Virtual Machine Installation Guidelines

Applications Development with C++

1. Download and install a virtual machine workstation of your choice
   1. Popular options are VMWare Workstation/Player or Virtual Box
   2. For this example - VMWare is chosen
   3. Download link:  
      <https://www.vmware.com/products/workstation-pro/workstation-pro-evaluation.html>
   4. Keep in mind that the VMWare **Workstation** has 30 days free trial
   5. You must find a way to register it
   6. Another approach is to use Vmware **Player**
      1. it is has everything you basically need
      2. The most important difference is that the **Workstation** can take “snapshots” of your VM in which you can easily return to (like a system restore)
   7. Or use another alternative such as VirtualBox (which is free)
   8. Download link: <https://www.oracle.com/virtualization/technologies/vm/downloads/virtualbox-downloads.html>
   9. Or simply choose the software you are most comfortable with
2. A general remark about Virtualization players:
   1. Both VMWare Workstation/Player and VirtualBox (Virtualization players) are tools that can run Virtual Machines (simulate another Operating System(OS) on your Host machine)
   2. In order for virtualization to be achieved, you would need to enable the virtualization option in your BIOS settings
   3. On most modern hardware it is enabled by default. But if are having trouble running the VM’s - don’t forget to check that option
   4. Most Virtualization players have an additional “utility” tool/package that is often required for most of their features to work
      1. For example copy-paste with the system buffer between the host and the guest OS
      2. For the VMWare Workstation/Player: <https://websiteforstudents.com/how-to-install-vmware-guest-tools-on-ubuntu-20-04-18-04/>

1. A general remark about Virtual Machines:
   1. They are referred to as “guest”, while the host OS is referred to as “host”
   2. Virtual Machines don’t substitute your host OS - they run alongside your host
   3. Virtual Machines comes in form of “images”, which are mounted by the Virtualization Player
   4. Virtual Machine requires enough hardware resources(CPU/GPU/RAM) in order to operate properly - just like your host OS
   5. When configuring your Virtual Machine (while it is turned off) - you can change how many resources it should use. For example, you can change:
      1. how many CPU cores your VM has - 1,2,3,4,...
      2. How many threads each CPU core has - 1,2,3,4,...
      3. How much RAM should your guest has
      4. How much VRAM (VIdeo RAM/GPU RAM) should your guest has
      5. How much Hard-Drive should your guest has
   6. **The guest takes those resources from the host so choose your configuration wisely**
      1. don’t kill your host (stealing all its resources)
      2. don’t make your VM slow as a turtle
      3. Unless you like turtles - then fine. So be it :)
2. Download Linux Ubuntu 18.04 LTS image for your VMWorkstation
   1. Download Link: <https://www.linuxvmimages.com/images/ubuntu-1804/>
   2. Ubuntu 18.04 LTS will be used for this course
   3. Ubuntu 20.04 LTS is another option  
      <https://www.linuxvmimages.com/images/ubuntu-2004/>

1. (Optional - Experiment) Download Windows 10 image and play it in the VM
   1. Download Windows 10 developer image (preinstalled) -

<https://developer.microsoft.com/en-us/windows/downloads/virtual-machines/>

* + 1. Use the “File->Open” to select the virtual machine image
  1. Download Windows 10 Iso bland image (normal installation is used in the VIrtual Machine Workstation/Player)
     1. Use the “File->New Virtual Machine” to select the blank .iso image

1. Configuring your Ubuntu 18.04 LTS image
   1. Open the image
   2. Modify the specs of the guest - give it enough hardware resources
   3. Select the “**Display**” option on your image
      1. Make sure you have “**3D Accelerated Graphics**” **enabled**   
         under the tab 3D acceleration
      2. This will enable the guest OS to use your host GPU
   4. When the VM is loaded - on the login screen choose the **Ubuntu** user
   5. Password is **ubuntu**

1. Your first Ubuntu Login
   1. When you open a fresh Ubuntu OS for the first time it will automatically start downloading and installing important security updates
   2. This will happen in the background without you noticing
   3. You can tell that this is happening by noticing:
      1. One of your CPU cores is busy at 100%
      2. Both on the host and the guest OS
      3. you can check ubuntu CPU load ty typing the command “top”
      4. Use ‘q’ to exit the command “top”
      5. Nothing can be installed - you get the error “E: could not acquire the lock on dpkg frontend” - is another process using it?”
      6. Yes, the unattended-upgr is :)
      7. This can take several minutes (or more) depending on your hardware specs and your internet download link speed
         1. It took around 15 minutes on my setup

1. Welcome ... to the magnificent world of Linux :)