

# **Operating Systems 2022 – Exercise 0**

## **Course Environment Setup**

### **General Guidelines:**

- Submission due date is **Thursday, March 10, 23:55 Moodle server time**
- This exercise must be done on your personal computer.
- Submit your answers in the course website only as a PDF.
- Place your name and Id at the top of the PDF you submit.
- This exercise is mandatory and is very important for your work in the rest of the course. It will be graded as a pass/fail exercise.
- **In case you have Mac with M1 processor, VirtualBox won't work for you. You will need to use UTM to run the virtual machine.**
  - Just follow the instructions [here](#)
  - UTM currently does not support snapshots
  - For part 2, install Eclipse (C/C++) on your ubuntu and the rest is the same

### **Part 0 - Install Ubuntu from the ready-to-use image:**

1. Download the ready-to-use machine image from [here](#).  
If you are unable to download the file with a web browser, please use an FTP client.
2. Download Oracle Virtual Box and install it.  
<https://www.virtualbox.org/>
3. Open the Virtual Box Application, click on File -> Import Appliance.
4. Select the OVA file you've downloaded in section 1 and click on next and then import.
5. Once the import is done, select the VM on the main window and click on 'Start'
6. Machine credentials:
  - User name: os
  - Password: 123456

### **Part 1 – Snapshots:**

In this part you will experiment with VM snapshots, Snapshots are extremely useful when working with virtualization. For more information about the use of snapshots in virtual box, read the following link:

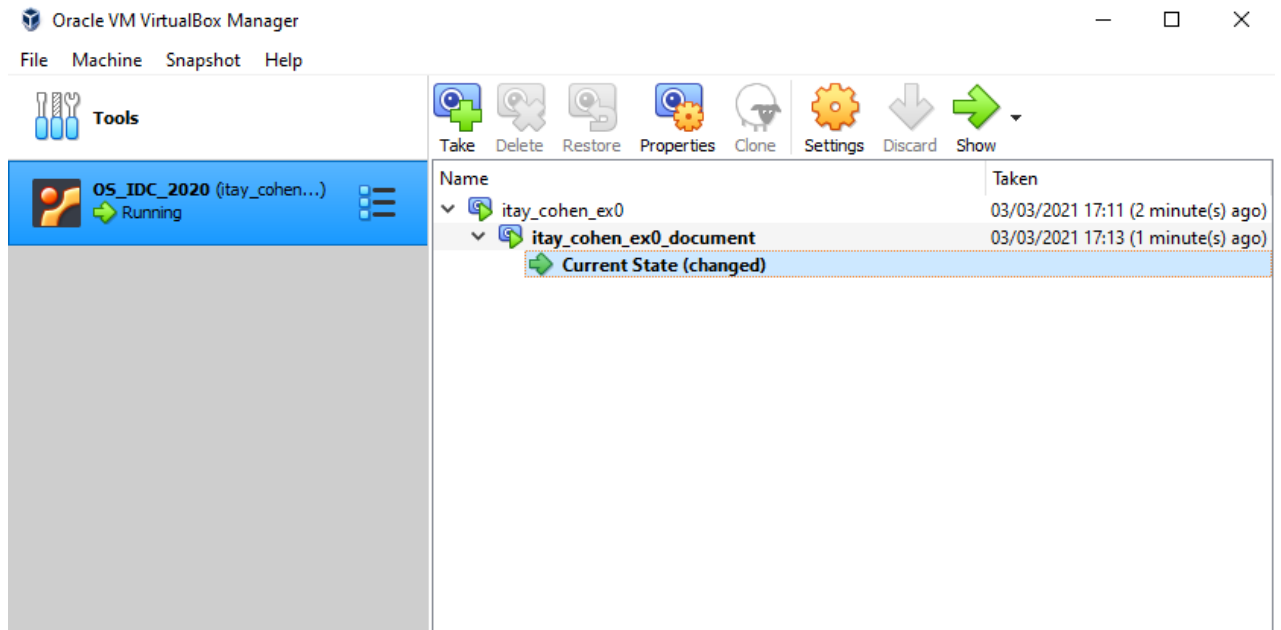
<https://www.techrepublic.com/article/how-to-use-snapshots-in-virtualbox/>

Please follow the instructions below (in the same order they are written):

#### **Taking snapshots:**

1. Login to the VM you have created in part 0.
2. At the top menu-bar select: Machine > Tools > Snapshots.
3. Select the VM you have created in part 0 and click on 'Take'.
4. In the snapshot name type "<your\_name>\_ex0" and click ok.
5. Create an empty document on the Documents folder in your VM.
6. Open the main window of VirtualBox, select your VM and click on 'Take' again.
7. In the snapshot name type "<your\_name>\_ex0\_document".
8. In Virtual Box, click on Machine < Tools > Snapshots.

Take a screenshot of the current screen and save it for submission. Example:

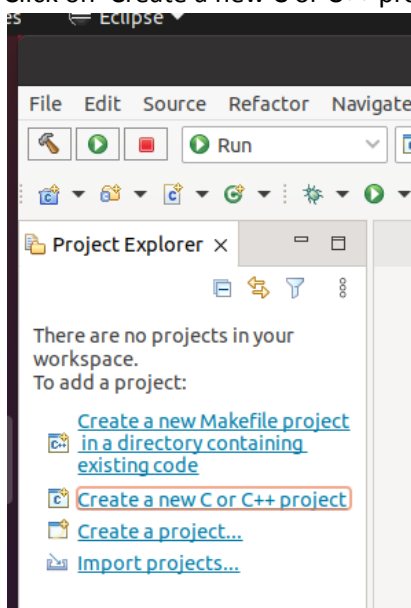


9. Power off the VM.
10. Right click on the first Snapshot you have taken and click on Restore.
11. Start the VM and login again.
12. See that the previously empty document was deleted.
13. Power off the VM.
14. Delete the "<your\_name>\_ex0\_document" snapshot.

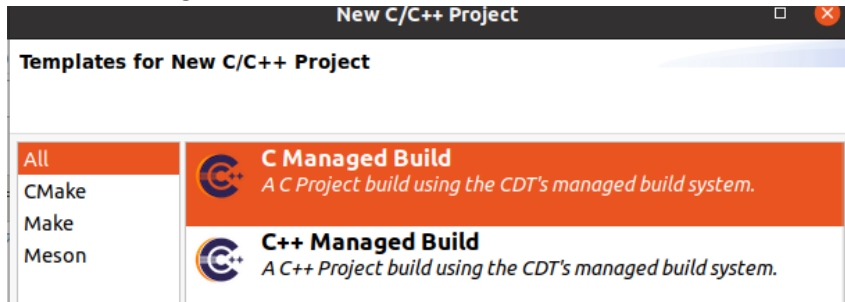
## **Part 2 – First C Program on Ubuntu:**

The purpose of this part is compiling and running your first C program on Ubuntu, this way you'll know everything is configured properly for later use.

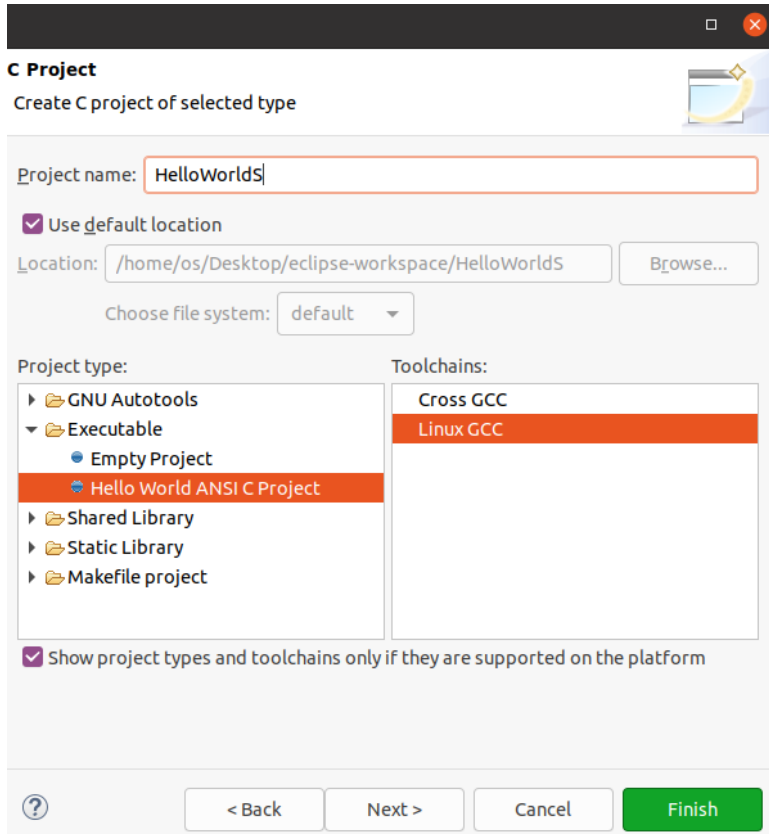
1. Login to the VM you have created in part 0.
2. Run 'Eclipse IDE for C/C++ Developers' which resides on your Desktop.
3. Click on 'Create a new C or C++ project'



4. Select 'C Managed Build'



5. Write 'HelloWorldS' in the Project name, select 'Hello World ANSI C Project' as Project type and select 'Linux GCC' for your Toolchains selection.



6. Change the String in the puts function to be "!!!Hello Ubuntu, My name is <your name>!!!".

7. Build and run the application:

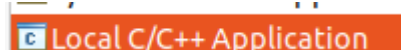
- a. Click on the following to Build your application:



- b. Then, Click on the following to Run it

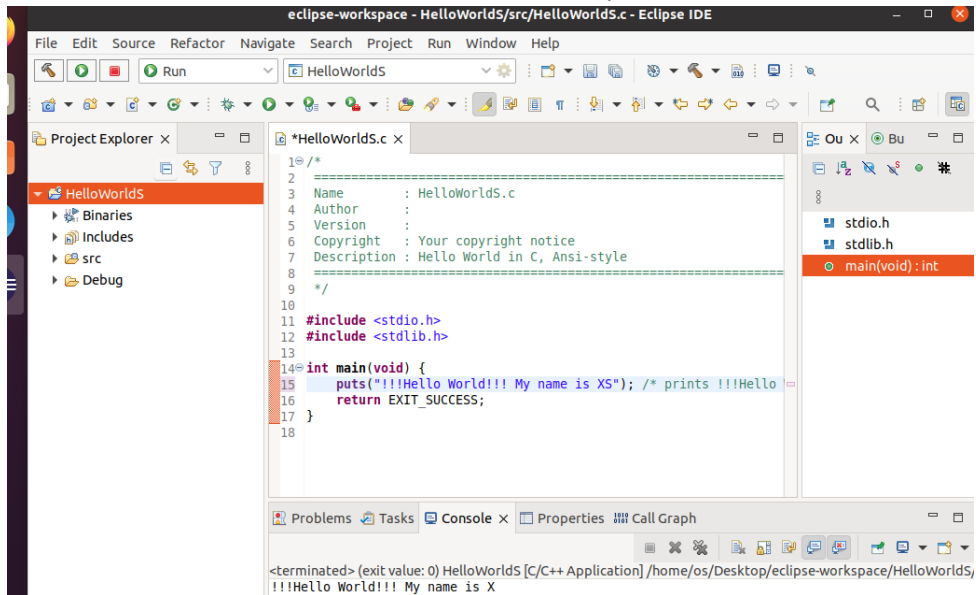


- c. And select



- d. Finally, click 'Finish'

## 8. Take a screenshot and save it for submission. Example:



You should submit both screenshots that you have created as **ONE PDF FILE** with your name and Id as stated in the general guidelines.

Good luck.

### **Part 3 – Appendix - Transferring files to and from your virtual machine**

You will often need to transfer files to and from your VM.

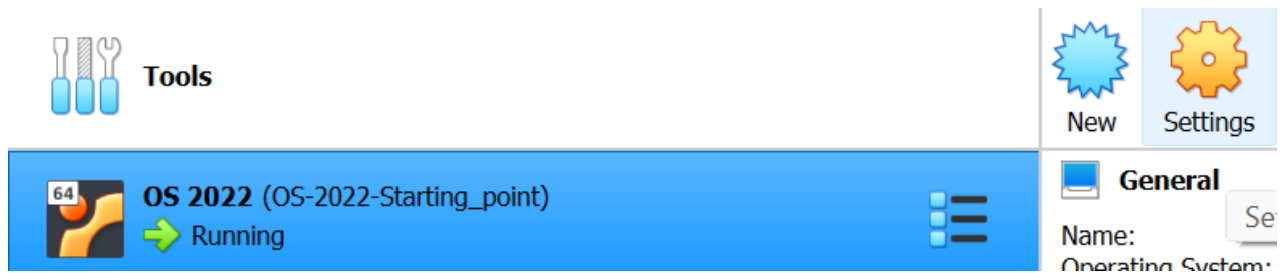
1. Turn off your VM.
2. In your PC (your host OS): Open the main window of VirtualBox, select your VM > Settings > Shared Folders, and define a shared folder. Name it 'hostShared' (can be anything else)
3. The following steps are in your VM (turn it on)
4. Under Documents, create a folder named 'guestShared'.
5. Every time you turn on your VM, run this command in terminal:  
`sudo mount -t vboxsf hostShared Documents/guestShared`
6. You can now transfer files in both directions.

### **Part 4 - Appendix - Accessing your VM without any GUI \*NOT MANDATORY\***

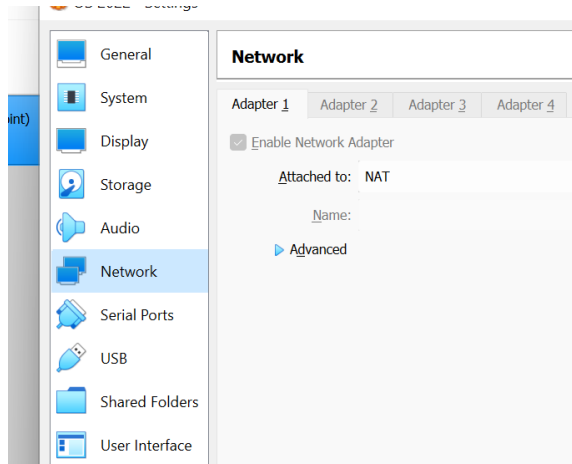
This part is for those of you who want to access their VM via SSH access instead of using the GUI as described previously.

The VM already comes packed with OPENSSH-Server installed, you only need to follow the following steps to enable port-forwarding so you can access it.

1. Click on Settings



2. Then on Network -> Advanced



3. Port Forwarding, Then click on Add from the right



4. Fill Host Port with 1000, Guest Port with 22 (Leave the rest as they are) and click OK.  
Now turn on your VM, and access SSH via IP: localhost, PORT: 1000