# Set up virtual machines CompSci 316 Yuhao Wen, Junyang Gao

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#### Notice

- For this class:
  - Will answer questions after going through the slides.
- For VM's:
  - VitualBox & Vagrant: Yuhao
  - Google Cloud: Junyang

- Step 1:
  - Download & Install them.
  - VitrualBox: <u>https://www.virtualbox.org/</u>
    - Don't forget the extension pack!
    - Recommend you to install in default folders. Otherwise may encounter problems when installing the extension pack.
    - Close your anti-virus software/firewall temporarily when installing extension pack.
  - Vagrant: <a href="https://www.vagrantup.com/">https://www.vagrantup.com/</a>
    - After installation: type "vagrant plugin install vagrant-vbguest" in a cmd window.

Microsoft Windows [版本 6.3.9600] <c> 2013 Microsoft Corporation。保留所有权利。

C:\Windows\system32>vagrant

C:\Windows\system32>vagrant plugin install vagrant-vbguest Installing the 'vagrant-vbguest' plugin. This can take a few minutes...

- Step 2:
  - Download Vagrantfile
    - Don't download with .txt!
  - Vagrant up
  - Vagrant ssh
    - Sometimes not working under Windows. You can either directly use the shell given by VirtualBox, or download 'Putty' or 'XShell' to connect your virtual machine.
    - User: vagrant
    - Password: vagrant
  - Vagrant halt

vagrant–ubuntu–trusty–64 login: vagrant Password: Last login: Wed Sep  7 21:41:34 UTC 2016 on tty1 Welcome to Ubuntu 14.04.3 LTS (GNU/Linux 3.13.0–63–generic x86_64)
* Documentation: https://help.ubuntu.com/
System information as of Wed Sep 7 22:54:17 UTC 2016
System load: 0.25 Processes: 88 Usage of /: 2.8% of 39.34GB Users logged in: 0 Memory usage: 6% IP address for eth0: 10.0.2.15 Swap usage: 0%
Graph this data and manage this system at: https://landscape.canonical.com/
Get cloud support with Ubuntu Advantage Cloud Guest: http://www.ubuntu.com/business/services/cloud
New release '16.04.1 LTS' available. Run 'do–release–upgrade' to upgrade to it.
vagrant@vagrant-ubuntu-trusty-64:~\$ _ 🛛 🖓 🗗 🥅 🖼 🗐 🖓 🐨 Right Ctrl 🔒

## Google Cloud

#### • Steps:

- Access to Google cloud console <u>https://console.cloud.google.com/project</u>
- Create a project (if you've never created one before)
- Go to Compute Engine
- Create an instance
  - Machine type: 1v CPU with 3.75GB (recommended)
  - Disk: Ubuntu 14.04 LTS
  - Disk room: at least 20GB
  - ALLOW HTTP/HTTPS traffic
- SSH into your virtual machine
- No more steps!
- Don't forget to turn it off when you are not using it!

Machine type		
1 vCPU	- 3.75 GB memory	Customize
Upgrade your accour	nt to create instances with up to 32	cores
Boot disk 📀		
New 20	GB standard persistent disk	
Image	14 04 LTS	Change
		Change
Identity and API access	0	
Service account 📀		
Compute Engine de	efault service account 📼	
Access scopes (2) Allow default acc Allow full access Set access for ea	ess to all Cloud APIs ch API	
	1 vCPU Upgrade your accour Boot disk New 20 Image Ubuntu Identity and API access Service account Compute Engine de Access scopes Allow default acc Allow full access Set access for eac	1 vCPU       3.75 GB memory         Upgrade your account to create instances with up to 32         Boot disk       Image         Wew 20 GB standard persistent disk         Image       Ubuntu 14.04 LTS         Identity and API access       Image         Compute Engine default service account       Image         Access scopes       Image         Allow default access       Allow full access to all Cloud APIs         Set access for each API       Set access for each API

**Firewall** ② Add tags and firewall rules to allow specific network traffic from the Internet

Allow HTTP traffic
 Allow HTTPS traffic

#### You have \$299.98 in credit and 59 days left in your free trial. DISMISS UPGRADE **D** 🕖 😗 🚺 Compute Engine CREATE INSTANCE CREATE INSTANCE GROUP CREFRESH START VM instances STOP () RESET DELETE \_ 🗆 🗙 Ö. ywen1995@testinstance: ~ - Google Chrome https://ssh.cloud.google.com/projects/composed-sun-142621/zones/us-central1-b/instances/testinstance?authus VM instances ..... **D**-Welcome to Ubuntu 14.04.5 LTS (GNU/Linux 4.4.0-34-generic x86 64) **д**, Instance groups 1 hour 6 hours 12 hours 1 day 2 days 4 days 7 days 14 days 30 days \* Documentation: https://help.ubuntu.com/ Instance templates Ξ System information as of Wed Sep 7 23:12:54 UTC 2016 0 Disks Memory usage: 3% Processes: System load: 0.08 Usage of /: 18.3% of 9.81GB Swap usage: 0% Users logged in: 0 Snapshots Graph this data and manage this system at: Images https://landscape.canonical.com/ Metadata Get cloud support with Ubuntu Advantage Cloud Guest: http://www.ubuntu.com/business/services/cloud Health checks Ô. Your Hardware Enablement Stack (HWE) is supported until April 2019. 56 Zones Last login: Tue Sep 6 21:58:13 2016 from 74.125.42.164 ywen1995@testinstance:~\$ $\odot$ Operations Quotas Settings ☆.

 ssh into your VM, and type in these commands: wget -N <u>http://www.cs.duke.edu/courses/spring17/compsci316/init.sh</u>

bash init.sh

 Follow the instructions. You will be asked to copy and paste your public key to the Duke gitlab website (https://gitlab.oit.duke.edu/). Make sure you copy the entire public key (which spans multiple lines and should start with ssh-rsa and end with @duke.edu). Switch back to your Web browser, paste the copied output into the text box for "Key," enter a title for your key (anything is fine), and then submit the form.



Once your key is accepted by gitlab, press [ENTER] to continue:

1 Sign in	■ Projects	₩		Search	۹ 🔺 🤀
	Your projects Starred projects Expl	ore projects	Filter by name	Last updated $\lor$	New Profile Settings
Username or email	D Junyang Gao / Durable-Top-K				Help
	Junyang Gao / RangeKSkyband				Sign out
Deseuverd	efficient algorithm for answering range	e-k-skyband reporting queries			(⇒) ★ 0 🔒
Password					
	■ Profile Settings	₩		Search	
Remember me     Forgot your password?	Profile Account	Applications Chat Access Tokens Emails Password	Notifications SSH Keys	Preferences Audit Log	
Sign in	SSH Keys	Add an SSH key Before you can add an SSH key you need to generate it.			
Sightin	connection between your computer and GitLab.	Key			
		Don't paste the private part of the SSH key. Paste the public part, which is usually contained in the file '~/.ssh/id_rsa.pub' and begins with 'ssh-rsa'.			
Sign in with Duke Shibboleth Login					
					4
		Title			

Add ke

```
Once your key is accepted by gitlab, press [ENTER] to continue:
Cloning into '/opt/dbcourse'...
## You are about to access a Duke University computer network that is intended #
## for authorized users only. You should have no expectation of privacy in
## your use of this network. Use of this network constitutes consent to
## monitoring, retrieval, and disclosure of any information stored within the
## network for any purpose including criminal prosecution.
remote: Counting objects: 141, done.
remote: Compressing objects: 100% (107/107), done.
remote: Total 141 (delta 24), reused 119 (delta 23)
Receiving objects: 100% (141/141), 1.85 MiB | 0 bytes/s, done.
Resolving deltas: 100% (24/24), done.
Checking connectivity... done.
```

• Run

/opt/dbcourse/sync.sh

#### Database related

- Play with RA:
  - Run '/opt/dbcourse/examples/db-beers/setup.sh' in virtual machine
  - Have fun 🙂
  - Follow the instructions on the course website.

#### Frequently Asked Questions

#### How can we copy our SSH Key from the Virtual Box window?

• Don't use VirtualBox window, either ssh from your host shell or use other software, such as PuTTY, to ssh into your VM.

#### Frequently Asked Questions

#### When running 'vagrant up', I got the error as follows:

[JunyangGao:test junyang\$ vagrant up A Vagrant environment or target machine is required to run this command. Run `vagrant init` to create a new Vagrant environment. Or, get an ID of a target machine from `vagrant global-status` to run this command on. A final option is to change to a directory with a Vagrantfile and to try again.

• Do NOT rename the Vagrantfile you downloaded. If you saved the file with a '.txt' extension, you will see the above error when running vagrant up.

#### Frequently Asked Questions When running '/opt/dbcourse/sync.sh' on Google Cloud, I got the error as follows:



 The memory of your VM is not large enough. Actually, when you choose 'Micro' as your machine type, you will see this error. Recommended machine type: 1 vCPU with 3.75GB, but feel free to try more expensive options when needed.

#### Thank you very much for listening 😳