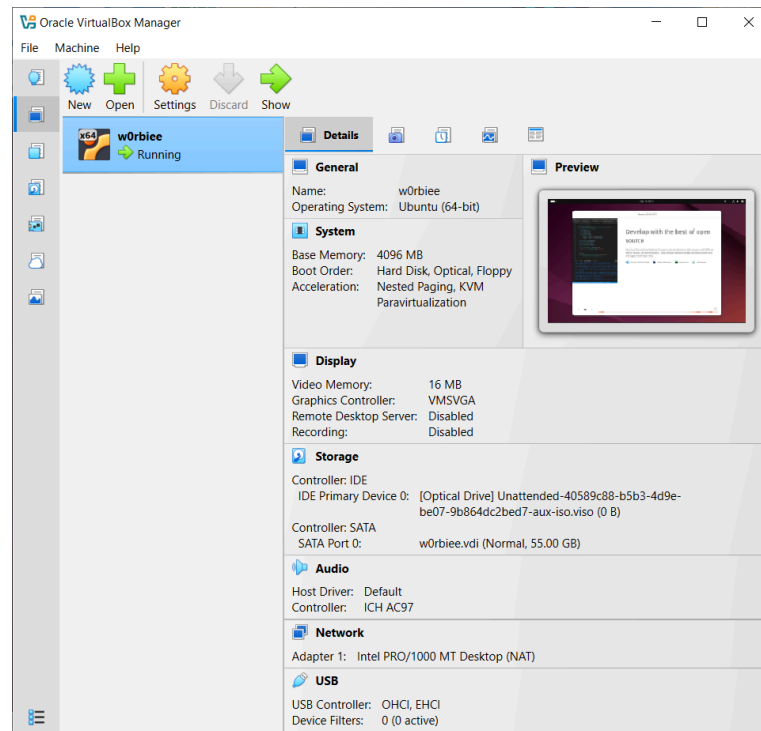


RISC-V Tapeout Program
By VSD.
Day 0.

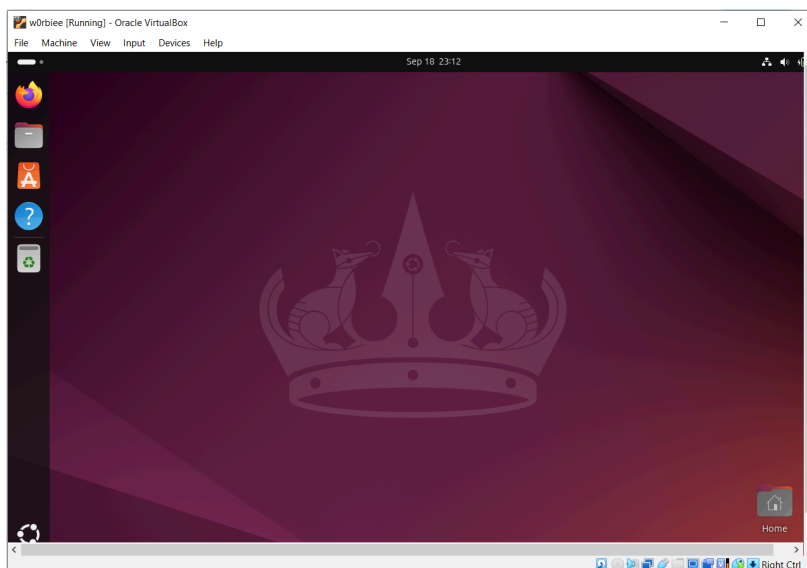
1. Task 1 - Install Oracle Virtual Machine on Win.

- Download from oracle's website.
- Install it on my win machine.



2. Task 2 - Install and configure Ubuntu ISO image on “OVM”.

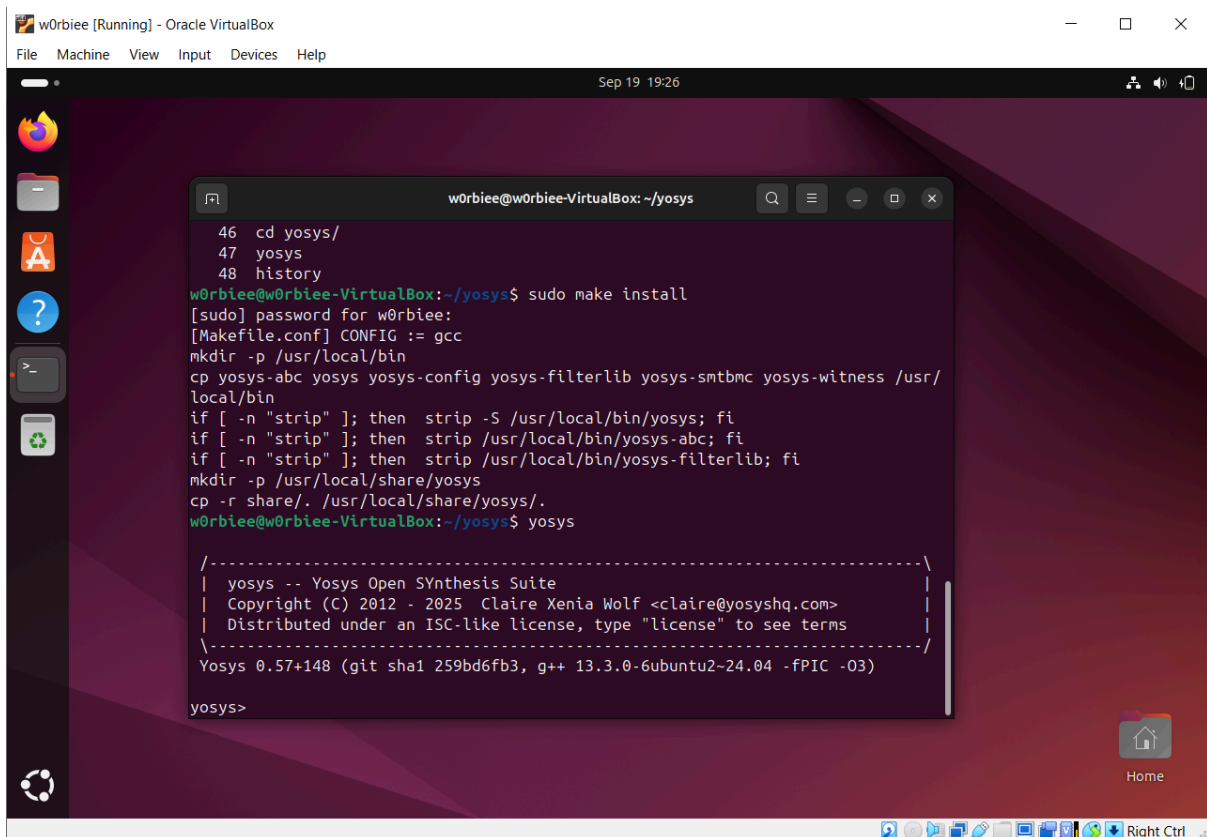
- Ubuntu ISO image download.
- Installing ISO image on Oracle Virtual machine.
- Setting up the image and booting Ubuntu on the VM.
- setting up and installing ubuntu “this takes time”.



3. Task 3 - Tool check

a. **Yosys** - Yosys is an open-source logic synthesis framework primarily used in digital hardware design. It takes hardware description languages (HDLs) like Verilog (and partially VHDL through front-ends) and converts them into optimized netlists or formats suitable for implementation on FPGAs or for ASIC flows.

- i. `$ sudo apt-get update`
- ii. `$ git clone https://github.com/YosysHQ/yosys.git`
- iii. `$ cd yosys`
- iv. `$ sudo apt install make`
- v. `$ sudo apt-get install build-essential clang bison flex \ libreadline-dev gawk tcl-dev libffi-dev git \ graphviz xdot pkg-config python3 libboost-system-dev \ libboost-python-dev libboost-filesystem-dev zlib1g-dev`
- vi. `$ make config-gcc`
- vii. `$ make`
- viii. `$ sudo make install`



```
w0rbiee [Running] - Oracle VirtualBox
File Machine View Input Devices Help
Sep 19 19:26

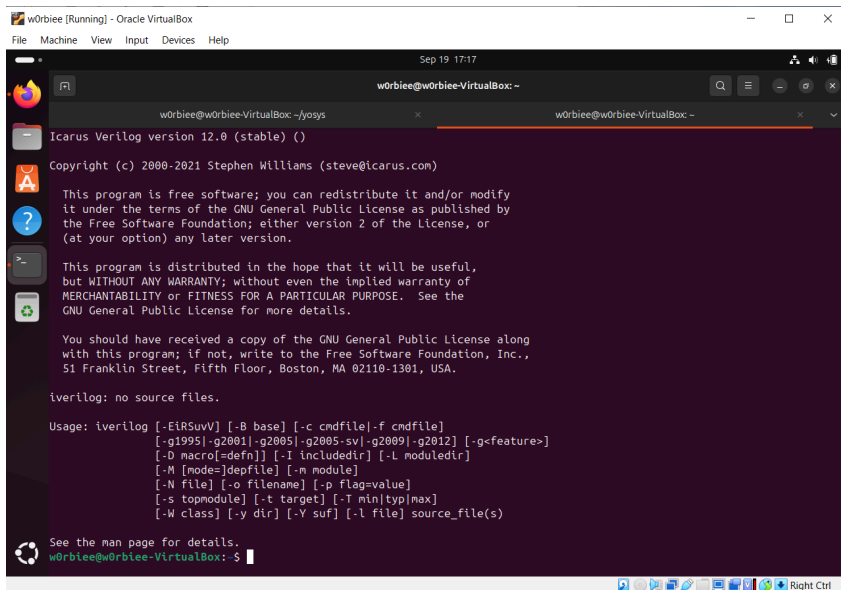
w0rbiee@w0rbiee-VirtualBox: ~/yosys
46 cd yosys/
47 yosys
48 history
w0rbiee@w0rbiee-VirtualBox:~/yosys$ sudo make install
[sudo] password for w0rbiee:
[Makefile.conf] CONFIG := gcc
mkdir -p /usr/local/bin
cp yosys-abc yosys yosys-config yosys-filterlib yosys-smtbmc yosys-witness /usr/
local/bin
if [ -n "strip" ]; then strip -S /usr/local/bin/yosys; fi
if [ -n "strip" ]; then strip /usr/local/bin/yosys-abc; fi
if [ -n "strip" ]; then strip /usr/local/bin/yosys-filterlib; fi
mkdir -p /usr/local/share/yosys
cp -r share/. /usr/local/share/yosys/.
w0rbiee@w0rbiee-VirtualBox:~/yosys$ yosys

/-----\
| yosys -- Yosys Open SYnthesis Suite          |
| Copyright (C) 2012 - 2025 Claire Xenia Wolf <claire@yosyshq.com> |
| Distributed under an ISC-like license, type "license" to see terms |
\-----/
Yosys 0.57+148 (git sha1 259bd6fb3, g++ 13.3.0-6ubuntu2-24.04 -fPIC -O3)

yosys>
```

b. **Iverilog** - Icarus Verilog (Iverilog) is an open-source Verilog simulation and synthesis tool widely used for HDL-based digital design and verification.

- i. `sudo apt-get update`
- ii. `sudo apt-get install iverilog`



```
w0rbiee@w0rbiee-VirtualBox:~$ iverilog
Icarus Verilog version 12.0 (stable) ()

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You should have received a copy of the GNU General Public License along
with this program; if not, write to the Free Software Foundation, Inc.,
51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA.

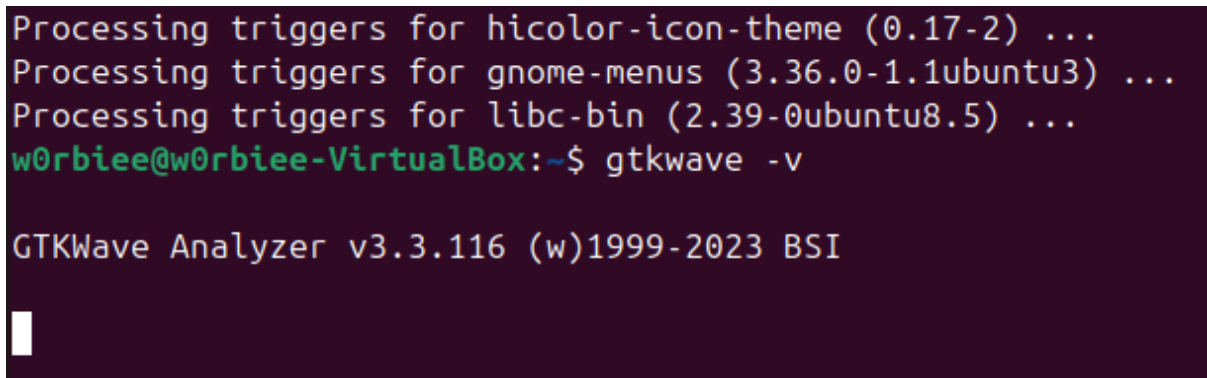
iverilog: no source files.

Usage: iverilog [-EiRSuvV] [-B base] [-c cmdfile] [-f cmdfile]
[-g1995|-g2001|-g2005|-g2005-sv|-g2009|-g2012] [-g<feature>]
[-D macro[=defn]] [-I includedir] [-L moduledir]
[-M [mode=depfile] [-N module]
[-N file] [-o filename] [-p flag=value]
[-s toplevel] [-t target] [-T min|typ|max]
[-W class] [-y dir] [-Y suf] [-l file] source_file(s)

See the man page for details.
w0rbiee@w0rbiee-VirtualBox:~$
```

c. **GTKWave** - GTKWave is an open-source waveform viewer used to debug and analyze simulation results from digital designs.

- i. `sudo apt update`
- ii. `sudo apt install gtkwave`.



```
Processing triggers for hicolor-icon-theme (0.17-2) ...
Processing triggers for gnome-menus (3.36.0-1ubuntu3) ...
Processing triggers for libc-bin (2.39-0ubuntu8.5) ...
w0rbiee@w0rbiee-VirtualBox:~$ gtkwave -v

GTKWave Analyzer v3.3.116 (w)1999-2023 BSI
```

d. **Ngspice** - Ngspice is an open-source mixed-level/mixed-signal circuit simulator based on SPICE (Simulation Program with Integrated Circuit Emphasis).

- i. `sudo apt update`
- ii. `sudo apt install ngspice`.

```
Unpacking ngspice (42+ds-3build1) ...  
Setting up ngspice (42+ds-3build1) ...  
Processing triggers for man-db (2.12.0-4build2) ...  
w0rbiee@w0rbiee-VirtualBox:~$ ngspice -v  
*****  
** ngspice-42 : Circuit level simulation program  
** Compiled with KLU Direct Linear Solver  
** The U. C. Berkeley CAD Group  
** Copyright 1985-1994, Regents of the University of California.  
** Copyright 2001-2023, The ngspice team.  
** Please get your ngspice manual from https://ngspice.sourceforge.io/docs.html  
** Please file your bug-reports at http://ngspice.sourceforge.net/bugrep.html  
** Creation Date: Sun Mar 31 20:15:14 UTC 2024  
*****  
w0rbiee@w0rbiee-VirtualBox:~$
```

- e. **Magic VLSI** - Magic VLSI is an open-source VLSI (Very Large Scale Integration) layout tool used for designing, editing, and analyzing integrated circuits at the physical layout level. It's one of the oldest yet still widely used tools in the open-source silicon ecosystem, especially for academic projects and open PDK flows like SkyWater 130nm.
 - i. `sudo apt-get install m4`
 - ii. `sudo apt-get install tcsh`
 - iii. `sudo apt-get install csh`
 - iv. `sudo apt-get install libx11-dev`
 - v. `sudo apt-get install tcl-dev tk-dev`
 - vi. `sudo apt-get install libcairo2-dev`
 - vii. `sudo apt-get install mesa-common-dev libglu1-mesa-dev`
 - viii. `sudo apt-get install libncurses-dev`
 - ix. Git clone <https://github.com/RTimothyEdwards/magic>
 - x. `Cd magic`
 - xi. `./configure`
 - xii. `Make`
 - xiii. `sudo make install`

