

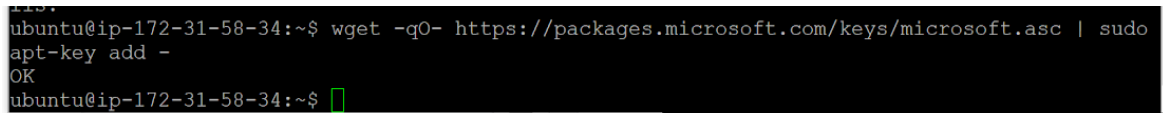
For Milestone 2 you will be installing Microsoft SQL Server into your Ubuntu 16.04 virtual machine that you build in Milestone 1. In order to begin make sure that your instance is powered on and connect to it via PuTTY.

Import GPG keys

Once you are logged into your machine the first step we will need to do is import the GPG keys for the Microsoft repository into your Linux machine. This will allow us to access the package repositories needed for this install. To do this type in and execute the following command.

```
wget -qO- https://packages.microsoft.com/keys/microsoft.asc | sudo apt-key add -
```

Paste a screenshot of your console showing the command and result below. The result should be an upper case OK



```
ubuntu@ip-172-31-58-34:~$ wget -qO- https://packages.microsoft.com/keys/microsoft.asc | sudo
apt-key add -
OK
ubuntu@ip-172-31-58-34:~$
```

Register Repository

After you have imported your keys the next step is to register the MSSQL server repository. You can do that by typing in and executing the command below.

```
sudo add-apt-repository "$ (wget -qO- https://packages.microsoft.com/config/ubuntu/16.04/mssql-server-2019.list)"
```

There should be no response on the console but a return to the prompt.

Install Microsoft SQL Server

Next you will run the commands to actually install the SQL server application. This will be a 2 part installation. First you will update the apt-get packages with the command below

```
Sudo apt-get update
```

This command will cause several lines to appear on your console representing the packages being updated. Include a screenshot below showing your command and the packages updated.

```
ubuntu@ip-172-31-86-29:~$ sudo apt-key add --
OK
ubuntu@ip-172-31-86-29:~$ sudo add-apt-repository "$(wget -qO- https://packages.
microsoft.com/config/ubuntu/16.04/mssql-server-2019.list)"
ubuntu@ip-172-31-86-29:~$ sudo apt-get update
Get:1 http://security.ubuntu.com/ubuntu xenial-security InRelease [109 kB]
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial InRelease
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates InRelease [1
109 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-backports InRelease
[107 kB]
Get:5 https://packages.microsoft.com/ubuntu/16.04/mssql-server-2019 xenial InRel
ease [10.5 kB]
Get:6 http://security.ubuntu.com/ubuntu xenial-security/main amd64 Packages [1,4
76 kB]
Get:7 http://security.ubuntu.com/ubuntu xenial-security/main Translation-en [350
kB]
Get:8 http://security.ubuntu.com/ubuntu xenial-security/restricted amd64 Package
s [9,824 B]
Get:9 http://security.ubuntu.com/ubuntu xenial-security/universe amd64 Packages
[772 kB]
Get:10 http://security.ubuntu.com/ubuntu xenial-security/universe Translation-en
[218 kB]
Get:11 http://security.ubuntu.com/ubuntu xenial-security/multiverse amd64 Packag
es [8,236 B]
Get:12 http://security.ubuntu.com/ubuntu xenial-security/multiverse Translation-
en [2,888 B]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial/universe amd64 Pack
ages [7,532 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial/universe Translatio
n-en [4,354 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial/multiverse amd64 Pa
ckages [144 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial/multiverse Translat
ion-en [106 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/main amd64
Packages [1,880 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/main Transl
ation-en [454 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/restricted
amd64 Packages [10.2 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/universe am
d64 Packages [1,194 kB]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/universe Tr
anslation-en [348 kB]
Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/multiverse
amd64 Packages [23.0 kB]
Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/multiverse
Translation-en [8,632 B]
Get:24 https://packages.microsoft.com/ubuntu/16.04/mssql-server-2019 xenial/main
amd64 Packages [2,709 B]
Get:25 https://packages.microsoft.com/ubuntu/16.04/mssql-server-2019 xenial/main
armhf Packages [2,709 B]
Get:26 https://packages.microsoft.com/ubuntu/16.04/mssql-server-2019 xenial/main
```

```
ubuntu@ip-172-31-86-29:~$ sudo apt-get install mssql-server
Get:5 https://packages.microsoft.com/ubuntu/16.04/mssql-server-2019 xenial InRelease [10.5 kB]
Get:6 http://security.ubuntu.com/ubuntu xenial-security/main amd64 Packages [1,476 kB]
Get:7 http://security.ubuntu.com/ubuntu xenial-security/main Translation-en [3509 kB]
Get:8 http://security.ubuntu.com/ubuntu xenial-security/restricted amd64 Packages [9,824 B]
Get:9 http://security.ubuntu.com/ubuntu xenial-security/universe amd64 Packages [772 kB]
Get:10 http://security.ubuntu.com/ubuntu xenial-security/universe Translation-en [218 kB]
Get:11 http://security.ubuntu.com/ubuntu xenial-security/multiverse amd64 Packages [8,236 B]
Get:12 http://security.ubuntu.com/ubuntu xenial-security/multiverse Translation-en [2,888 B]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial/universe amd64 Packages [7,532 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial/universe Translation-en [4,354 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial/multiverse amd64 Packages [144 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial/multiverse Translation-en [105 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/main amd64 Packages [1,880 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/main Translation-en [454 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/restricted amd64 Packages [10.2 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/universe amd64 Packages [1,194 kB]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/universe Translation-en [348 kB]
Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/multiverse amd64 Packages [23.0 kB]
Get:23 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-updates/multiverse Translation-en [8,632 B]
Get:24 https://packages.microsoft.com/ubuntu/16.04/mssql-server-2019 xenial/main arm64 Packages [2,709 B]
Get:25 https://packages.microsoft.com/ubuntu/16.04/mssql-server-2019 xenial/main armhf Packages [2,709 B]
Get:26 https://packages.microsoft.com/ubuntu/16.04/mssql-server-2019 xenial/main amd64 Packages [17.5 kB]
Get:27 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-backports/main amd64 Packages [9,812 B]
Get:28 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-backports/main Translation-en [4,456 B]
Get:29 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-backports/universe amd64 Packages [11.3 kB]
Get:30 http://us-east-1.ec2.archive.ubuntu.com/ubuntu xenial-backports/universe Translation-en [4,476 B]
Fetched 19.3 MB in 3s (4,960 kB/s)
Reading package lists... Done
ubuntu@ip-172-31-86-29:~$
```

After this has completed you will need to execute

```
Sudo apt-get install -y mssql-server
```

This command will result in a significant output to the screen and may take a few minutes to complete.

Configure MSSQL Server

Now that the actual code has been installed on the server you will need to complete the initial configuration. To start the configuration run the command

```
Sudo /opt/mssql/bin/mssql-conf setup
```

The first thing you will have to configure is what edition of MS SQL server you are licensed for. For this class you should choose Evaluation (option 1). When prompted say Yes to accept the license terms.

After accepting the license agreement you will be prompted for an SA password. This is the master system administration password for the database server. Please keep track of what you set it to for future use. Once you have set the password a series of configuration messages should appear. Include a screenshot below of the messages once the configuration is complete.

```
ubuntu@ip-172-31-58-34: ~
https://go.microsoft.com/fwlink/?LinkId=2109348&clid=0x409

Use of PAID editions of this software requires separate licensing through a
Microsoft Volume Licensing program.
By choosing a PAID edition, you are verifying that you have the appropriate
number of licenses in place to install and run this software.

Enter your edition(1-8): 1
The license terms for this product can be found in
/usr/share/doc/mssql-server or downloaded from:
https://go.microsoft.com/fwlink/?LinkId=2104078&clid=0x409

The privacy statement can be viewed at:
https://go.microsoft.com/fwlink/?LinkId=853010&clid=0x409

Do you accept the license terms? [Yes/No]:Yes

Enter the SQL Server system administrator password:
Confirm the SQL Server system administrator password:
Configuring SQL Server...

The licensing PID was successfully processed. The new edition is [Enterprise Evaluation Editi
on].
ForceFlush is enabled for this instance.
ForceFlush feature is enabled for log durability.
Created symlink from /etc/systemd/system/multi-user.target.wants/mssql-server.service to /lib
/systemd/system/mssql-server.service.
Setup has completed successfully. SQL Server is now starting.
ubuntu@ip-172-31-58-34:~$
```

Validate MS SQL is running

In order to ensure that the Microsoft SQL Server service is running as expected execute

Systemctl status mssql-server --no-pager

Include a screenshot of the service information below.

```
ubuntu@ip-172-31-58-34: ~
Do you accept the license terms? [Yes/No]:Yes

Enter the SQL Server system administrator password:
Confirm the SQL Server system administrator password:
Configuring SQL Server...

The licensing PID was successfully processed. The new edition is [Enterprise Evaluation Editi
on].
ForceFlush is enabled for this instance.
ForceFlush feature is enabled for log durability.
Created symlink from /etc/systemd/system/multi-user.target.wants/mssql-server.service to /lib
/systemd/system/mssql-server.service.
Setup has completed successfully. SQL Server is now starting.
ubuntu@ip-172-31-58-34:~$ systemctl status mssql-server --no-pager
● mssql-server.service - Microsoft SQL Server Database Engine
   Loaded: loaded (/lib/systemd/system/mssql-server.service; enabled; vendor preset: enabled)
   Active: active (running) since Tue 2020-11-03 01:24:39 UTC; 2min 28s ago
     Docs: https://docs.microsoft.com/en-us/sql/linux
   Main PID: 17915 (sqlservr)
    Tasks: 118
   Memory: 753.4M
      CPU: 9.405s
   CGroup: /system.slice/mssql-server.service
           └─17915 /opt/mssql/bin/sqlservr
             └─17943 /opt/mssql/bin/sqlservr

Nov 03 01:24:49 ip-172-31-58-34 sqlservr[17915]: [61B blob data]
Nov 03 01:24:49 ip-172-31-58-34 sqlservr[17915]: [96B blob data]
Nov 03 01:24:49 ip-172-31-58-34 sqlservr[17915]: [66B blob data]
Nov 03 01:24:50 ip-172-31-58-34 sqlservr[17915]: [75B blob data]
Nov 03 01:24:50 ip-172-31-58-34 sqlservr[17915]: [96B blob data]
Nov 03 01:24:50 ip-172-31-58-34 sqlservr[17915]: [100B blob data]
Nov 03 01:24:50 ip-172-31-58-34 sqlservr[17915]: [71B blob data]
Nov 03 01:24:50 ip-172-31-58-34 sqlservr[17915]: [124B blob data]
Nov 03 01:24:50 ip-172-31-58-34 sqlservr[17915]: [73B blob data]
Nov 03 01:24:50 ip-172-31-58-34 sqlservr[17915]: [186B blob data]
ubuntu@ip-172-31-58-34:~$
```

