

# Using Functions in Alice



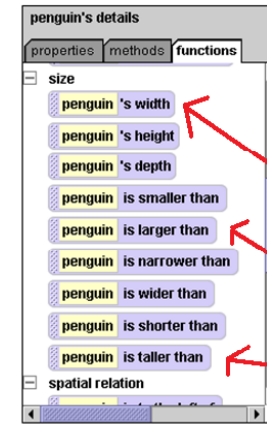
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## Step 1: Understanding Functions

### 1.

Download the starting world that goes along with this tutorial. We will be using functions. A **function** in Alice is basically a question about information in your Alice world that Alice answers. Click on the **penguin** object in the object tree. Then click on the **functions** tab. You will see a LONG list of functions. Scroll down and look at the functions under **size**.



### 2.

Each of these functions asks a question about the penguin, and then keeps the answer so that you can use it in your Alice world.

-How wide is the penguin?

-Is the penguin larger than a certain object?

-Is the penguin taller than a certain object?

These functions can be very useful in Alice. What if, for example, you want to make something move up and stand on top of the penguin's head? You don't know how exactly how tall the penguin is. But Alice does!

## Step 2: Using the **True** or **False** Functions

Some functions in Alice are statements to which the answer is either **true** or **false**, like the one on the previous page that says, "penguin is taller than." We want to know whether the penguin is taller than the normalGuy. It's almost impossible to tell just by looking at them, because their heights are so close together. So we will use a function to know for sure.

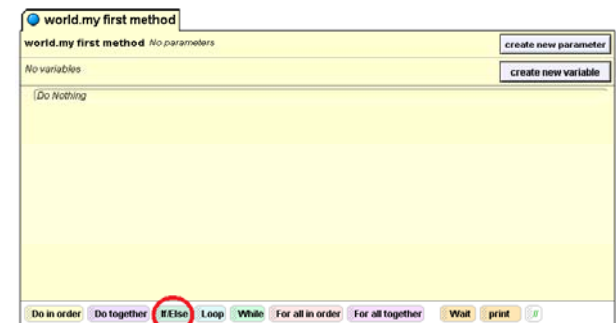
We are going to add commands so that when the Alice world starts, if the penguin is taller, it will say "Hah! I'm taller!", but if the normalGuy is taller, he will say, "Hah! I'm taller!".



## Step 2: cont.

Since we only want the penguin to say "Hah! I'm taller" IF he is taller, we need to use something called an **If Else** statement. It is located below your method editor:

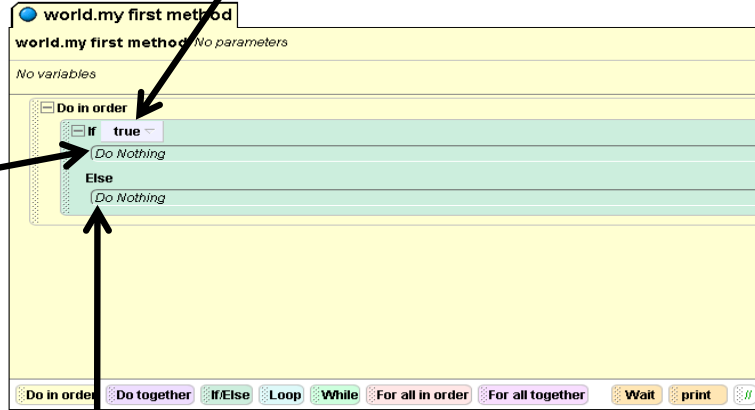
First drag a **Do in order** into your method editor. Then, inside that, drag in an **If Else** statement. Select **true** when you drop it. We will replace this later.



## Step 2: cont.

This is where you put whatever you want to happen if the answer to your question is true. This is where we'll tell the penguin to say "Hah! I'm taller!"

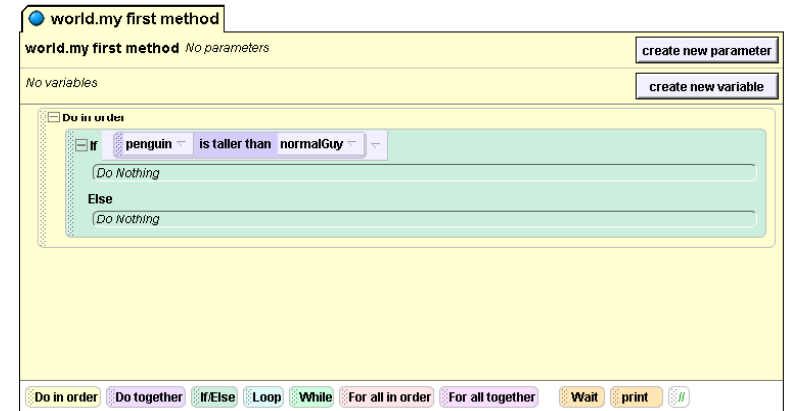
Here is where you put the question that is either true or false. For us, that will be **penguin is taller than normalGuy**. Since it is currently set at **true**, that means this If Else says, "If this statement right here is true, do whatever commands are right under it."



This is where you put whatever you want to happen if the answer to your question is NOT true. If it is not true, it will skip everything above the **Else**, and go straight to whatever is here. This is where we'll tell the person to say "Hah! I'm taller!", because our statement is false, and the penguin is NOT taller, that means the person is taller!

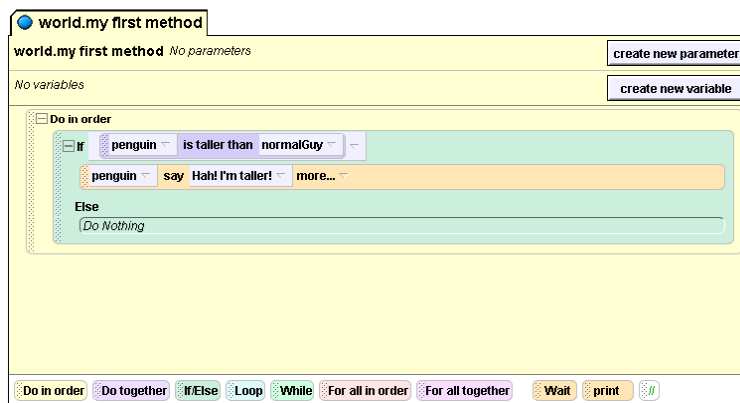
## Step 2: cont.

So let's construct our question. Click on **penguin** in the object tree and then click on **functions**. Find the **penguin is taller than** function, and drag it over the word **true** in your If Else statement. When the little menu pops up, click on **normalGuy**. Your code will look like this:



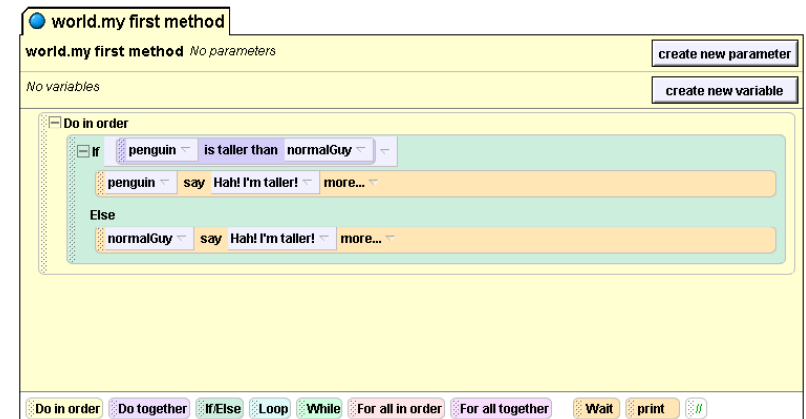
## Step 2: cont.

Now click on **penguin** in the object tree, and then click on **methods**. Find **penguin say**, and drag it into the method editor under **if**. When the menu pops up, click on **other**, and type in "Hah! I'm taller!". Your code will look like this:



## Step 2:

Now click on **normalGuy** in the object tree, and click on **methods**. Find **normalGuy say** and put under the **Else** part of your If Else statement. Tell him to say "Hah! I'm taller!" Your code will look like this:

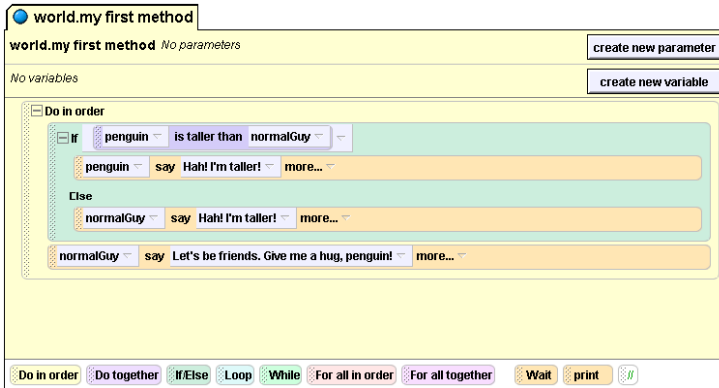


Now play your world. Who is taller, the penguin or the person?

### Step 3: Using Number Functions

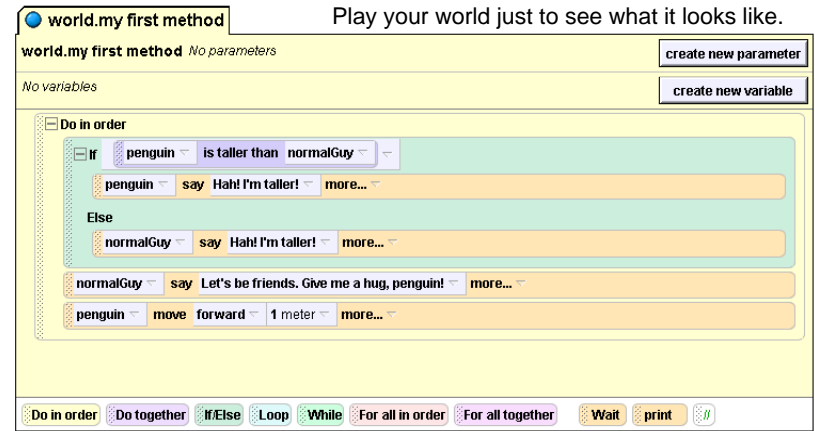
Now we're going to use one of the functions that is a question whose answer is a number. We're going to make the penguin move right up to the guy and give him a hug. The only problem is, we don't know how far to tell him to move! That's why we'll use a function!

First we'll tell the man to say something. He's tired of competing with the penguin about their height, and he wants to be friends. Click on **normalGuy say**, and drag it under your If Else statement. Make him say "Let's be friends. Give me a hug, penguin!" Your code will look like this:



### Step 3: cont.

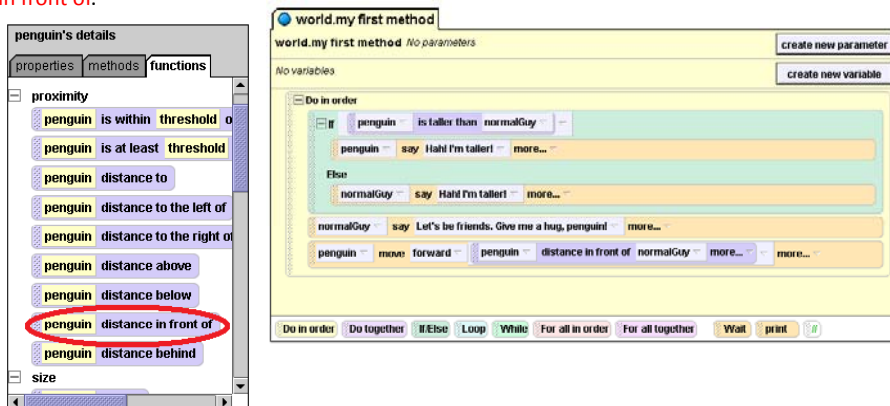
Now we want the penguin to move right up to the guy to hug him. Click on **penguin** in your object tree and then click on **methods**. Find the **penguin move** and drag it into your method editor under everything else. We don't know exactly how far yet, so just put 1 meter for now. Your code will look like this:



### Step 3: cont.

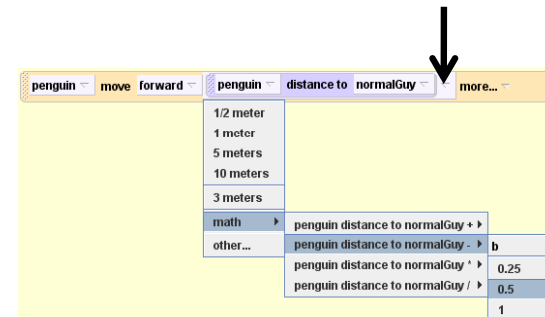
Now we're going to use a function to tell the penguin how far forward to move. Click on **penguin** in your object tree, and then click on the **functions** tab. Find the function called **distance in front of**.

Drag that function over the **1 meter** on your **penguin move forward** command and drop it there. On the menu that pops up, select **normalGuy**. Your code will look like this:



### Step 3: cont.

Try playing your world. What happens? The penguin moves too far, into the body of the normalGuy. It would be nice if the penguin would stop about 0.5m before normalGuy. We can select math, followed by "-", followed by a number. Click here to apply math.

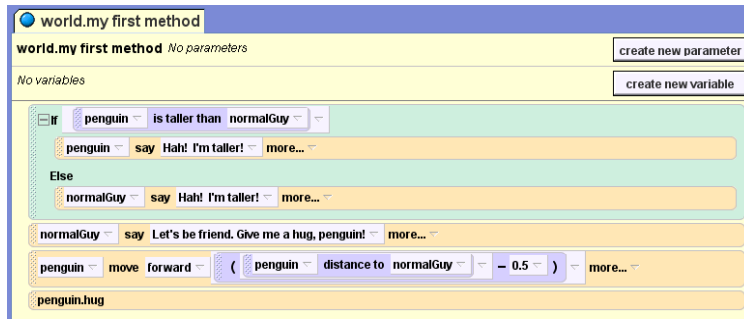


Your code for this line will then look like this:



## Step 4: Finishing Up

The last thing you need to do is make the penguin hug the guy. Click on **penguin** in the object tree, and then click on the **methods** tab. Find the **hug** method (near the top of the methods) and drag it into your method editor under everything else. Your final code will look like this:



```
world.my first method No parameters
No variables
if penguin is taller than normalGuy
  penguin say Hah! I'm taller! more...
Else
  normalGuy say Hah! I'm taller! more...
normalGuy say Let's be friend. Give me a hug, penguin! more...
penguin move forward ( ( penguin distance to normalGuy - 0.5 ) ) more...
penguin.hug
```

Now play your world and watch the magic!

Now you know the basics of using functions. We only used two functions in this tutorial, but there are MANY functions in the Alice world that can be useful. Feel free to explore the uses of other functions.

