

VM instance is created with the given specification

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Create an instance

To create a VM instance, select one of the options:

New VM instance
Create a single VM instance from scratch

New VM instance from template
Create a single VM instance from an existing template

New VM instance from machine image
Create a single VM instance from an existing machine image

Marketplace
Deploy a ready-to-go solution onto a VM instance

Name ⓘ
Name is permanent
canberk11

Labels ⓘ (Optional)
+ Add label

Region ⓘ
Region is permanent
us-central1 (Iowa)


Zone ⓘ
Zone is permanent
us-central1-a


Machine configuration

Machine family
General-purpose | Memory-optimized | Compute-optimized
Machine types for common workloads, optimized for cost and flexibility

Series
N1
Powered by Intel Skylake CPU platform or one of its predecessors

Machine type
n1-standard-4 (4 vCPU, 15 GB memory)

 vCPU
4

 Memory
15 GB

CPU platform ⓘ
CPU platform configuration is permanent
Automatic

GPUs
+ Add GPU

Display device
Turn on a display device if you want to use screen capturing and recording tools.
☐ Turn on display device

[CPU platform and GPU](#)

\$97.89 monthly estimate
That's about \$0.134 hourly
Pay for what you use: No upfront costs and per second billing
[Details](#)

Resulting VM

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Compute Engine

VM instance details

EDIT

RESET

CREATE MACHINE IMAGE

CREATE SIMILAR

STOP

DELETE

VM instances

Instance groups

Instance templates

Sole-tenant nodes

Machine images

Disks

Snapshots

Images

TPUs

Migrate for Compute Eng...

Committed use discounts

Metadata

Health checks

Zones

Network endpoint groups

Operations

Security scans

OS patch management

Marketplace

canberk11

Details

Monitoring

Screenshot

Remote access

SSH

Connect to serial console

Enable connecting to serial ports

Logs

Stackdriver Logging

Serial port 1 (console)

More

Instance id

5251344553788416692

Machine type

n1-standard-4 (4 vCPUs, 15 GB memory)

Reservation

Automatically choose

CPU platform

Intel Haswell

Display device

Turn on a display device if you want to use screen capturing and recording tools.

Turn on display device

Zone

us-central1-a

Labels

None

Creation time

Jul 16, 2020, 12:22:35 PM

Network interfaces

Name	Network	Subnetwork	Primary internal IP	Alias IP ranges	External IP	Network Tier	IP forwarding	Network details
nic0	default	default	10.128.0.2	—	35.184.79.64 (ephemeral)	Premium	Off	View details

Firewalls

Allow HTTP traffic

Allow HTTPS traffic

Network tags

None

Deletion protection

Enable deletion protection

When deletion protection is enabled, instance cannot be deleted.

Boot disk

Name	Image	Size (GB)	Device name	Type	Encryption	Mode	When deleting instance
canberk11	ubuntu-1604-xenial-v20200713a	20	canberk11	Standard persistent disk	Google managed	Boot, read/write	Delete disk

Additional disks

None

Local disks

None

Shielded VM

To edit Shielded VM features you need to stop the instance first.

Turn on all settings for the most secure configuration.

Turn on Secure Boot

Turn on vTPM

Turn on Integrity Monitoring

Availability policies

Preemptibility	Off (recommended)
On host maintenance	Migrate VM instance (recommended)
Automatic restart	On (recommended)

Custom metadata

None

SSH Keys

Block project-wide SSH keys

berk

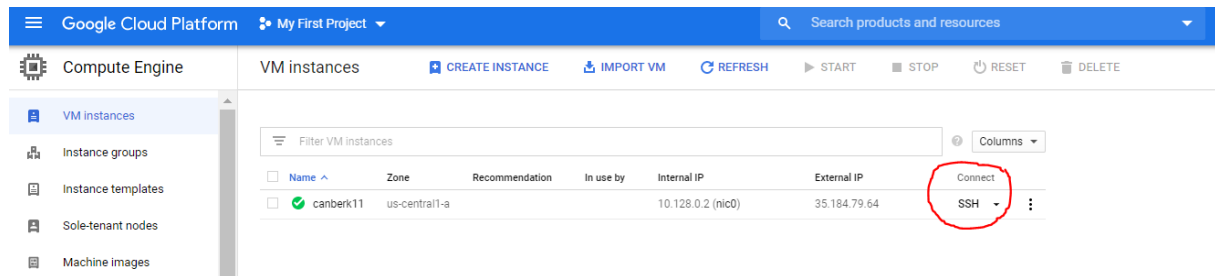
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQODD...3lcYcMqFXLbtA39vd
berk@uni-hildesheim.de

your_email

ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQgQC3...1MhlabITIQK83YsE=
your_email@example.com

My Ssh key and instructors' Ssh key are entered.

Accessed to VM using SSH connect button



Basic Linux Operations

```
can94berk@canberk11: ~ - Google Chrome
ssh.cloud.google.com/projects/atomic-key-283508/zones/us-central1-a/instances/canberk11?useAdminProxy=true&authuser=0&hl=en...
Connected, host fingerprint: ssh-rsa 0 0A:8A:76:F6:79:8A:CB:B6:81:1C:D3:EE:54:B4
:40:57:55:F5:AD:6F:1A:A0:12:C9:BF:A5:99:24:45:60:14:30
Welcome to Ubuntu 16.04.6 LTS (GNU/Linux 4.15.0-1078-gcp x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

0 packages can be updated.
0 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

can94berk@canberk11:~$ sudo apt-get update
Hit:1 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial InRelease
Get:2 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-updates InRelease [109 kB]
Get:3 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-backports InRelease [107 kB]
Get:4 http://security.ubuntu.com/ubuntu xenial-security InRelease [109 kB]
Get:5 http://archive.canonical.com/ubuntu xenial InRelease [11.5 kB]
Get:6 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial/universe amd64 Packages [7,532 kB]
Get:7 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial/universe Translation-en [4,354 kB]
Get:8 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial/multiverse amd64 Packages [144 kB]
Get:9 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial/multiverse Translation-en [106 kB]
Get:10 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-updates/main amd64 Packages [1,170 kB]
Get:11 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-updates/universe amd64 Packages [800 kB]
Get:12 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-updates/universe Translation-en [335 kB]
Get:13 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-updates/multiverse amd64 Packages [17.1 kB]
Get:14 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-updates/multiverse Translation-en [8,632 B]
Get:15 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-backports/main amd64 Packages [7,280 B]
Get:16 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-backports/main Translation-en [4,456 B]
Get:17 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-backports/universe amd64 Packages [8,316 B]
Get:18 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-backports/universe Translation-en [4,476 B]
Get:19 http://archive.canonical.com/ubuntu xenial/partner amd64 Packages [3,120 B]
Get:20 http://archive.canonical.com/ubuntu xenial/partner Translation-en [1,672 B]
Get:21 http://security.ubuntu.com/ubuntu xenial-security/main amd64 Packages [894 kB]
Get:22 http://security.ubuntu.com/ubuntu xenial-security/universe amd64 Packages [495 kB]
```

First, install repos are updated and then dummy folder named "Gcssberk" is created. Folders are listed and entered into "Gcssberk" dummy folder to create blank document named berkss.txt, also some text is written there.

Installing Anaconda in VM

After going home directory with `cd` command, I downloaded Anaconda using `wget` and installed it. Also, all necessary paths are initialized through “`source ~/.bashrc`”.

```
can94berk@canberk11:~/GCssberk}$ cd
can94berk@canberk11:~$ wget https://repo.anaconda.com/archive/Anaconda3-2019.03-Linux-x86_64.sh
--2020-07-16 11:31:22-- https://repo.anaconda.com/archive/Anaconda3-2019.03-Linux-x86_64.sh
Resolving repo.anaconda.com (repo.anaconda.com)... 104.16.131.3, 104.16.130.3, 2606:4700::6810:8303, ...
Connecting to repo.anaconda.com (repo.anaconda.com)|104.16.131.3|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 685906562 (654M) [application/x-sh]
Saving to: 'Anaconda3-2019.03-Linux-x86_64.sh'

Anaconda3-2019.03-Linux-x86_ 100%[=====>] 654.13M  232MB/s   in 2.8s

2020-07-16 11:31:25 (232 MB/s) - 'Anaconda3-2019.03-Linux-x86_64.sh' saved [685906562/685906562]

can94berk@canberk11:~$ bash ./Anaconda3-2019.03-Linux-x86_64.sh

Welcome to Anaconda3 2019.03

In order to continue the installation process, please review the license
agreement.
Please, press ENTER to continue
>>>
=====
Anaconda End User License Agreement
=====

Copyright 2015, Anaconda, Inc.

All rights reserved under the 3-clause BSD License:

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

    * Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
    * Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer.
```

```
Anaconda3 will now be installed into this location:
/home/can94berk/anaconda3
```

- Press ENTER to confirm the location
- Press CTRL-C to abort the installation
- Or specify a different location below

```
[/home/can94berk/anaconda3] >>> █
```

```
can94berk@canberk11: ~ - Google Chrome
ssh.cloud.google.com/projects/atomic-key-283508/zones/us-central1-a/instances/canberk11?useAdminProxy=true&authuser=0&hl=en...

installing: scikit-image-0.14.2-py37he6710b0_0 ...
installing: scikit-learn-0.20.3-py37hd81dba3_0 ...
installing: astropy-3.1.2-py37h7b6447c_0 ...
installing: statsmodels-0.9.0-py37h035aef0_0 ...
installing: seaborn-0.9.0-py37_0 ...
installing: anaconda-2019.03-py37_0 ...
installation finished.
Do you wish the installer to initialize Anaconda3
by running conda init? [yes|no]
[no] >>> yes
WARNING: The conda.compat module is deprecated and will be removed in a future release.
no change      /home/can94berk/anaconda3/condabin/conda
no change      /home/can94berk/anaconda3/bin/conda
no change      /home/can94berk/anaconda3/bin/conda-env
no change      /home/can94berk/anaconda3/bin/activate
no change      /home/can94berk/anaconda3/bin/deactivate
no change      /home/can94berk/anaconda3/etc/profile.d/conda.sh
no change      /home/can94berk/anaconda3/etc/fish/conf.d/conda.fish
no change      /home/can94berk/anaconda3/shell/condabin/Conda.psm1
no change      /home/can94berk/anaconda3/shell/condabin/conda-hook.ps1
no change      /home/can94berk/anaconda3/lib/python3.7/site-packages/xonsh/conda.xsh
no change      /home/can94berk/anaconda3/etc/profile.d/conda.csh
modified       /home/can94berk/.bashrc

==> For changes to take effect, close and re-open your current shell. <==

If you'd prefer that conda's base environment not be activated on startup,
set the auto_activate_base parameter to false:

conda config --set auto_activate_base false

Thank you for installing Anaconda3!

=====

Anaconda and JetBrains are working together to bring you Anaconda-powered
environments tightly integrated in the PyCharm IDE.

PyCharm for Anaconda is available at:
https://www.anaconda.com/pycharm

can94berk@canberk11:~$ source ~/.bashrc
(base) can94berk@canberk11:~$
```

Moving files to VM

```
If you'd prefer that conda's base environment not be activated on startup,
set the auto_activate_base parameter to false:

conda config --set auto_activate_base false

Thank you for installing Anaconda3!

=====

Anaconda and JetBrains are working together to bring
environments tightly integrated in the PyCharm IDE.

PyCharm for Anaconda is available at:
https://www.anaconda.com/pycharm

can94berk@canberk11:~$ source ~/.bashrc
(base) can94berk@canberk11:~$
```

File Transfer	Close
dda_ex1.py	Finished

File upload destination: /home/can94berk

```
can94berk@canberk11:~$ source ~/.bashrc
(base) can94berk@canberk11:~$ ls
anaconda3  Anaconda3-2019.03-Linux-x86_64.sh  dda_ex1.py  {GCssberk}
(base) can94berk@canberk11:~$
```

Run Labs

Exercise 1 from Exercise Sheet-9 →

```
(base) can94berk@canberk11:~$ python dda_ex1.py
downloading Olivetti faces from https://ndownloader.figshare.com/files/5976027 to /home/can94berk/scikit_learn_data
(400, 4096)
(400,)
iteration: 100 Accuracy: 0.0 %
iteration: 200 Accuracy: 5.0 %
iteration: 300 Accuracy: 5.0 %
iteration: 400 Accuracy: 12.5 %
iteration: 500 Accuracy: 32.5 %
iteration: 600 Accuracy: 42.5 %
iteration: 700 Accuracy: 52.5 %
iteration: 800 Accuracy: 62.5 %
iteration: 900 Accuracy: 72.5 %
iteration: 1000 Accuracy: 87.5 %
iteration: 1100 Accuracy: 90.0 %
iteration: 1200 Accuracy: 92.5 %
iteration: 1300 Accuracy: 95.0 %
iteration: 1400 Accuracy: 95.0 %
iteration: 1500 Accuracy: 95.0 %
iteration: 1600 Accuracy: 97.5 %
iteration: 1700 Accuracy: 97.5 %
iteration: 1800 Accuracy: 97.5 %
iteration: 1900 Accuracy: 97.5 %
iteration: 2000 Accuracy: 97.5 %
iteration: 2100 Accuracy: 97.5 %
iteration: 2200 Accuracy: 97.5 %
iteration: 2300 Accuracy: 97.5 %
iteration: 2400 Accuracy: 97.5 %
iteration: 2500 Accuracy: 100.0 %
iteration: 2600 Accuracy: 100.0 %
iteration: 2700 Accuracy: 100.0 %
iteration: 2800 Accuracy: 100.0 %
iteration: 2900 Accuracy: 100.0 %
iteration: 3000 Accuracy: 100.0 %
iteration: 3100 Accuracy: 100.0 %
iteration: 3200 Accuracy: 100.0 %
iteration: 3300 Accuracy: 100.0 %
iteration: 3400 Accuracy: 100.0 %
iteration: 3500 Accuracy: 100.0 %
iteration: 3600 Accuracy: 100.0 %
iteration: 3700 Accuracy: 100.0 %
iteration: 3800 Accuracy: 100.0 %
iteration: 3900 Accuracy: 100.0 %
iteration: 4000 Accuracy: 100.0 %
Time: 0m 37s
(base) can94berk@canberk11:~$
```

Here, I used my solution from previous tutorial and plotting the graph is modified with # to not be executed. It took longer than my result in previous lab which was 34 seconds.

Also, pytorch is installed separately as this exercise uses it.

```
(base) can94berk@canberk11:~$ conda install pytorch torchvision cpuonly -c pytorch
```

Exercise 2 from Exercise Sheet-9 →

First, file is uploaded to VM.

```
iteration: 2900 Accuracy: 100.0 %
iteration: 3000 Accuracy: 100.0 %
iteration: 3100 Accuracy: 100.0 %
iteration: 3200 Accuracy: 100.0 %
iteration: 3300 Accuracy: 100.0 %
iteration: 3400 Accuracy: 100.0 %
iteration: 3500 Accuracy: 100.0 %
iteration: 3600 Accuracy: 100.0 %
iteration: 3700 Accuracy: 100.0 %
iteration: 3800 Accuracy: 100.0 %
iteration: 3900 Accuracy: 100.0 %
iteration: 4000 Accuracy: 100.0 %
Time: 0m 37s
(base) can94berk@canberk11:~$ ls
anaconda3  Anaconda3-2019.03-Linux-x86_64.sh  dda_ex1.py  dda_ex2.py  [G0ssberk]  scikit_learn_data
(base) can94berk@canberk11:~$
```

File Transfer	Close
dda_ex2.py	Finished

File upload destination: /home/can94berk

This time, `plt.savefig()` is used for the graph to be saved along with `plt.close(fig)` to not show it as it cant be. Result is →

```
(base) can94berk@canberkl1:~$ ls
anaconda3  Anaconda3-2019.03-Linux-x86_64.sh  dda_ex1.py  dda_ex2.py  {GCssberk}  scikit_learn_data
(base) can94berk@canberkl1:~$ python dda_ex2.py
(400, 4096)
(400,)
iteration: 100 Accuracy: 12.5 %
iteration: 200 Accuracy: 12.5 %
iteration: 300 Accuracy: 7.5 %
iteration: 400 Accuracy: 10.0 %
iteration: 500 Accuracy: 17.5 %
iteration: 600 Accuracy: 20.0 %
iteration: 700 Accuracy: 22.5 %
iteration: 800 Accuracy: 27.5 %
iteration: 900 Accuracy: 47.5 %
iteration: 1000 Accuracy: 60.0 %
iteration: 1100 Accuracy: 65.0 %
iteration: 1200 Accuracy: 67.5 %
iteration: 1300 Accuracy: 72.5 %
iteration: 1400 Accuracy: 75.0 %
iteration: 1500 Accuracy: 80.0 %
iteration: 1600 Accuracy: 80.0 %
iteration: 1700 Accuracy: 80.0 %
iteration: 1800 Accuracy: 87.5 %
iteration: 1900 Accuracy: 87.5 %
iteration: 2000 Accuracy: 87.5 %
iteration: 2100 Accuracy: 87.5 %
iteration: 2200 Accuracy: 87.5 %
iteration: 2300 Accuracy: 87.5 %
iteration: 2400 Accuracy: 87.5 %
iteration: 2500 Accuracy: 87.5 %
iteration: 2600 Accuracy: 87.5 %
iteration: 2700 Accuracy: 87.5 %
iteration: 2800 Accuracy: 87.5 %
iteration: 2900 Accuracy: 87.5 %
iteration: 3000 Accuracy: 87.5 %
iteration: 3100 Accuracy: 87.5 %
iteration: 3200 Accuracy: 87.5 %
iteration: 3300 Accuracy: 87.5 %
iteration: 3400 Accuracy: 90.0 %
iteration: 3500 Accuracy: 90.0 %
iteration: 3600 Accuracy: 90.0 %
iteration: 3700 Accuracy: 90.0 %
iteration: 3800 Accuracy: 90.0 %
iteration: 3900 Accuracy: 90.0 %
iteration: 4000 Accuracy: 90.0 %
Time: 0m 40s
(base) can94berk@canberkl1:~$
```

Code is executed and only difference is time is 2 seconds longer than my result in previous lab in same exercise probably due to system specifications.

Also, graph is saved to VM as “dda9_ex2_result.png”

```
(base) can94berk@canberkl1:~$ ls
anaconda3  Anaconda3-2019.03-Linux-x86_64.sh  dda9_ex2_result.png  dda_ex1.py  dda_ex2.py  {GCssberk}  scikit_learn_data
```

As I did only exercise 1 and exercise 2 in Exercise Sheet 9 and process is repeating itself I’m going to stop here.