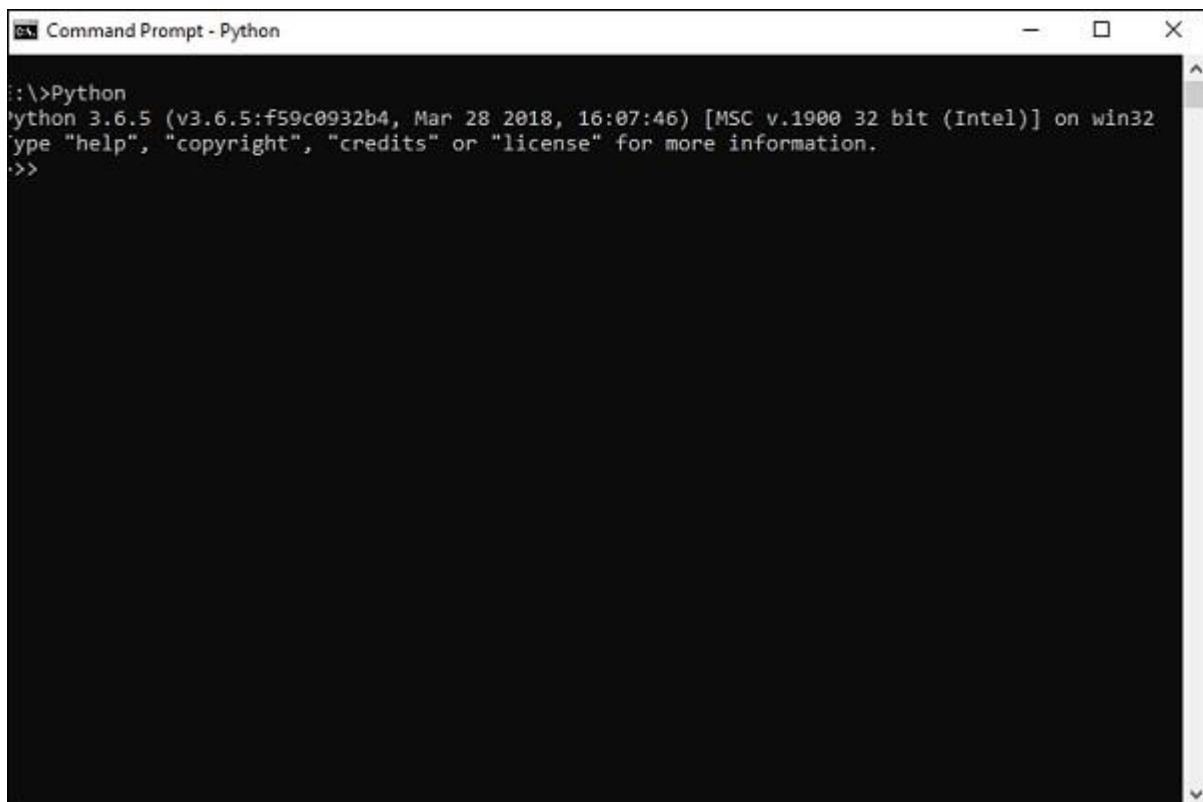


# TensorFlow - Installation

To install TensorFlow, it is important to have “Python” installed in your system. Python version 3.4+ is considered the best to start with TensorFlow installation.

Consider the following steps to install TensorFlow in Windows operating system.

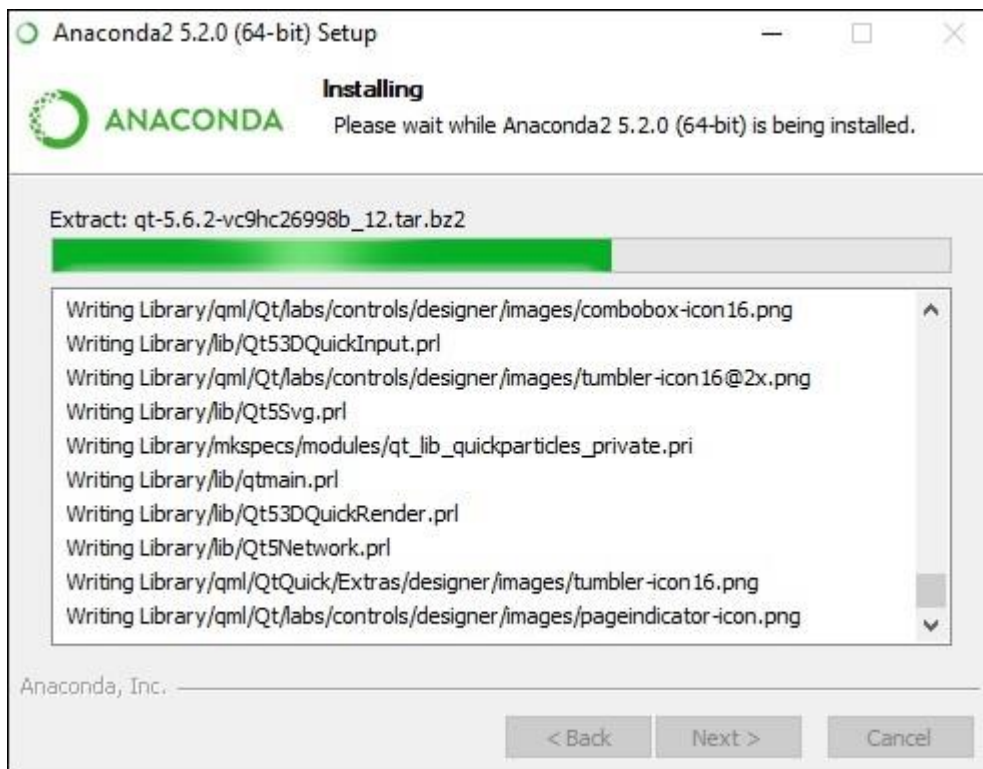
**Step 1** – Verify the python version being installed.

A screenshot of a Windows Command Prompt window titled "Command Prompt - Python". The window has a black background with white text. The text shows the command prompt at the root directory (C:\>) where the command 'Python' has been entered. The output shows 'Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 16:07:46) [MSC v.1900 32 bit (Intel)] on win32'. Below this, it says 'type "help", "copyright", "credits" or "license" for more information.' and the prompt returns to 'C:\>'.

```
C:\>Python
Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 16:07:46) [MSC v.1900 32 bit (Intel)] on win32
type "help", "copyright", "credits" or "license" for more information.
C:\>
```

**Step 2** – A user can pick up any mechanism to install TensorFlow in the system. We recommend “pip” and “Anaconda”. Pip is a command used for executing and installing modules in Python.

Before we install TensorFlow, we need to install Anaconda framework in our system.



After successful installation, check in command prompt through “conda” command. The execution of command is displayed below –

```
C:\Users\Radhika>conda
usage: conda [-h] [-V] command ...

conda is a tool for managing and deploying applications, environments and packages.

Options:
positional arguments:
  command
  clean                Remove unused packages and caches.
  config               Modify configuration values in .condarc. This is modeled
                        after the git config command. Writes to the user .condarc
                        file (C:\Users\Radhika\condarc) by default.
  create               Create a new conda environment from a list of specified
                        packages.
  help                 Displays a list of available conda commands and their help
                        strings.
  info                 Display information about current conda install.
  install              Installs a list of packages into a specified conda
                        environment.
  list                 List linked packages in a conda environment.
  package              Low-level conda package utility. (EXPERIMENTAL)
  remove               Remove a list of packages from a specified conda environment.
  uninstall            Alias for conda remove. See conda remove --help.
  search               Search for packages and display associated information. The
                        input is a MatchSpec, a query language for conda packages.
                        See examples below.
```

**Step 3** – Execute the following command to initialize the installation of TensorFlow –

```
conda create --name tensorflow python = 3.5
```

```
Command Prompt - conda create --name tensorflow python=3.5

vc-14 | h0510ff6_3 | 3 KB
wincertstore-0.2 | py35hfbbdb8_0 | 13 KB
wheel-0.31.1 | py35_0 | 81 KB
certifi-2018.4.16 | py35_0 | 143 KB
python-3.5.5 | h0c2934d_2 | 18.2 MB
-----
Total: 20.8 MB

The following NEW packages will be INSTALLED:

certifi: 2018.4.16-py35_0
pip: 10.0.1-py35_0
python: 3.5.5-h0c2934d_2
setuptools: 39.2.0-py35_0
vc: 14-h0510ff6_3
vs2015_runtime: 14.0.25123-3
wheel: 0.31.1-py35_0
wincertstore: 0.2-py35hfbbdb8_0

Proceed ([y]/n)? y

Downloading and Extracting Packages
pip-10.0.1 | 1.8 MB | ##### | 100%
setuptools-39.2.0 | 593 KB | ##### | 100%
vc-14 | 3 KB | ##### | 100%
wincertstore-0.2 | 13 KB | ##### | 100%
wheel-0.31.1 | 81 KB | ##### | 100%
certifi-2018.4.16 | 143 KB | ##### | 100%
python-3.5.5 | 18.2 MB | ##### | 70%
```

It downloads the necessary packages needed for TensorFlow setup.

**Step 4** – After successful environmental setup, it is important to activate TensorFlow module.

activate tensorflow

```
Command Prompt

C:\Users\Radhika>activate tensorflow

(tensorflow) C:\Users\Radhika>
```

**Step 5** – Use pip to install “Tensorflow” in the system. The command used for installation is mentioned as below –

pip install tensorflow

And,

pip install tensorflow-gpu

```
Command Prompt - pip install tensorflow
Requirement already satisfied: termcolor>=1.1.0 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (1.1.0)
Requirement already satisfied: numpy>=1.13.3 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (1.14.5)
Requirement already satisfied: grpcio>=1.8.6 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (1.12.1)
Requirement already satisfied: wheel>=0.26 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.31.1)
Requirement already satisfied: six>=1.10.0 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (1.11.0)
Requirement already satisfied: absl-py>=0.1.6 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.2.2)
Requirement already satisfied: astor>=0.6.0 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.6.2)
Requirement already satisfied: gast>=0.2.0 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.2.0)
Requirement already satisfied: tensorboard<1.9.0,>=1.8.0 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (1.8.0)
Requirement already satisfied: setuptools in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (39.2.0)
Requirement already satisfied: html5lib==0.9999999 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.9999999)
Requirement already satisfied: bleach==1.5.0 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (1.5.0)
Requirement already satisfied: markdown>=2.6.8 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (2.6.11)
Requirement already satisfied: werkzeug>=0.11.10 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.14.1)
Installing collected packages: tensorflow
Successfully installed tensorflow-1.8.0

Command Prompt
Requirement already satisfied: numpy>=1.13.3 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (1.14.5)
Requirement already satisfied: grpcio>=1.8.6 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (1.12.1)
Requirement already satisfied: wheel>=0.26 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.31.1)
Requirement already satisfied: six>=1.10.0 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (1.11.0)
Requirement already satisfied: absl-py>=0.1.6 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.2.2)
Requirement already satisfied: astor>=0.6.0 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.6.2)
Requirement already satisfied: gast>=0.2.0 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.2.0)
Requirement already satisfied: tensorboard<1.9.0,>=1.8.0 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (1.8.0)
Requirement already satisfied: setuptools in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (39.2.0)
Requirement already satisfied: html5lib==0.9999999 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.9999999)
Requirement already satisfied: bleach==1.5.0 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (1.5.0)
Requirement already satisfied: markdown>=2.6.8 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (2.6.11)
Requirement already satisfied: werkzeug>=0.11.10 in c:\users\radhika\anaconda2\envs\tensorflow\lib\site-packages (from tensorflow) (0.14.1)
Installing collected packages: tensorflow
Successfully installed tensorflow-1.8.0
```

After successful installation, it is important to know the sample program execution of TensorFlow.

Following example helps us understand the basic program creation “Hello World” in TensorFlow.

```

C:\Users\Radhika>activate tensorflow

(tensorflow) C:\Users\Radhika>python
Python 3.5.5 [Anaconda, Inc.] (default, Apr  7 2018, 04:52:34) [MSC v.1900 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import tensorflow as tf
>>> hello = tf.constant('Hello, Tensorflow!')
>>> sess = tf.Session()
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
AttributeError: module 'tensorflow' has no attribute 'session'
>>> sess = tf.Session()
2018-06-28 11:12:04.586763: I T:\src\github\tensorflow\tensorflow\core\platform\cpu_feature_guard.cc:140] Your CPU supports instructions that this TensorFlow binary was not compiled to use: AVX2
>>> print(sess.run(hello))
b'Hello, Tensorflow!'
>>>

```

The code for first program implementation is mentioned below –

```

>> activate tensorflow
>> python (activating python shell)
>> import tensorflow as tf
>> hello = tf.constant('Hello, Tensorflow!')
>> sess = tf.Session()
>> print(sess.run(hello))

```