

# Guide CHANGE OF DIRECTION

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Chieko Asakawa was born in Japan in 1958. At 14 she lost her sight, but that didn't stop her from becoming a brilliant computer scientist who continues to work to make digital media universal, so people like her can be independent.

In this workshop we will learn about her work, put ourselves in situations that make us empathise with people who are visually impaired, and create a Scratch project.



# Before we begin

## What we are going to do

What we are going to do:


- Learn about and experience object-based programming.
- Learn about the Scratch programming environment and the function of each block used to conduct this activity.
- Develop a simple video game using object programming.
- Explore the interaction of play, imagination and technology.
- Raise awareness of the role of women in technology professions.
- Raise awareness of visual impairment.

## We will need

- Internet connection
- Access to Scratch <https://scratch.mit.edu/>
- Paper
- Google Chrome extension Funkify



### The competencies we will work on

- Mathematics, science and technology skills. Introduction to problem solving, so we can apply it to everyday situations.
  - Digital competency. Enable experimentation with digital media, facilitating understanding of technology, logical and computational thinking.
  - Critical thinking. Propose situations that enable us to question, pose problems, select information and draw conclusions. Encourage research and project development, problem solving and critical decision making, using digital applications and resources.
  - Social and civic competencies. Develop individual and team-work habits, and attitudes of self-confidence, initiative, curiosity and creativity.
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# Development of the activity

In the 1990s, Chieko Asakawa was introduced to an as yet little-known tool called the Internet. She was impressed by how useful it could be and dreamed of adapting it for blind people like herself. From then on, she embarked on a new project that led to developing a voice-enabled browser to facilitate access to internet browsing for visually impaired people.

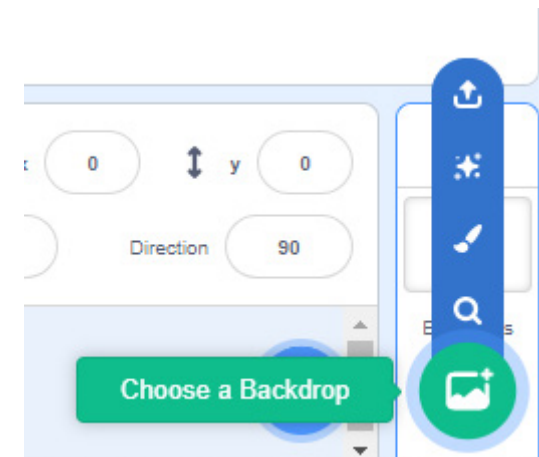
Can you imagine what surfing the Internet would be like without being able to see? We will create a little game that will put us in a visually impaired person's shoes.

## 1. Open Scratch!

Go to the Scratch website and start your program by clicking on Create. You can also follow this link <https://scratch.mit.edu/>

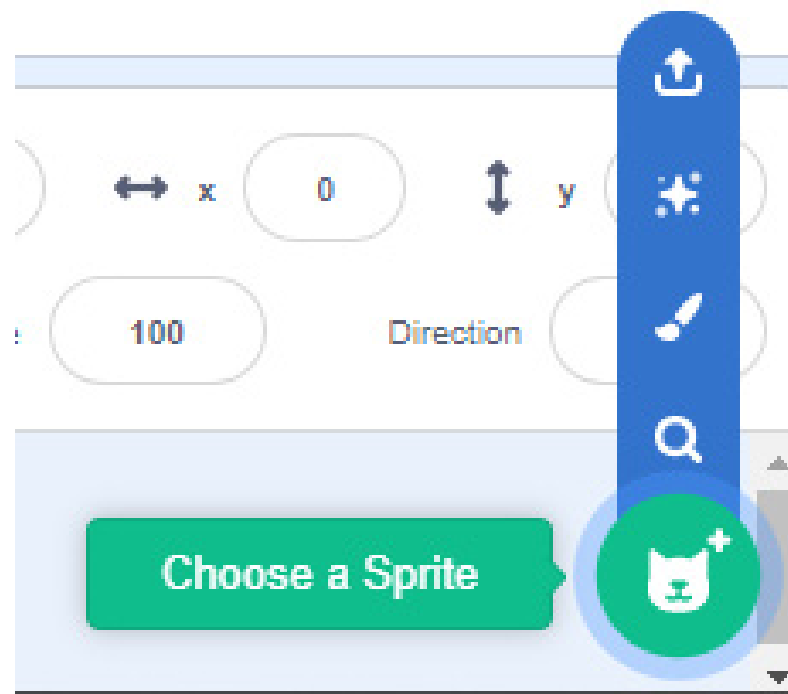
## 2. Choose a backdrop

First, let's choose our program's backdrop. You can choose a scene you would like to be in, such as a room, a castle, a concert... or a basketball court.



### 3. Who is hiding there?

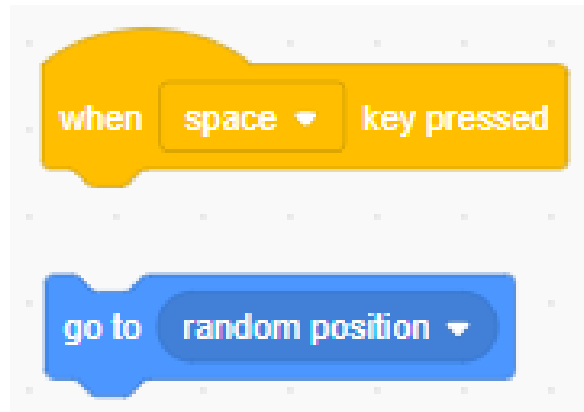
The game will consist of finding an object on the screen without using your eyes, so your first mission will be to choose from the library the objects you want to appear in the game.



#### 4. Everyone can go where they want!

If you have chosen the objects, you must program them to make the characters go to any point on the screen when space key is pressed using the go to random position block.

This way no one can know where they are, or the game would be too easy.

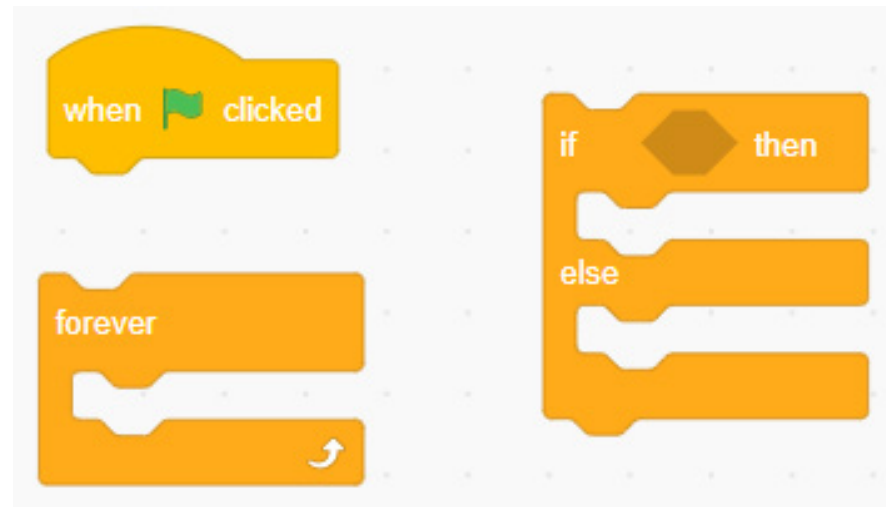


## 5. It won't move!

As you cannot use your sight when playing, you must identify each object with a sound to know that you are touching it with the mouse.

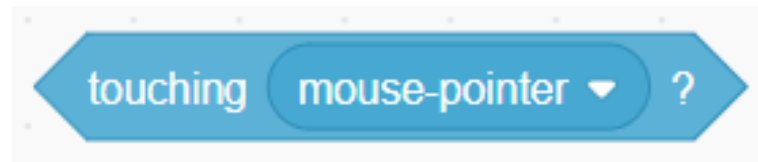
To solve this, use the forever and if \_then else, control blocks to build a condition.

Thinking about a condition in programming is easier than it sounds. For example, if the condition is that we are hungry, we eat. If it rains, we open an umbrella.

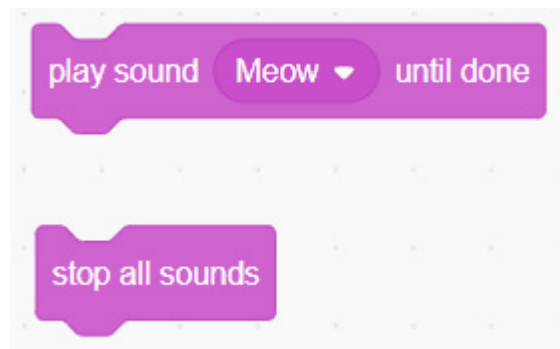




The condition to be checked is programmed in the gaps of the conditional block. Add the menu block Sensors touching mouse pointer? to your condition

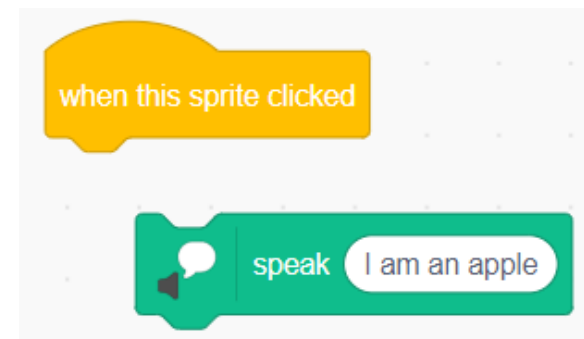
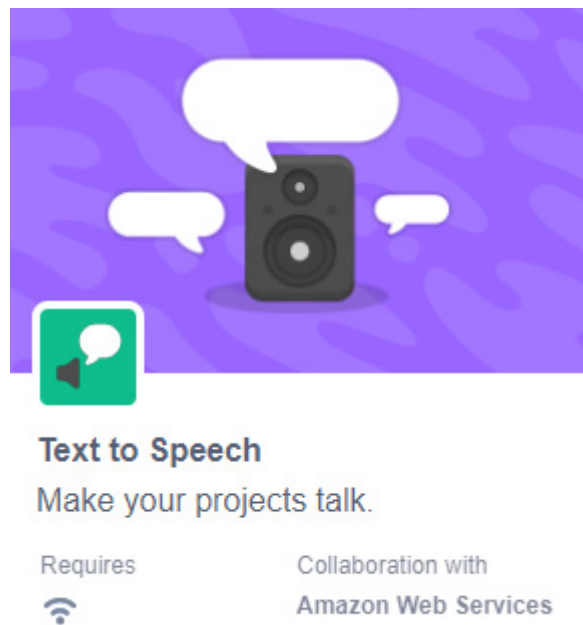


Finally, within the condition, we program the action to be performed by the object if the condition is met. If we touch the character with the pointer in the program, the character will emit a sound using the play sound block, until done and else stop all sounds.



## 6. Let's think about how Chieko would do it

As in the program developed by Chieko, we will include the Scratch Text-to-Speech extension to describe the characters we can hear.



## 7. Play and create!

We've got it! It's time to play the game. The rules are quite simple:

- Cover your eyes with a mask or blindfold and hold the mouse with one hand.
- Press the space key to move the objects to a new position.
- Try to locate them all; you can try again as often as you want.



# Activities

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# 1. Extends programming

Here are some programming challenges that require you to be quick-witted and creative. Once you have overcome them, your programming will have improved.

## Challenge 1. Different sizes

We will not always know the sizes of objects in advance. So, the search may be a little more difficult. We propose that you change its size every time you start the game. Add the set size to block to the when space key pressed block.



Place the random number block inside the set size to oval to get a different size within the range of values you choose. Remember that 1 is a very small value.





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