

Tutorial 6: Verilog Test-benches and Intro to Containerisation for IoT

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1 Verilog Test-benches and Intro to Containerisation for IoT

1.1 Testbenches

1. Screenshots:

```
Write 10 to address 12
Write 11 to address 13
Write 12 to address 14
Write 13 to address 15
Write 14 to address 16
Write 15 to address 17
Write 16 to address 18
Write 17 to address 19
Write 18 to address 20
Write 19 to address 21
Write 20 to address 22
Write 21 to address 23
Write 22 to address 24
Write 23 to address 25
Write 24 to address 26
Write 25 to address 27
Write 26 to address 28
Write 27 to address 29
Write 28 to address 30
Write 29 to address 31
Write 30 to address 0
Write 31 to address 1
Write 32 to address 2
Write 33 to address 3
Write 34 to address 4
Write 35 to address 5
Write 36 to address 6
Write 37 to address 7
Write 38 to address 8
Write 39 to address 9
Write 40 to address 10
Write 41 to address 11
```

Figure 1: Values written to the memory register.

```
Read 10 from address 12
Read 11 from address 13
Read 12 from address 14
Read 13 from address 15
Read 14 from address 16
Read 15 from address 17
Read 16 from address 18
Read 17 from address 19
Read 18 from address 20
Read 19 from address 21
Read 20 from address 22
Read 21 from address 23
Read 22 from address 24
Read 23 from address 25
Read 24 from address 26
Read 25 from address 27
Read 26 from address 28
Read 27 from address 29
Read 28 from address 30
Read 29 from address 31
Read 30 from address 0
Read 31 from address 1
Read 32 from address 2
Read 33 from address 3
Read 34 from address 4
Read 35 from address 5
Read 36 from address 6
Read 37 from address 7
Read 38 from address 8
Read 39 from address 9
Read 40 from address 10
Read 41 from address 11
```

Figure 2: Values read from the memory register.

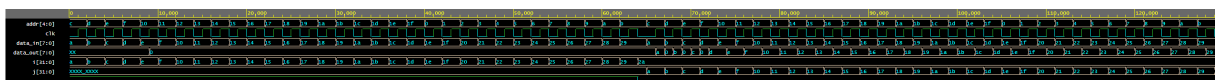


Figure 3: Simulation waveform with values written to memory and values read from memory.

2. Links:

- Git Repository Link(Tutorials/Tut6/EDAPlayground_Verilog_Source_Code):
<https://github.com/BhekananiCele/EEE3095S.git>
- EDAPlayground Link:
<https://edaplayground.com/x/Jckm>

1.2 IoT deployment via containerisation

1. Git Repository Link(Tutorials/Tut6/Balena_Python_Source_Code):

<https://github.com/BhekananiCele/EEE3095S.git>

2. Screenshots:

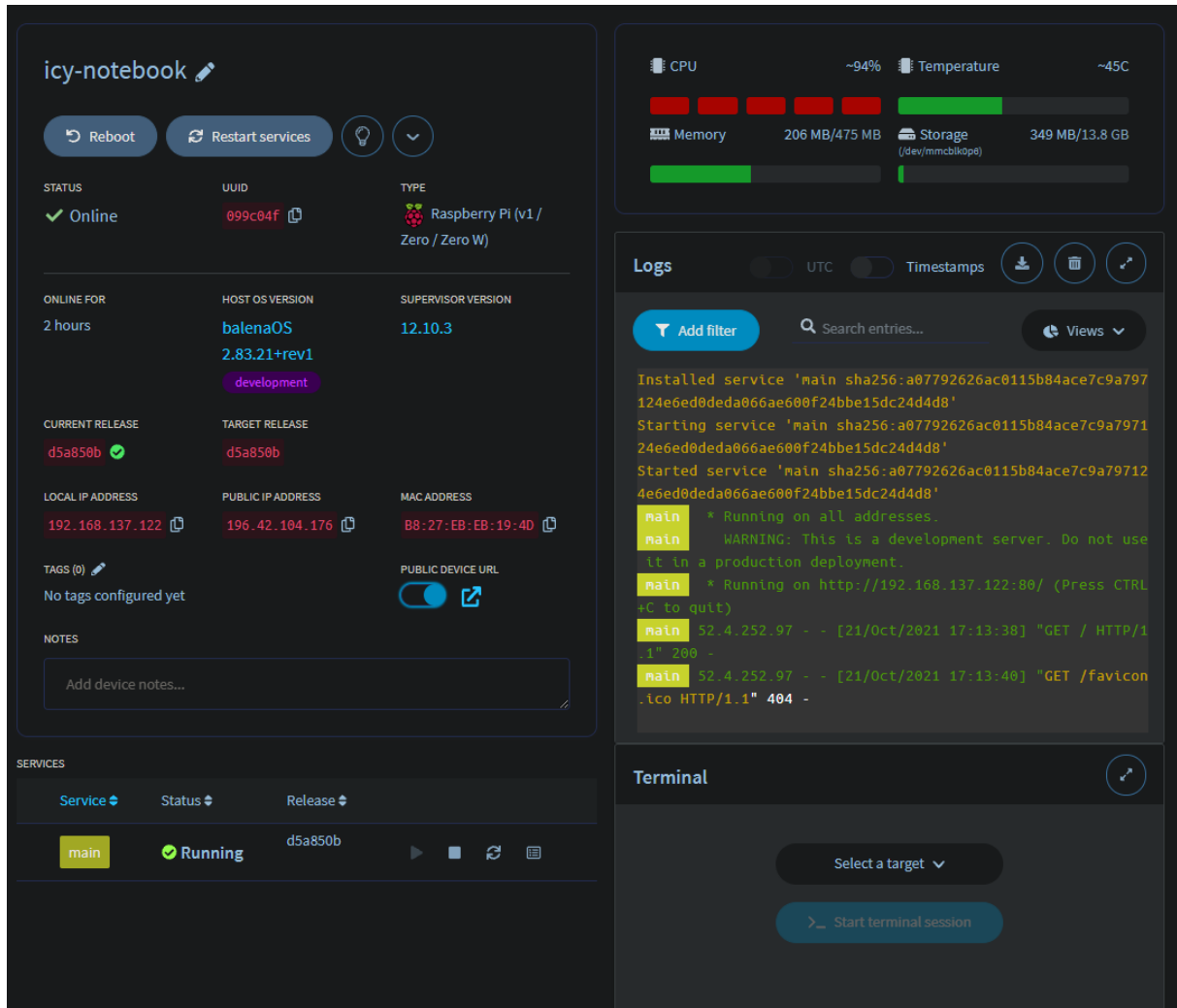


Figure 4: Balena monitoring web interface showing connected device(Raspberry Pi) and web-server running status.

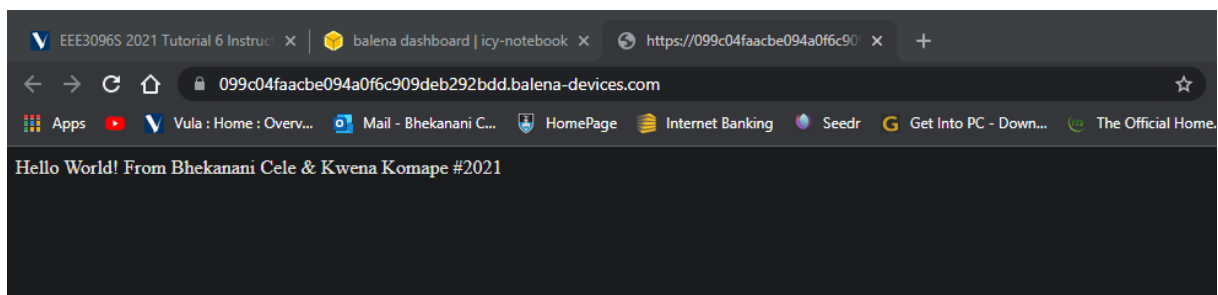


Figure 5: Our unique message.