The boxballs and boxzballs folders - Red: (redtext) and Blue: (bluertext) boxes in Z lines at the top next to red and blue balls chosen from the redarray and bluearray will display the objects in the object tree.

Make sure you understand the starting world from the website.

Make sure you've downloaded the boxballs.

Overview

To see a simulated random sample of 1, type 5 into a simple random sample of 1.

In a simulated random sample of 1, if you choose balls from this box only, you get a sample of size 5.

Regardless of box size, the probability of picking any ball is equally likely.

In a simple random sample of 1, if you choose balls from this box only you get a sample of size 5.

Regardless of box size, the probability of picking any ball is equally likely.

At the top of Alice, click on File, select Make.

At the beginning of the game, we want these instructions to display at the image from the website.

Make sure you've downloaded the instructions.

The screen, and click the instructions so that in a simulated random sample of 1, if you choose balls from this box only, you get a sample of size 5.

Regardless of box size, the probability of picking any ball is equally likely.

In a simulated random sample of 1, if you choose balls from this box only you get a sample of size 5.

Regardless of box size, the probability of picking any ball is equally likely.

1 ball, 2 ball, red ball, blue ball.

1/0G%$-/68"/60(<+DF360

• Done.

We’ll use 2 kinds of sampling: Simple random sampling and stratified random sampling.

We’ll use nonstandard arrays, variables, random numbers, and other basic Alice animation.

Programming concepts included are visual and intuitive.
The changes are:

1. Set value to false.
2. Drag simple into the Do in order, and select set.
3. Click create new variable, name it simple, and
4. Create a parameter of type Object named allballs.
5. So create 2 parameters of type Number, numchossendalls and numtotalballs.
6. Check off make a list, and change List to Array.
7. This single method will work for both kinds of samples. Click create new method, and name it chossendalls.
8. The changes are: change 5 to T, and true to false.
9. Make sure that the ordering is the same as in the picture because this will be important later.
10. When a key is typed.
11. Create instructions in the object tree, and go to its properties.
12. Once you understand the instructions, click on everything behind it while we’re coding.
13. Let’s hide the instructions for now so we can see
14. number of balls, regardless of box.
15. If the player wants to see a simple random sample, we’ll randomly choose that certain sample. If the player wants to see a stratified random sample, we’ll randomly choose one of the two boxes and then choose the number of balls that the player specifies from that one box.
16. Make sure you understand the instructions.
17. Choose Isshowing to false.

We want to keep track of if the user chose a simple or stratified sample.

We want to keep track of if the user chose a simple

the do in order, and select false.

From instructions’ properties, drag Isshowing into

From the bottom, drag a do in order onto Nothing.

Click any key, and select letters, S.

Select When a key is typed.

In the top right corner, click create new event, and
to disappear and show a simple random sample.

When the player types S, we want the instructions

creating events.

Create new method: chossendalls
Choose another number.

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expressions, index, and set the duration to 0.

Drag alliballs onto camera, select item from array,
array, expressions, rand, array, and select item from array
expressions, rand, expressions, for now.

Drag tempball into the loop and select set value,
In the method, create a new Object variable named
So let’s code that

Camera, for now.

Drag tempball into the loop and select set value,
we are moving.
In this new loop, we’ll use tempball as the ball that
show complicated version,
and select expressions, numchosoanals, and click
and select another loop into the bottom of the method,
ball we choose.
Now we want to move the first numchosoanals to
set item index to tempball.
set item duration to 0 seconds.

expressions, index, expressions, expressions,
drag alliballs into the loop, and select set item
Shuffling the balls

• Click the purple move more than 3 times to set the minimum to 0,
to item, expressions, rand, item, to item <index>
• From word’s functions, drag random number onto T.
• Drag rand into the loop, select set value, T, for now.
• In the method, create a Number variable named rand.
• numchosoanals of them.
• all the balls in alliballs and choose the first
• In order to get a random sample of balls, we will shuffle
expressions, numchosoanals, and click show
• Drag a loop into the bottom of the method, and select

Notice that this temp spot is necessary to store.
Green in the purple’s former place.
We move the green to a temp spot, put the
Suppose we want to make this change:

Theory behind shuffling
Increment by 0.5. Below that line, drag in the יעטרכון and select יעטרכון, and set duration to 0.5.

Expressions, יעטרכון, הפשטות, temball,

ליצטראיה into the $^$, select set PRECATED, $^$, илиטראיה, drag elements.

Increment by 1.

Below that line, drag  יעטרכון and select

يعטручס.

Do the same for يعטручס with יעטרכון and

( יעטרכון – يعطручס).

From world's functions, drag absolute value of a unto

ידטס.

Click the white arrow, and select match,’הפשטות, יעטרכון.

Select set value, יעטרכון, יעטרכון.

Drag rediff into the bottom of the method, and
drag rediff into the method.

Create two new number variables in the method.

ブルゲラス were from יעטרכון and יעטרכון, so

Now we want to see how close ידטס and יעטручס.

Finding the difference

Drag allballs onto camera, and select ith item

Showing our sample of balls

Drag alllball onto temball.

color onto the line, and select ==, red.

From boxv1’s properties in the object tree, drag

Get it from an item in the object tree.

To access the color property, we’ll first have to

Below that line, drag an if/else and select true.

and bluearry if it’s blue.

We want the ball to move to redarry if it’s red.

Drag alllball onto camera, and select ith item

set item (index) to <item>, expressions, יעטרכון, יעטרכון.

Drag elements into the first do nothing, and select

spot for item יעטרכון in redarry.

We want the red ball we just choose to move to the

in the object tree, go to redarry’s properties.

We have chosen, especially.

These will keep track of how many red and blue balls

to 0.

Create two new number variables in the method:

ליצטראיה and יעטרכון, and set their starting values.
Do the same for blue.

numchosenballs, and select match, * 100.
Cick the arrow after (redcount/numchosenballs).

Cick the arrow after (redcount/numchosenballs).
Cick match next to redcount, and select /.

To enter text:
Joined with b’s 4 times until you have 5 places
Drag astronaut say into the method, and add a
Change the duration to 5 seconds.

Answer:
Might have been even closer to the true
If we had sampled more balls, your guess
Drag astronaut say into the method, and type
Drag astronaut say into the method, and type
Answer when the sample size is larger.
Reasonable are usually closer to the true
Statistically speaking, our guesses (if they’re

Analyzing the data

rediff
string onto rediff, and select expressions,
Also from world’s functions, drag int as a
string, and select camera, for now.
Drag what as a string onto the first default
string, and put another a joined with b
default string, and put another a joined with b
textbox.

from astronaut’s methods tab, drag say into

Astronaut says...

value, expressions, rediff, redcount.
Drag reddiff into the method, and select set
Calculate the percentages of red and blue balls.
Now we’ll use reddiff and blueiff as variables to

Analysing the data

Do the same for the blue balls.

Cange the duration to 5 seconds.

Cange the duration to 5 seconds.

from the number we sampled!
Cange the past default string to say „balls off"
randomly choose 25 total balls. How many do you want to number onto the string and type “There are number of words’ functions, drag ask user for a and select set value, J. Drag numballs below the astronaut say line. Create a number variable named numballs. You choose a simple random sample. For 2 seconds, have the astronaut say “Great! you include all of them, you include all of them, but make sure that reds and blues, “blue 10 in items 0-24 filled with red, ... Click new item until you have list, and change list to array. Name the variable. Create a new object variable. Under world’s properties, make a ball. Which box they are from, so we choose balls without cages for a simple random sample, keeping track of the balls.

another sample” for 3 seconds. Next have the astronaut say “Press restart to see 50% red balls and 50% blue balls.” For example, the astronaut would say, “We choose if there were half red and have blue balls, for Change the text field so that the line looks like this: Set the duration to 5 seconds.

From world’s properties, drag simple onto the true. Drag in an if/else at the bottom and select true. Drag is showing onto the true, and leave the do properties tab. Find instructions in the object tree, and go to its my first method. My first method.
random sample? (Not stratified yet, though.)

Play your world—it should work for a simple
Set checkbox to true.
Find instruction’s properties in the object tree.
Are 25 total balls.
Change the second numballs to 25 since there
world bothboxballs.
numballs, expressions, numballs, expressions,
numballs set value inline, and select expressions
numballs, set value inline, and select expressions
From world’s methods, drag choose below the

Under the else, do the same for box2:

drag ask user for a number onto the 2, and type
below that line, draw numballs, and select set value, 2.
set color to ‘green.
drag boxtext into the first ‘Do Nothing’, and select
derg firstbox onto the true.
derg else and select true.
derg below that line, still in the else, draw in another if

box2boxballs folder (red, ed2, blue, blue, blue, blue)

Similarly, create a 15-object object array named
...’blue2s’ into the spaces, in any order.
drag box2boxballs folder (red2, ed2, blue2, blue2)
derg from the box2boxballs folder, and insert each of the 10 items
create a 10-item object array named
case.
derg from box or box2, so we need an array for each
for a stratified sample, we are either sampling

allbox2balls and allbox2balls

For a stratified sample
First, choose the method.

If your method is...

- The first method:
  - Choose a simple random sample of 20 balls, then calculate the median.
  - Choose a simple random sample of 50 balls, then calculate the median.
  - Choose a simple random sample of 100 balls, then calculate the median.

- The second method:
  - Choose a simple random sample of 20 balls, then calculate the mean.
  - Choose a simple random sample of 50 balls, then calculate the mean.
  - Choose a simple random sample of 100 balls, then calculate the mean.

Go back to my first method, and scroll to the bottom.

Finishing up