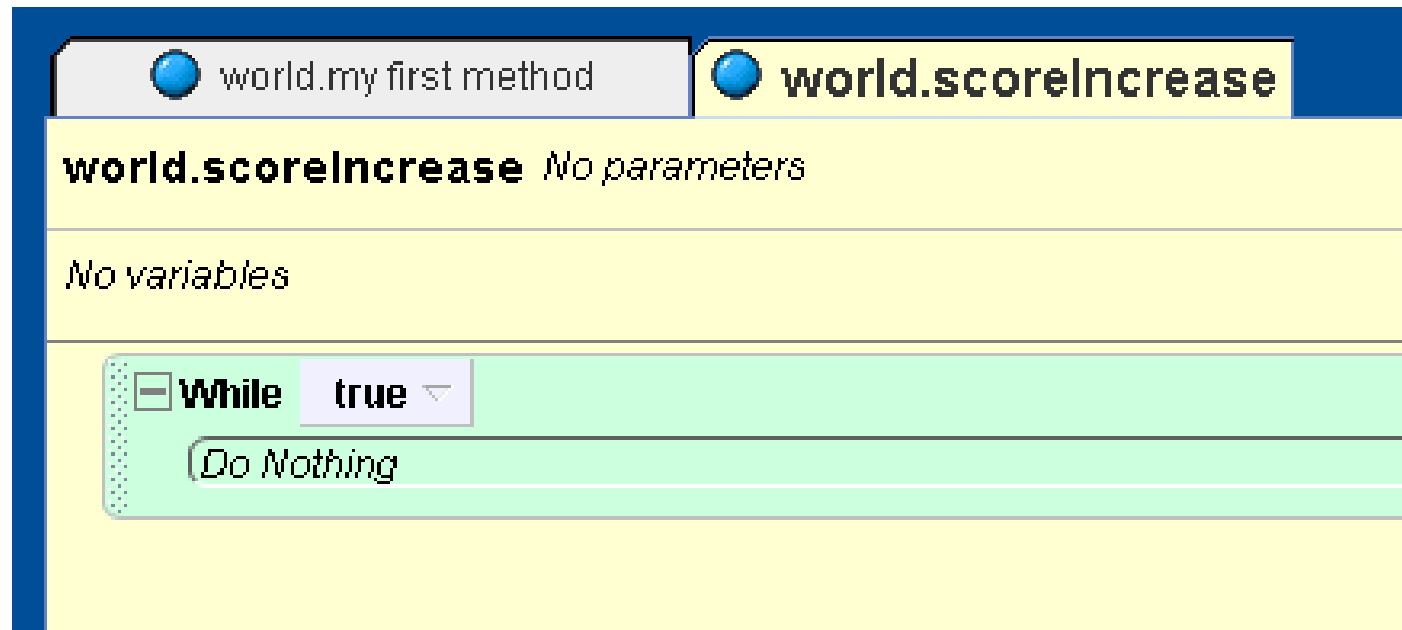
Making a Score

Now we need to create a method that will increase your score every time you drive the boat through an arch. Click on **world** in the object tree and create a new method called **scoreIncrease**.



Making a Score

We only want the score to increase while there is still time on the clock, so we will need a While loop. Drag and drop a While loop into your method. Select **true** on the drop down menu.



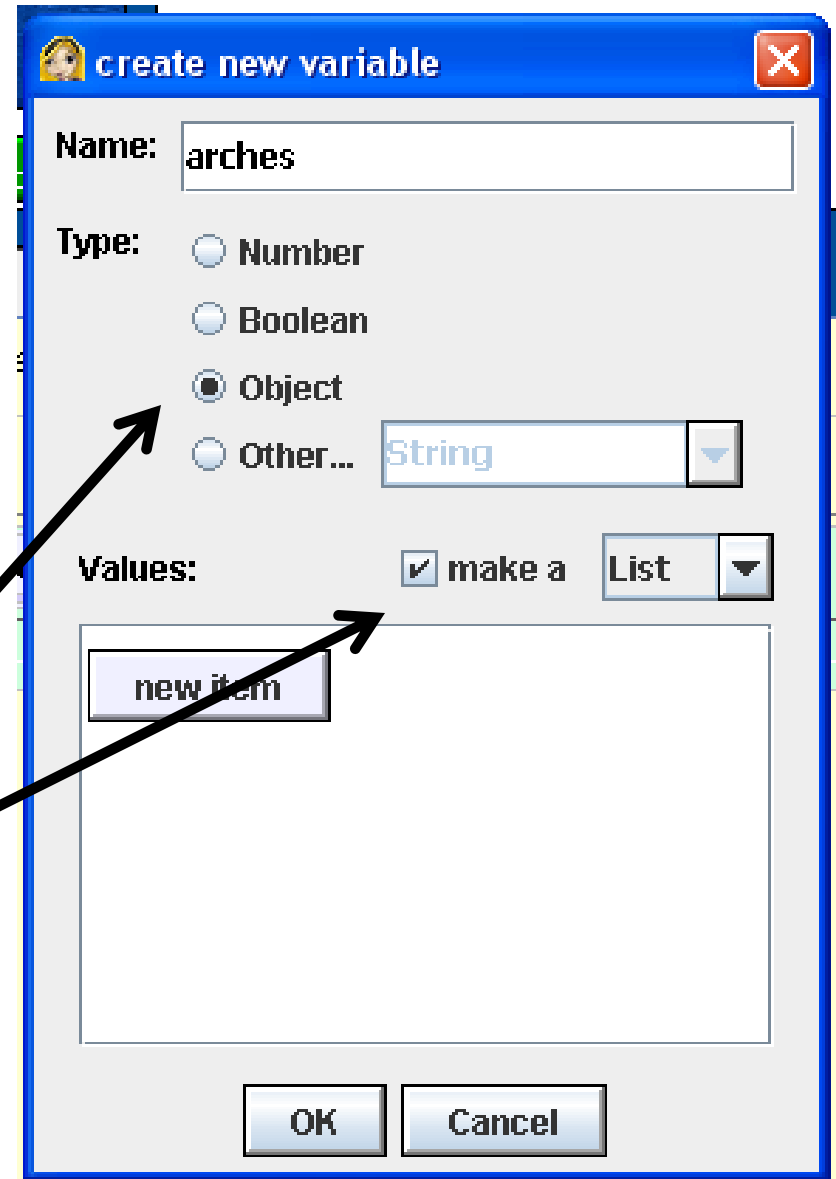
Making a Score

To finish the while loop, go to the world functions tab and get $a > b$, and drop it on top of the **true** in the while loop. In the drop down menu select **expressions**, then **world.timerValue** then **other...**, and type in **0** into the calculator.

The screenshot shows the Scratch code editor interface. On the left, the 'boolean logic' and 'math' categories are expanded. The 'math' category contains several comparison blocks, with the $a > b$ block highlighted by a black box. An arrow points from this block to the 'While' loop block in the workspace. The 'While' loop block has a dropdown menu open, showing a list of values: 0.25, 0.5, 1, and 2. Below this list, the 'expressions' option is selected and highlighted with a black box. An arrow points from 'expressions' to another dropdown menu. This second dropdown menu shows the 'world.timerValue' option selected and highlighted with a black box. An arrow points from 'world.timerValue' to a third dropdown menu. This third dropdown menu shows the 'other...' option selected and highlighted with a black box. The workspace background is yellow, and the 'While' loop block is currently set to 'Do Not Run'.

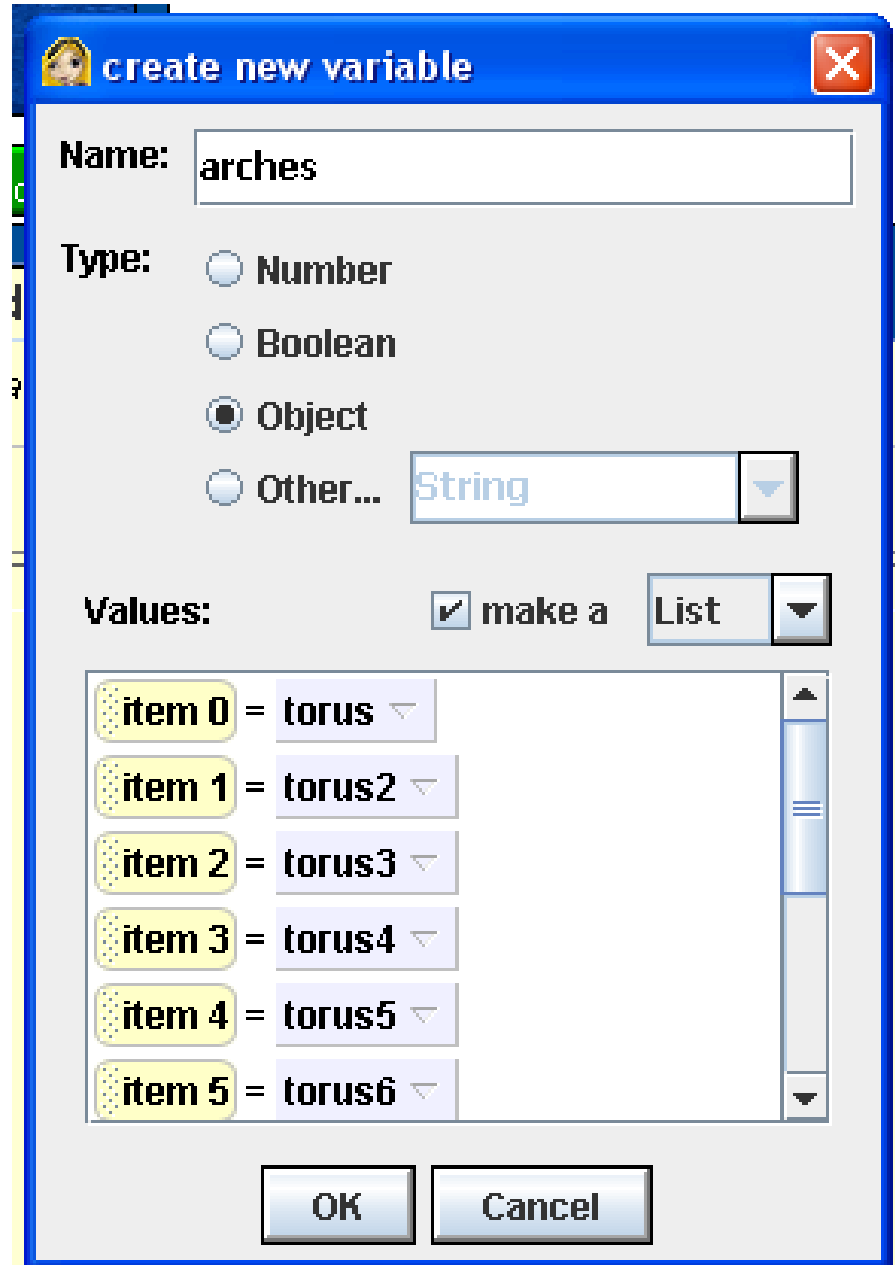
Making a Score

We want this method to continuously be checking to see if the motorboat is inside any of the arches. To do this, we will need to make the arches into a list. Go to the world's properties tab and click **create new variable**. Select **Object**, then name it **arches**. Then click the **make a List** box.



Making a Score

Add each of the arches into the list. Since there are 10 arches, and the first arch will be item 0, your list should go up to item 9. So, click the **new item** button until your list goes up to item 9, and put each **torus** object into the list. When your list is all set up, click **OK**.



Making a Score

Now that we have a list, we can have this method constantly search through it to see if the motorboat is inside any of the arches. To do this, get a **For all in order** from the bottom of your method editor, and drop it into your while statement. Choose **expressions**, and **world.arches** in the drop down menu.

The screenshot shows a method editor for a method named `world.scoreIncrease` with no parameters and no variables. The method body contains a **While** loop with the condition `world.timerValue > 0`. Inside the while loop is a **For all in order** loop over `world.arches`, with a variable `Obj item_from_arches` and a `Do Nothing` block. A black arrow points from the **For all in order** button in the bottom toolbar to the corresponding loop in the method editor.

`world.scoreIncrease` *No parameters*

No variables

While `world.timerValue > 0`

For all in order `world.arches`, one `Obj item_from_arches` at a time

`Do Nothing`

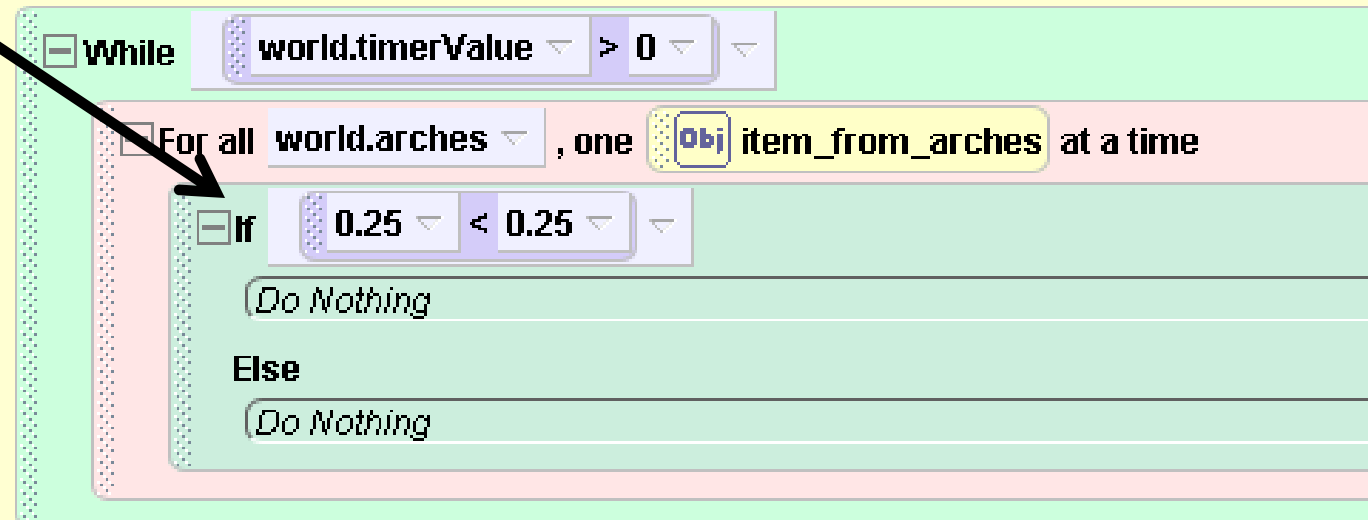
Do in order **Do together** **If/Else** **Loop** **While** **For all in order** **For all together**

Making a Score

Now we need to write in our code to add a point to the score if the motorboat is inside an arch. Get an **If/Else** from the bottom of your method editor, and drop it into the **For all in order**. Select **true**. Then go to the world's functions tab, and get an **a<b**, and drop it on top of the true. Choose any two numbers.

world.scoreIncrease *No parameters*

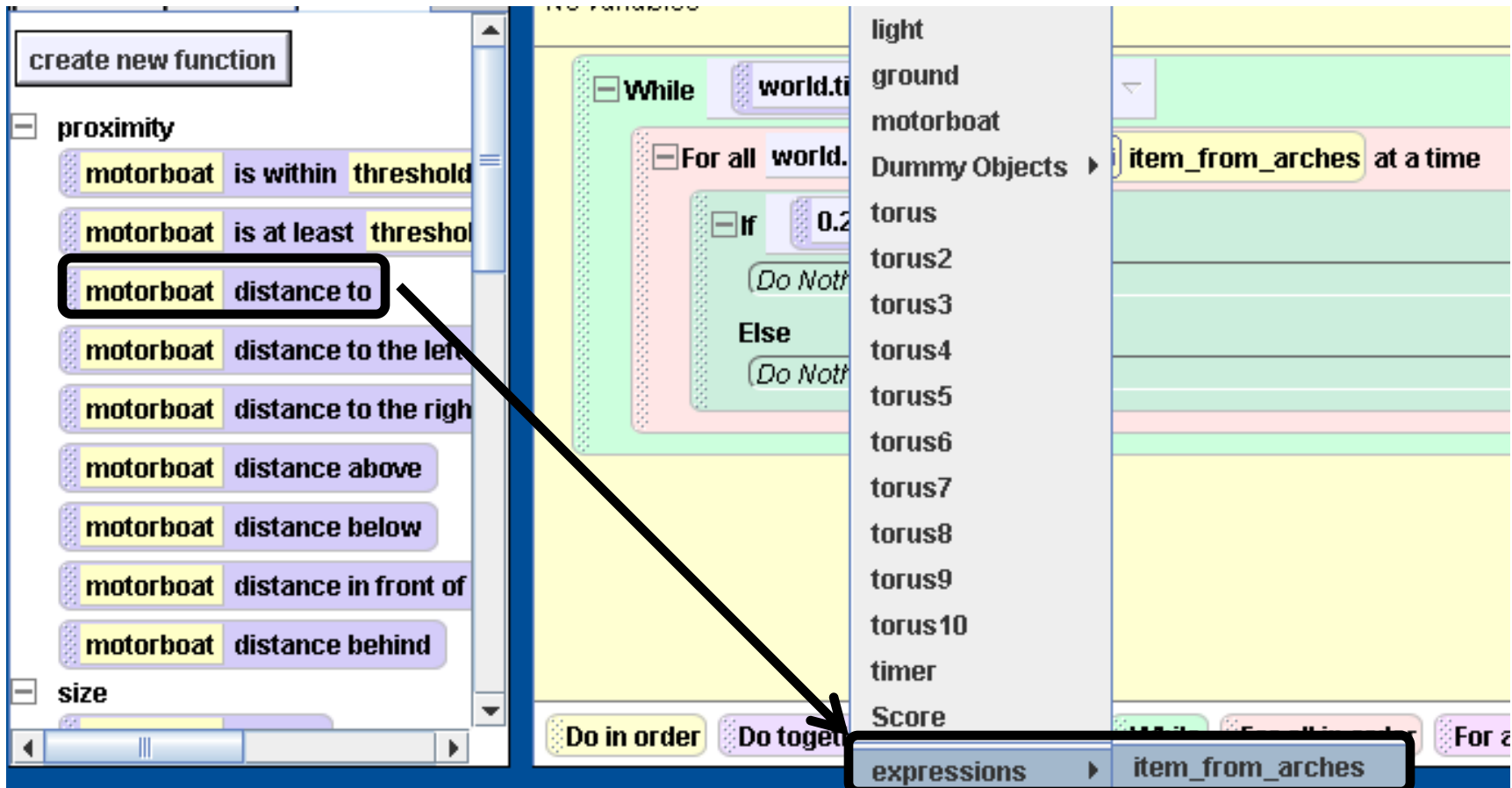
No variables



The image shows a snippet of Scratch code editor. It features a **While** loop with the condition `world.timerValue > 0`. Inside the while loop is a **For all** loop over `world.arches`, with a variable `item_from_arches` selected. Inside the for all loop is an **If** statement with the condition `0.25 < 0.25`. Both the if statement and the for all loop currently have `Do Nothing` as their actions. A black arrow points from the text in the first block to the **If** statement.

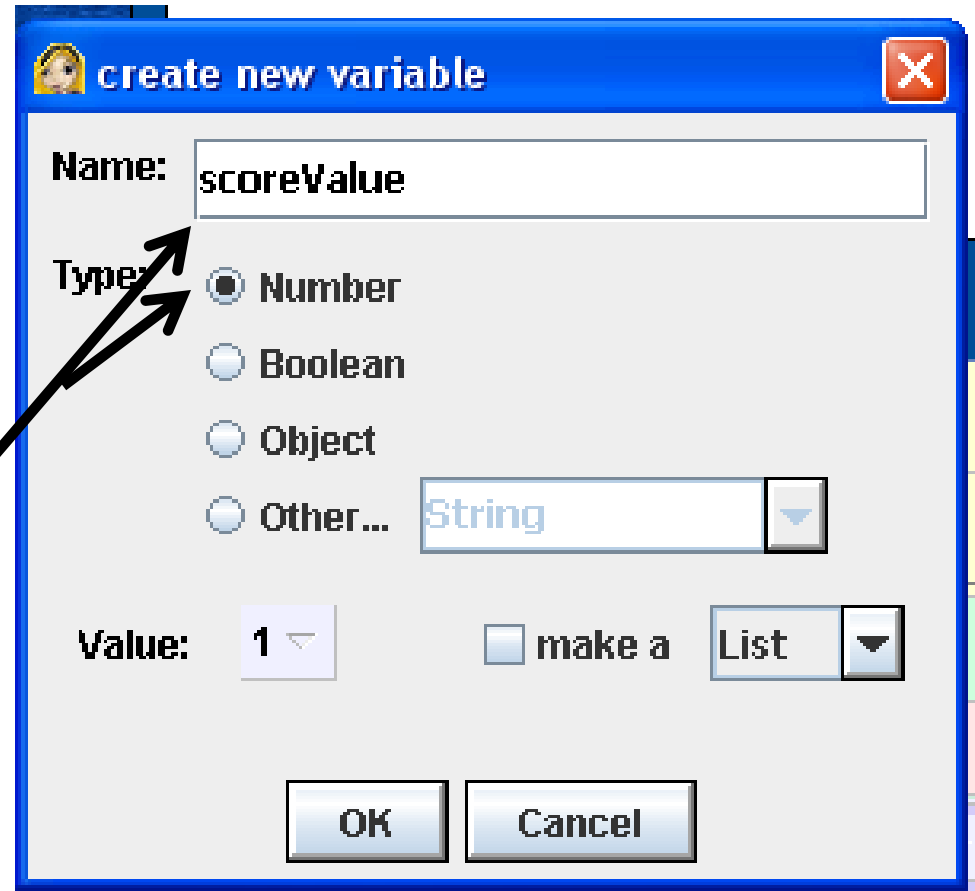
Making a Score

Now, click on **motorboat** in the object tree and go to its **functions** tab. Get a **motorboat distance to**, and drop it on top of the first number in the **a < b**. Select **expressions**, and **item_from_arches**. Then, change the second number to **1.5**.



Making a Score

Now, we want the score to add a point if it finds that you are inside an arch. To do this, click on **world** in the object tree and go to the **properties** tab. Click on **create new variable**, and name it **scoreValue**. Make sure **Number** is selected, then click **Ok**.



Making a Score

world.scoreIncrease *No parameters*

No variables

- While** world.timerValue > 0
 - For all** world.arches, one Obj item_from_arches at a time
 - If** motorboat distance to item_from_arches < 1.5
 - increment** world.scoreValue by 1 more...
 - Else**
(Do Nothing)

Now click and drag **scoreValue** into your **If/Else** under **If**. Select **increment world.score Value by 1**. Then, in the world's properties tab, set the value of **scoreValue** to 0.

world's details

properties | methods | functions

- timerValue = 15
- arches = torus, torus2, tori
- scoreValue = 0

Making a Score

Now, we need to set the text of the 3D Text object to the variable **scoreValue**. Click on **Score** in the object tree and go to its **properties** tab. Click on **text** and drag it under your **increment** command. Then select **default string**.

world.scoreIncrease *No parameters*

No variables

The image shows a Scratch script editor with the following structure:

- While** loop: `world.timerValue > 0`
- For all** loop: `world.arches`, one `Obj item_from_arches` at a time
- If** statement: `motorboat distance to item_from_arches < 1.5`
- Increment** block: `increment world.scoreValue by 1 more...`
- Score** block: `Score set text to default string more...` (highlighted with a black box and an arrow pointing from the text above)
- Else** block: `Do Nothing`

Making a Score

Now, go to the world's functions tab and scroll down to **what as a string**. Click and drag that on top of **default string** in your code. Then select **expressions** and **world.scoreValue**. Finally, change the duration of that command to 0.

The screenshot shows a programming environment with a sidebar on the left and a main workspace on the right. The sidebar is titled "world's details" and has three tabs: "properties", "methods", and "functions". The "functions" tab is selected, showing a list of functions including "a >= b", "a < b", "a <= b", "random", "string", and "what as a string". The "what as a string" function is highlighted with a black box. An arrow points from this box to the "what as a string" block in the script.

The main workspace shows a script for "world.scoreIncrease" with "No parameters" and "No variables". The script consists of the following blocks:

- While** block: `world.timerValue > 0`
- For all** block: `world.arches`, one `Obj` `item_from_arches` at a time
- If** block: `motorboat distance to item_from_arches < 1.5`
- Increment** block: `world.scoreValue` by 1 more...
- Score** block: `set text to world.scoreValue as a string` with a `duration = 0 seconds` dropdown.
- Else** block: `(Do Nothing)`

An arrow points from the text "change the duration of that command to 0." to the `duration = 0 seconds` dropdown in the "Score" block.