Projects
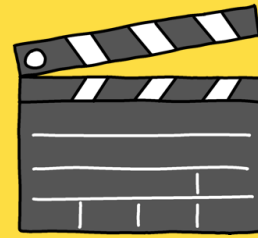

Special Effects

Create special effects for a film or computer game.

Step 1   Introduction
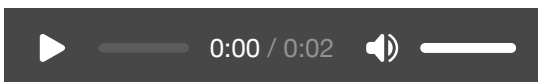
In this project you will use Sonic Pi to create some special effect sounds that can be used in a film or a computer game.
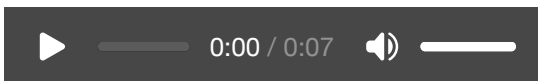
If you don't have Sonic Pi installed on your computer, you can download it from sonic-pi.net (https://sonic-pi.net/).

Click the play button below to hear how your special effects will sound:

Suspense:

▶ ——————— 0:00 / 0:02 🔊 ————

Stormy night:

▶ ——————— 0:00 / 0:07 🔊 ————

Haunted bells:

▶ ——————— 0:00 / 0:24 🔊 ————
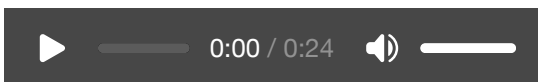
Additional information for club leaders

If you need to print this project, please use the Printer friendly version (https://projects.raspberrypi.org/en/projects/special-effects/print).

ℹ️   Club leader notes

Introduction:

In this project, children will learn how to manipulate samples to create spacial effects.

Resources

The 'Project Materials' link for this project contains the following resources:

Club leader Resources

You can find a completed version of this project by clicking the 'Project Materials' link for this project, which contains:

- suspense.txt
- suspense.mp3
- stormy-night.txt
- stormy-night.mp3
- haunted-bells.txt
- haunted-bells.mp3

Learning Objectives

- Sonic Pi samples
- Sample `rate` and `amp`
- Using random values

This project covers elements from the following strands of the Raspberry Pi Digital Making Curriculum [(htt](http://rpf.io/curriculum) [p://rpf.io/curriculum)](http://rpf.io/curriculum):

- Combine programming constructs to solve a problem. [(https://www.raspberrypi.org/curriculum/progra](https://www.raspberrypi.org/curriculum/programming/builder) [mming/builder)](https://www.raspberrypi.org/curriculum/programming/builder)

Challenges

- "Create your own special effects" - using samples to create special effects.

Frequently Asked Questions

- To find samples available in Sonic Pi, learners can go to jumpto.cc/sonic-pi-samples [(http://jumpto.cc/s](http://jumpto.cc/sonic-pi-samples) [onic-pi-samples)](http://jumpto.cc/sonic-pi-samples). Alternatively, they can just type `sample [space]` and choose from the list that appears.

 Project materials

Club leader resources

- Downloadable completed Sonic Pi 'Suspense' special effecte (https://projects-static.raspberrypi.org/projects/special-effects/e6818c8cba74e7ef02cc4e959391f3ee13397371/en/resources/suspense.txt)
- Downloadable completed 'Suspense' mp3 file (https://projects-static.raspberrypi.org/projects/special-effects/e6818c8cba74e7ef02cc4e959391f3ee13397371/en/resources/suspense.mp3)
- Downloadable completed Sonic Pi 'Stormy night' special effect (https://projects-static.raspberrypi.org/projects/special-effects/e6818c8cba74e7ef02cc4e959391f3ee13397371/en/resources/stormy-night.txt)
- Downloadable completed 'Stormy night' mp3 file (https://projects-static.raspberrypi.org/projects/special-effects/e6818c8cba74e7ef02cc4e959391f3ee13397371/en/resources/stormy-night.mp3)
- Downloadable completed Sonic Pi 'Haunted bells' special effect (https://projects-static.raspberrypi.org/projects/special-effects/e6818c8cba74e7ef02cc4e959391f3ee13397371/en/resources/haunted-bells.txt)
- Downloadable completed 'Haunted bells' mp3 file (https://projects-static.raspberrypi.org/projects/special-effects/e6818c8cba74e7ef02cc4e959391f3ee13397371/en/resources/haunted-bells.mp3)

Step 2   Suspense

Let's start by creating a sound to show that danger is approaching.

- To create the first special effect you should add the `:ambi_choir` sample to am empty buffer.

```
#suspense
sample :ambi_choir
```

- You can change the **rate** at which a sample is played. A `rate` of `1` is the sample's normal speed, and using a `rate` of less than 1 will slow the sample down.

```
#suspense
sample :ambi_choir, rate: 0.3
```

- Press 'Run' to hear your sample played slowly. How does the sample sound?

- A `rate` higher than 1 speeds the sample up.

```
#suspense
sample :ambi_choir, rate: 3
```

- Test your sample again. How does it sound now?

- You can repeat the sample a few times by putting it in a loop. You'll also need to add a `sleep` after playing the sample.

```
#suspense
4.times do
  sample :ambi_choir, rate: 3
  sleep 0.5
end
```

Step 3   Stormy night

- Choose an empty buffer to create the next special effect.

- To begin, add the `:ambi_swoosh` sample.

```
#stormy night
sample :ambi_swoosh
```

- Press 'Run' to test your sample and see how it sounds.

- If you slow the sample down, you'll hear that it sounds like a storm.

```
#stormy night
sample :ambi_swoosh, rate: 0.3
```

- You could also add a `:misc_crow` sample, that is played at the same time.

```
#stormy night
sample :ambi_swoosh, rate: 0.3
sample :misc_crow
```

- Put the `:misc_crow` sample in a loop, so it is played 4 times with a 1 beat `sleep` each time it is played.

```
#stormy night
sample :ambi_swoosh, rate: 0.3
4.times do
  sample :misc_crow
  sleep 1
end
```

- Instead of sleeping for 1 beat each time, you can use `rrand` to which will give you a random number between the 2 values in brackets.

```
#stormy night
sample :ambi_swoosh, rate: 0.3
4.times do
  sample :misc_crow
  sleep rrand(0.5, 2)
end
```

- The **amplitude** of a sound is the size of the sound wave. Changing the amplitude of a sound wave changes its **volume.**
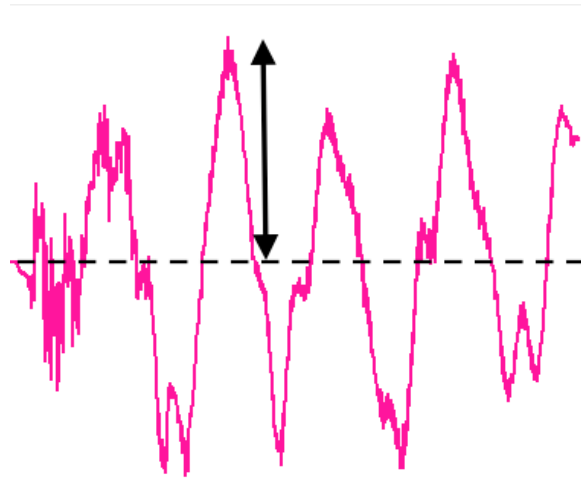
You can use `amp` to make a sample play at a different volume. A number less than 1 will play a sample quieter.

```
#stormy night
sample :ambi_swoosh, rate: 0.3
4.times do
  sample :misc_crow, amp: 0.2
  sleep rrand(0.5, 2)
end
```

Step 4   Haunted bells

- Choose an empty buffer to create the next special effect.

- Start by adding the `:perc_bell` sample.

```
#haunted bells
sample :perc_bell
```

- Press 'Run' to play the sample and see how it sounds.

- Change the `rate` of the sample to see how it sounds played at different speeds.

```
#haunted bells
sample :perc_bell, rate: 2
```

- Change the `rate` to `-1`. What does this do to the sample?

```
#haunted bells
sample :perc_bell, rate: -1
```

- You can use `rrand` to play the sample at a random rate.

```
#haunted bells
sample :perc_bell, rate: rrand(-1.5, 1.5)
```

- Add the sample to a loop that repeats **forever**. You can also `sleep` for a random time after the sample is played.

```
#haunted bells
loop do
  sample :perc_bell, rate: rrand(-1.5, 1.5)
  sleep rrand(0.1, 2)
end
```

Step 5   Challenge: Create your own special effects

Can you use samples to create your own special effects? Here are some examples to help you:

```
#bounce
sample :elec_twip, rate: 0.1
```

```
#alarm
5.times do
  sample :elec_beep, rate: 0.4
  sleep 0.5
end
```

Remember that you can **record** your effects and use them in a film or game that you're developing!