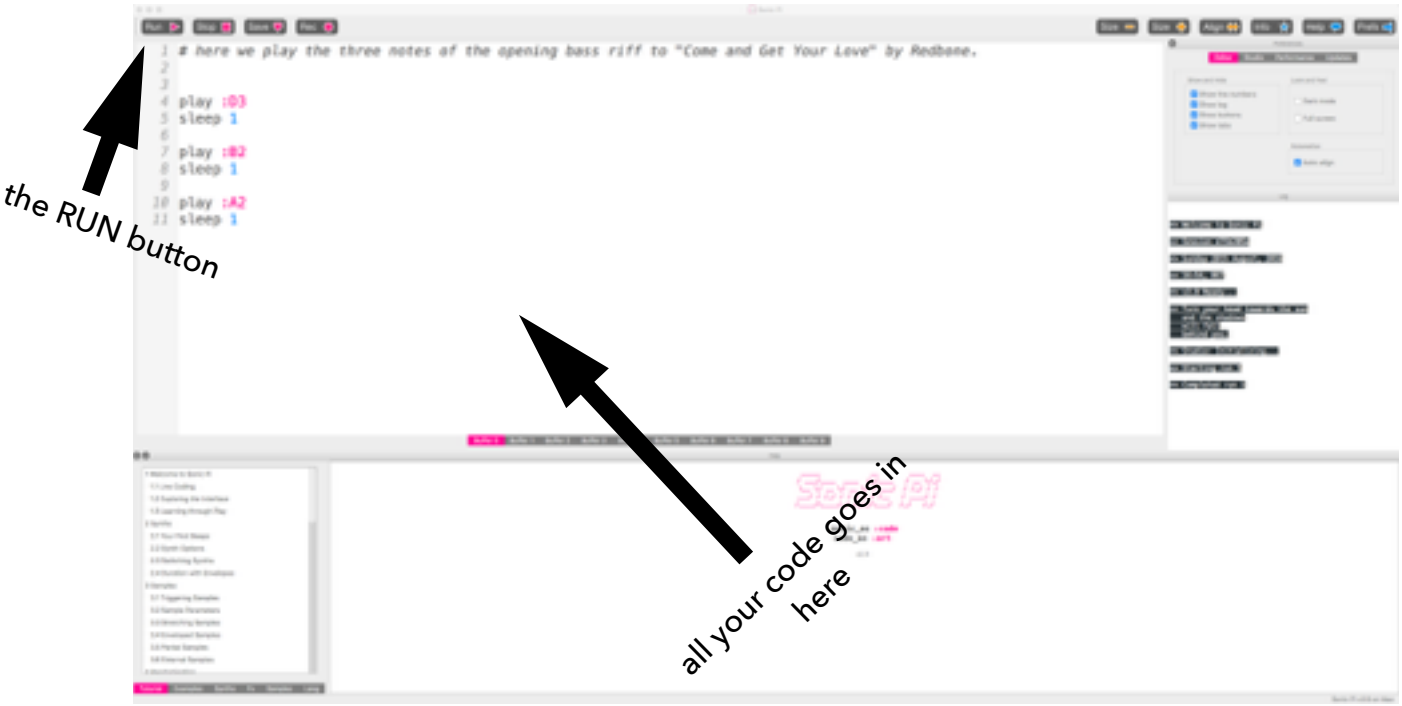
Intro to Sonic Pi

- **Sonic Pi** is an application you can use to make **music** through **code**.
- Songs usually have parts that repeat (verse, then chorus, then verse again – followed by another chorus!) and computers are *really good* at doing things that repeat. Computers can also be used to **generate** and **change** sounds.
- We'll now go through a few steps to recreate the opening bit of a song called "Come and Get Your Love" by a band called *Redbone.* Search for it on **youtube** and have a listen to the first 30 seconds or so. You might even recognise it from the *Guardians of the Galaxy* film. 😜

Let's make some noise!

First of all, you need to have the **Sonic Pi** app installed. Go to http://sonic-pi.net and download it for your computer, or ask someone to get you started.

When you start the app, it looks something like this:



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```
play :D3
sleep 1

play :B2
sleep 1

play :A2
sleep 1
```

- Type the stuff in the green box to the left into the area where the code should go in **Sonic Pi** and click **Run**.
- Aha! We made some noise!
- From the code it's easy to see we played three notes (D, B and A) with a pause (or *sleepl)* between them – and this is exactly what we hear.

```
play :D3
sleep 0.5

play :B2
sleep 0.25

play :A2
sleep 0.25
```

- It sounds a bit … tame though, right?
- We can increase the *energy* and *speed* by making the pauses between the notes *smaller.*
- Try running this code (where all the *pause* values have been halved) and see how it sounds.

```
3.times do
  play :D3, amp: 2
  sleep 0.5

  play :B2
  sleep 0.25

  play :A2
  sleep 0.25
end


play :D3, amp: 3
sleep 0.25
play :D3, amp: 3
sleep 0.25

play :B2
sleep 0.25

play :A2
sleep 0.25
```

- OK, things are getting interesting now
- Everything contained between the **3.times do** and **end** lines gets repeated – you guessed it – three times.
- We can also add in extra information to make certain notes sound different. Here **amp** stands for *amplitude.* A larger amplitude makes a *louder* noise – try it out!

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```
use_synth :fm

2.times do
  play :D3, amp: 2
  sleep 0.5

  play :B2
  sleep 0.25

  play :A2
  sleep 0.25
end


###############
sleep 0.25
play :D3, amp: 2
sleep 0.25

play :B2
sleep 0.25

play :A2
sleep 0.25


###############
play :D3, amp: 3
sleep 0.25
play :D3, amp: 3
sleep 0.25

play :B2
sleep 0.25

play :A2
sleep 0.25
```

- OK, let's change the instrument now, so that it sounds a bit more like a bass guitar. There are lots of instruments to choose from, so give some other ones a go too!

- Hash marks **#######** are ignored by **Sonic Pi**, but sometimes it's nice to separate blocks of code so they're easier to read.

- The *third* time these notes are played in the song actually sounds a little different to the first two times. So, let's just run the loop above **2 times** only, and add this third loop with an extra **sleep 0.25** pause to make it sound more like the song.

Congratulations!

You made a tune using code!

- There are lots of examples and tutorials in **Sonic Pi** itself, so just dig in, change some things here and there and listen to what happens!

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Here are a couple of optional extras, if you want to explore a little deeper

- Don't worry – the code below *looks* like a lot but it's exactly the same as on the previous page, just with more things to experiment with (**attack, sustain, release** etc). Add them in, change the values, see how it sounds!

```
use_synth :fm

2.times do
  play :D3, amp: 2, attack: 0.1, sustain: 0.2, release: 0.3
  sleep 0.5

  play :B2, attack: 0.1, sustain: 0.2, release: 0.3
  sleep 0.25

  play :A2, attack: 0.1, sustain: 0.2, release: 0.3
  sleep 0.25
end


###############
sleep 0.25
play :D3, amp: 2, attack: 0.1, attack_level: 1.5, sustain: 0.1, release: 0.2
sleep 0.25

play :B2, attack: 0.1, sustain: 0.2, release: 0.3
sleep 0.25

play :A2, attack: 0.1, sustain: 0.2, release: 0.3
sleep 0.25


###############
play :D3, amp: 3, attack: 0.1, sustain: 0.2, release: 0.3
sleep 0.25
play :D3, amp: 3, attack: 0.1, sustain: 0.2, release: 0.3
sleep 0.25

play :B2, attack: 0.1, sustain: 0.2, release: 0.3
sleep 0.25

play :A2, attack: 0.1, sustain: 0.2, release: 0.3
sleep 0.25
```

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```
in_thread do
  loop do
    ##### PLAY DRUMS
    sample :drum_bass_hard
    sleep 0.5

    sample :drum_snare_hard
    sleep 0.5

    sample :drum_bass_hard
    sleep 0.5

    sample :drum_snare_hard
    sleep 0.25
    sample :drum_snare_hard
    sleep 0.25
  end
end


#######
loop do
  ##### PLAY MELODY
  use_synth :fm
  play :D3, release: 0.2
  sleep 0.5
end
```

- **DRUMS!** You can play different drum sounds (as well as other sounds, called *samples*) using the **sample** command

- You might have noticed the **in_thread do** command at the top. We use this when we want **Sonic Pi** to play more than one thing at a time – in this example we have the *drums* playing at the same time as *repeating D note*.

- If you put something *else* in between the **loop do** and **end** lines, it will play along with the drum beat. Try copy/pasting in the tune from the previous page to see how it sounds with a drum beat.

The great thing about **Sonic Pi** is that you can learn a lot, and have a lot of fun just by fiddling around with the numbers. If you don't know what something is, try changing its value and listening to what happens.

There are also lots of examples to play with, already built in to the **Sonic Pi app**. Ask someone to show you where they are and have fun messing around with them.