



# Sonic Pi

*The Live Coding Music Synth for Everyone*

created by  
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```
music_as :code  
code_as :art
```

There are no mistakes, only opportunities

C Major 7 arpeggio from 'Stranger Things.'

```
1 use_synth :prophet  
2 use_bpm 62  
3  
4 in_thread do  
5   with_fx :reverb do  
6     loop do  
7       play_pattern_timed chord(:C3, :M7), 0.2  
8     end  
9   end  
10 end
```

[wrightstuffmusic.com](http://wrightstuffmusic.com)

## 1 Welcome to Sonic Pi

1.1 Live Coding

1.2 Exploring the Interface

1.3 Learning through Play

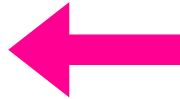
2 Synths

2.1 Your First Beeps

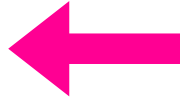
2.2 Synth Options

2.3 Switching Synths

2.4 Duration with Envelopes

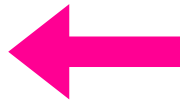


Step 1



Step 2

### Starting Text Blocks to Code:

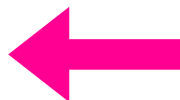


Eminor Guitar  
Loop

```
live_loop :guit do
  with_fx :echo, mix: 0.3, phase: 0.25 do
    sample :guit_em9, rate: 0.5
  end
  # sample :guit_em9, rate: -0.5
  sleep 8
end
```

### 2.times do

```
  play 60
  sleep 0.5
  play 62
  sleep 0.5
  play 64
  sleep 0.5
  play 67
  sleep 0.5
  play 69
  sleep 0.5
end
```



Repeats Twice

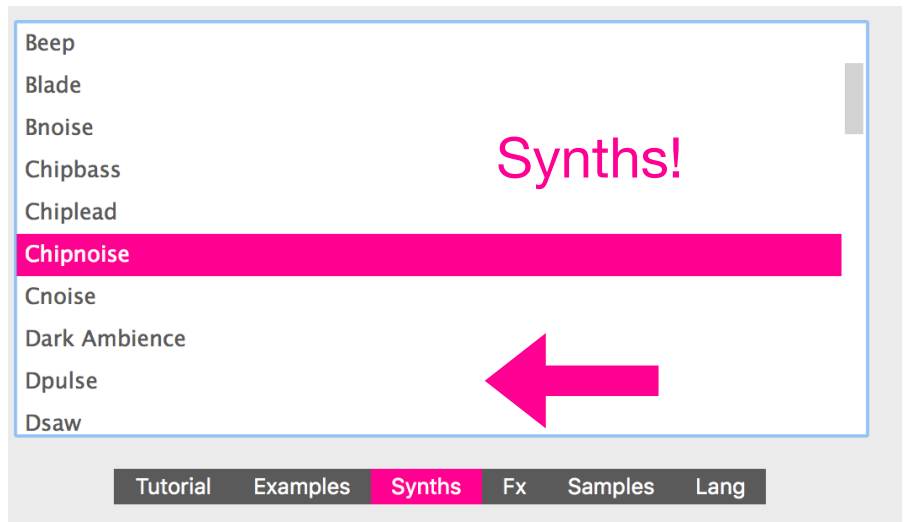
C	D	E	F	G	A	B
60	62	64	65	67	69	71

Notes use numbers as above.

```

use_synth :fm
2.times do
  play 60
  sleep 0.5
  play 67
  sleep 0.5
end

```



## Loops and Synths:

Loops and Synths can be added to your patterns using the following commands.

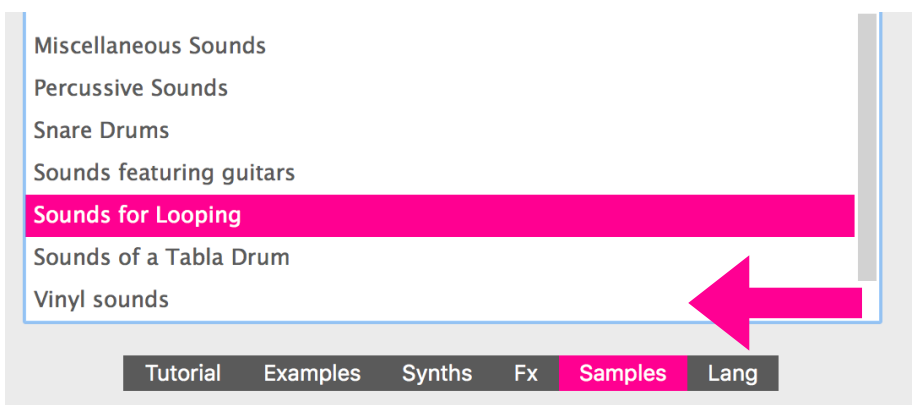
To use a synth, you need to add the code `use_synth :name of synth` above the sequence of code you want to use it in.

To use a sample, you need to add the code `sample :name of sample` in the sequence of your music program where you want it to play. Just by typing **sample: loop\_** a series of options will open up.

```

2.times do
  sample :loop_amen
  sleep 1.753
end

```



## Samples!

```

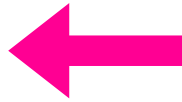
sample :loop_industrial
sample :loop_compus
sample :loop_amen
sample :loop_amen_full
sample :loop_garzul
sample :loop_mika
sample :loop_breakbeat
sample :loop_safari
sample :loop_tabla

```

The code we use to play two tunes at the same time needs to be between `in_thread do` and `end`.

### More than one loop at once:

```
in_thread do
  loop do
    sample :loop_amen
    sleep 1.753
  end
end
```



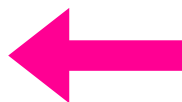
See how each time a  
'do' is referenced there  
is an 'end?'

Copy and paste the code below to now hear both at once:

```
in_thread do
  16.times do
    play 75
    sleep 1.753
    play 74
    sleep 0.25
  end
end
```

Can you add a synth sound above the 16. times do code?

```
in_thread do
  use_synth :tb303
  16.times do
    play 75
    sleep 1.753
    play 74
    sleep 0.25
  end
end
```



The synth option  
is up to you.

Here is an example of two loops playing at once.

**You can copy and paste them into the program:**

```
in_thread do
  use_synth :prophet
  16.times do
    play 75
    sleep 1.753
    play 74
    sleep 0.25
  end
end
in_thread do
  loop do
    sample :loop_amen
    sleep 1.753
  end
end
```

**Try to change the following:**

1. The synth sound
2. The loop sound
3. The timing of the notes or loop
4. The actual notes themselves

**Extension option:**

- Could you code a piano left hand pattern with a melody?
- Can you code a series of ostinato patterns?

Don't forget that copy & paste is a powerful tool. You can edit code, experiment and test ideas with this handout as your reference material.

The following two examples combine piano pieces with coding! The first is *Etude No.1* by Philip Glass and the second is *I'm going to make a Cake*.

```

1  use_synth :piano
2  use_bpm 80
3
4  in_thread(name: :triplets) do
5    loop do
6      4.times do
7        play :G3
8        sleep 0.2
9        play :Bb3
10       sleep 0.2
11       play :D4
12       sleep 0.2
13     end
14     4.times do
15       play :G3
16       sleep 0.2
17       play :Bb3
18       sleep 0.2
19       play :Eb4
20       sleep 0.2
21     end
22     4.times do
23       play :Gb3
24       sleep 0.2
25       play :Bb3
26       sleep 0.2
27       play :Eb4
28       sleep 0.2
29     end
30     4.times do
31       play :Gb3
32       sleep 0.2
33       play :Bb3
34       sleep 0.2
35       play :F4
36       sleep 0.2
37     end
38     in_thread do
39       with_fx :reverb do
40         play :G1
41         sleep 2.4
42         play :G1
43         sleep 2.4
44         play :Gb1
45         sleep 2.4
46         play :Gb1
47       end
48     end
49   end
50 end

```

```

use_synth :piano
use_bpm 80

in_thread(name: :triplets) do
  loop do
    4.times do
      play :G3
      sleep 0.2
      play :Bb3
      sleep 0.2
      play :D4
      sleep 0.2
    end
    4.times do
      play :G3
      sleep 0.2
      play :Bb3
      sleep 0.2
      play :Eb4
      sleep 0.2
    end
    4.times do
      play :Gb3
      sleep 0.2
      play :Bb3
      sleep 0.2
      play :Eb4
      sleep 0.2
    end
    4.times do
      play :Gb3
      sleep 0.2
      play :Bb3
      sleep 0.2
      play :F4
      sleep 0.2
    end
    in_thread do
      with_fx :reverb do
        play :G1
        sleep 2.4
        play :G1
        sleep 2.4
        play :Gb1
        sleep 2.4
        play :Gb1
      end
    end
  end
end
end
end

```

This example uses the alternating minor 3rd of A and C in the left hand.  
What other notes can you play over this ostinato pattern?

```

1  use_synth :piano
2  use_bpm 126
3  play [:A3, :C3, :E3]
4
5  in_thread do
6    32.times do
7      play :C4
8      sleep 0.5
9      play :A3
10     sleep 0.5
11   end
12 end
13 use_synth :pretty_bell
14 in_thread do
15   with_fx :reverb, room:8 do
16     play :E4
17     play :E5
18     sleep 8
19     play :F4
20     play :F5
21     sleep 8
22   end
23   use_synth :piano
24   in_thread do
25     with_fx :reverb do
26       play :A6
27       play :A5
28       sleep 4
29       play :E6
30       play :E5
31       sleep 4
32       play :F6
33       play :F5
34       sleep 4
35       play :C6
36       play :C5
37       sleep 4
38     end
39   end
40 end

```

```

use_synth :piano
use_bpm 126
play [:A3, :C3, :E3]

in_thread do
  32.times do
    play :C4
    sleep 0.5
    play :A3
    sleep 0.5
  end
end
use_synth :pretty_bell
in_thread do
  with_fx :reverb, room:8 do
    play :E4
    play :E5
    sleep 8
    play :F4
    play :F5
    sleep 8
  end
  use_synth :piano
  in_thread do
    with_fx :reverb do
      play :A6
      play :A5
      sleep 4
      play :E6
      play :E5
      sleep 4
      play :F6
      play :F5
      sleep 4
      play :C6
      play :C5
      sleep 4
    end
  end
end
end

```