Can I get your number?

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Overview

• This tutorial will teach you how to build a world that animates the process of random digit dialing to collect a random sample.
• We’ll dial a certain number of the phone numbers, identify that number with a person in a population, and look at the end results.
• Programming concepts covered include arrays, billboards, loops, variables, events, random numbers, and other basic Alice concepts.

Adding objects

• Create a new world with the grass background.
• Let’s sample from the 919 area code in North Carolina, but you can change this later.
• Add a 3D text object from the object gallery that says “919-” and drag it to the top middle of the screen, and make sure you leave room for the rest of the number!
• In the object tree, rename 3D Text to phoneNumber.

Adding a billboard

• We want there to be instructions when the player plays the world.
• Make sure you’ve downloaded instructionsBillboard from the website.
• Click File, Make Billboard, and find instructionsBillboard.
• Move and resize instructionsBillboard so that it covers most of the screen.
Suppose that these 10 people represent the population of the 919 area code, meaning that the population consists of 10% aliceLiddells, 10% bikeKid1s, 10% bobs, 10% boys, 10% euripides, 10% iceSkaters, 10% kellys, 10% pjs, 10% randomGirl2s and 10% randomGuy1’s. We’ll use random digit dialing to randomly sample a certain number of these people. Press ENTER to start.

Make sure you understand these instructions and how 2 aliceLiddells, for example, would represent 2 people in the 919 population with aliceLiddell’s demographics (blonde hair, blue eyes, young age, etc.)

Adding 10 people

- Find instructionsBillboard in the object tree, and go to its properties tab.
- Change isShowing to false.
- Find the People folder in the object gallery.
- Add the 10 people mentioned in the billboard: aliceLiddell, bikeKid1, bob, boy, euripides, iceSkater, kelly, pj, randomGirl2, and randomGuy1.

Putting people into a list

- Find the Visualizations folder in the object gallery, and select listVisualization.
- This listVisualization will allow us to have the people stand side by side on a line, each on his own square.
- Click new item until you have items 0-9.
- Click on the arrow next to each of the None’s select the people in the order that you added them.

- In the object tree, rename listVisualization to allPeople.
- Move and turn allPeople so that it is in the middle of the screen facing forward.
- Resize the people (especially the ice skater) so that their heights look realistic.
Hide everything, show instructions

- In `allPeople`’s properties, change `isShowing` to false.
- For each of the people in the object tree, go to their properties tab and set `isShowing` to false.
- Do the same for `phoneNumber`.
- Set `instructionBillboard`’s `isShowing` to true.

Creating an event

- The instructions say that when the user presses enter, the game will start.
- Go to `world`’s properties and click create new variable.
- Name the variable “start” and make it type `boolean` with starting value false.
- In the `Events` section (top right corner), click on create new event and select When a key is typed.
- Change any key to enter, and Nothing to start (in world’s properties), and set `start` to true.

Writing `world.my first method`

- We’re going to start with the instructions up, and they’ll be removed when the user presses enter.
- Drag a `While` into the method, and select `true`.
- Drag `start` (from world’s properties) onto `true`.
- Click the arrow next to `world.start`, and select logic, then not `start`.
- From `instructionsBillboard`’s properties tab, drag `isShowing` into the method and select `false`.

- At the top of the method, click create new variable, name it `numPlays`, set the type to `Number`, and set the value to 0.
- Drag `numPlays` into the method, and select `set value`, then 1, for now.
- From the world’s `functions` panel, drag ask user for a number onto the 1, select `other`, and type “How many people do you want to randomly select from the 919 population?”
- In `phoneNumber`’s `isShowing` (in its properties panel) into the method, and select `true`.
Create new method: world.dialNumber

- In the world’s methods tab, click create a new method, and name it dialNumber.
- Since we are always using 919, we have 7 digits left to make a complete phone number.
- Drag a Loop into the method, select other, 7, and click show complicated version.
- Create a new variable randNum of type Number.
- Drag randNum into the Loop, and select set value, 1.

- We want to associate the first digit after the 919 to one of our 10 people in allPeople.
- Create a world variable called firstNumChosen of type Number.
- Drag an If/Else into the Loop and select true.
- Drag index (the counter of the Loop that goes from 0 to 7) onto true and select index ==, then 0.
- Drag firstNumChosen into the first Do Nothing, select set value, expressions, randNum.

- From the world’s functions tab, drag random number onto the 1.
- We want random numbers between 0 and 9, and we want integers (you wouldn’t find a number like 4.3 in your phone number)!
- Click more... next to the 1, select minimum, 0.
- Click more... again, select maximum, and 10 (In Alice the maximum is never chosen, so it will really just go up to 9).
- Click more... again, select integerOnly, true.

- After we add 3 digits to the phone number, we need to add a dash.
- Drag another If/Else statement below the one you just made and select true.
- Drag index onto true, select index ==, then 3.
- Find phoneNumber in the object tree, and go to its properties tab.
- Drag text into the Do Nothing and select default string, for now.
• We want the phoneNumber to keep updating to what it already has.
• Drag text (again from phoneNumber’s properties) onto default string.
• From the world’s functions tab, drag a joined with b onto phoneNumber .text, and select other, then type “-”, and change duration to 0.
• Below the If/Else statement, drag text (again from phoneNumber’s properties), and select default string, for now.

Check to see if your method is correct:

New method: choosePerson

• Now we want to associate the number we just dialed to a person in allPeople.
• Create a new world method called choosePerson.
• Create a new variable personChosen of type Object.
• Drag personChosen into the method and select set value, camera, for now.
• Find allPeople in the object tree, and drag items from the top of its properties panel onto camera, select ith item from list, expressions, firstNumChosen.
Keeping track of counts

- We need to keep track of how many times aliceLiddell, for example has been chosen (remember aliceLiddell represents all people in the 919 population with similar characteristics).
- Create a new variable in the world’s properties tab called howMany, of type Number, and select make a List, and change List to Array.
- Click new item 9 times, and set all of them to 0.

- Now we want to make the person at index firstNumChosen of the array show.
- First, we need to increment that person’s associated howMany by 1 (item 0 in allPeople will match with item 0 in howMany, etc.)
- Create a new number variable in this method, and name it numTimesChosen.
- Drag numTimesChosen into the method, and select set value, 1, for now.
- Drag howMany onto the 1, and select ith item from array, expressions, firstNumChosen.
- Click the last arrow in the line and select math, +, 1.

- Drag howMany into the method, and select set item <index> to <item>, expressions, firstNumChosen, expressions, numTimesChosen, and change the duration to 0 seconds.
- Drag in a Do together.
- Find aliceLiddell in the object tree, drag isShowing from her properties into the Do Nothing, and select true.
- Drag personChosen onto aliceLiddell.

Relating allPeople and howMany

- To understand how and why allPeople and howMany relate to one another, here is a preview of what the final part of the animation will look like.
- In the picture, the small boy is saying that this is his second time being called.
- We kept track of the number of times he’s been called in howMany.
- The boy was item 7 in allPeople, and the number of times he’s been called (2) is item 7 in howMany.
• We want the person to say how many times they have been chosen.

• Drag personChosen into the Do together, select say, Hello, for now.

• Drag what as a string (from world’s functions) onto Hello, and select expressions, numTimesChosen.

• Drag int a as a string (from world’s functions) onto numTimesChosen, and select expressions, numTimesChosen.

Collecting more than one sample

• Go back to world.my first method.

• Drag a Loop into the bottom of the method, and select expressions, numPlays.

• From world’s methods, drag dialNumber into the Loop.

• Below that, drag choosePerson from world’s methods.

• To reset the number, drag in text from phoneNumber’s properties, select other, and type “919-”, and change the duration to 0.

• After the Loop, drag in text again from phoneNumber’s properties, select other, and type “Our sample:”.

• We want all of the people to show at the end.

• Drag in a For all in order, select expressions, and allPeople.items.

• Drag in isShowing from phoneNumber’s properties, and select true.

• Drag item_from_items onto phoneNumber, and set the duration to 0 seconds.
Person says total # times been called
• Create a number variable called index with starting value 1, so that we can go through all the people’s indices.
• Drag item_from_items into the For all in order, and select say, Hello, for now.
• From world’s functions, drag what as a string onto Hello, and select camera, for now.
• From world’s functions, drag int a as a string onto camera, and select 1, for now.
• Drag howMany from world’s properties onto the 1, select ith item from array, expressions, index.
• Drag in index, and select increment by 1.

Check your code:

Great job, you’re finished!
Play your world!