



Set up your environment to take the TensorFlow Developer Certificate Exam

Questions? Email tensorflow-certificate-support@google.com.

Last Updated: Dec 13 2021

This document describes how to get your environment ready to take the TensorFlow Developer Certificate exam. It does not discuss what the exam is or how to take it.

For more information about the TensorFlow Developer Certificate program, please go to tensorflow.org/certificate.

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Before you begin

The TensorFlow certificate exam runs inside PyCharm.

The exam uses TensorFlow 2.7.x.

You must use Python **3.8** to ensure accurate grading of your models. The exam has been tested with Python 3.8.0 and TensorFlow 2.7.x.

Before you start the exam, make sure your environment is ready:

- ☐ Make sure you have Python 3.8 installed on your computer.
- ☐ Check that your system meets the installation requirements for PyCharm [here](#).
- ☐ Install **version 2021.3** of [PyCharm](#).
- ☐ Ensure that you have a stable internet connection before starting the exam.
- ☐ Make sure you are familiar with using PyCharm and that it is configured correctly.

See the section [Before you begin: Get your environment ready](#) further down this document for details on making sure that you have PyCharm ready and set up correctly for the exam.

Refund policy

When the exam starts, you will have five hours to complete it.

It is your responsibility to ensure that:

- You are using a computing environment that can run PyCharm and PyCharm plugins without problems.
- You have a strong and reliable internet connection for the duration of the exam.
- You are using a computing environment that can handle the creation, training and testing of machine learning models. See [Is there a minimum hardware requirement?](#)
- You carefully read the instructions that will be sent to you when you purchase the exam.
- You read and understand the Terms and Conditions before you take the exam.

Important! After you start the exam, we are unable to issue refunds or retakes for any reason.

To start the exam, go to tensorflow.org/certificate.

Install Python 3.8

IMPORTANT! Make sure Python 3.8 is installed on your machine before you start the exam. Although TensorFlow works with other versions of Python, the exam has been tested with Python 3.8.0.

For step by step instructions to updating Python on your workstation, see [Before you begin: Get your environment ready to take the exam](#) (further down in this document).

Don't use Anaconda.

IMPORTANT! Your Python environment must be installed from canonical Python packages available at python.org. We cannot be responsible for errors in your submissions due to self-built or non-canonical Python environments.

Install PyCharm

1. Check that your system meets the installation requirements for PyCharm [here](#).
2. Install [PyCharm](#) 2021.3:
 - You can use either PyCharm Professional or PyCharm Community Edition.
 - **Don't** use the Anaconda plugin.

Get your environment ready for the exam

You will take the exam inside PyCharm. The exam infrastructure will create a project and install some software packages for you. You can install whatever other software you need as you take the exam. It is important that you don't change the version of TensorFlow within the exam project, because the grading infrastructure uses the same version of TensorFlow as the exam.

What libraries will the exam infrastructure install?

When you start the TensorFlow developer certificate exam, the exam framework will install the following software in your PyCharm project:

```
tensorflow==2.7.0
tensorflow-datasets==4.4.0
Pillow==8.4.0
pandas==1.3.4
numpy==1.21.4
scipy==1.7.3
```

Test your environment before you take the exam

Before you begin the exam, to mitigate any possible issues that you could encounter with the exam environment, create a PyCharm project, load the same libraries that you will need in the exam, and practice training models in PyCharm.

Make sure that PyCharm isn't subject to file-loading controls

The TensorFlow Developer certificate exam needs to load files. Make sure that the software or computer that you will use to access PyCharm isn't subject to any controls that could block the loading of files. This advice is relevant, for example, if you plan to use a Windows server administered by your company which might have restrictions on what files can be loaded through the server.

Windows and Linux Users: Check your GPU drivers

If you are a Windows user, and you have NVIDIA graphics cards installed, make sure your drivers work with the required version of TensorFlow. We recommend you test out a system after following the steps here: [tensorflow.org/install/gpu](https://www.tensorflow.org/install/gpu).

Also see github.com/tensorflow/docs/blob/r2.4/site/en/install/gpu.md for more information about hardware and software requirements for using CUDA and GPU with TensorFlow 2.x.

See the instructions below for testing in a PyCharm virtual environment.

Mac Users: Ensure you have Python 3.8

The exam has been tested with Python 3.8. Macs ship with 2.7 as the default native interpreter, and PyCharm can get confused by this. Merely installing Python 3.8 is not enough. First ensure that Python 3.8 is properly installed, by typing 'python3' at the terminal. This command returns the version of Python 3 that is installed – makes sure it says Python 3.8.x.

If it isn't installed, go to python.org/downloads to download a version of Python 3.8. Note that this is **not** the latest version. If you use homebrew make sure that you use it to install Python 3.8, and not the latest (which it will default to).

All Users: Create a Test Virtual Environment that uses TensorFlow in PyCharm

When you start the TensorFlow developer certificate exam, it will install TensorFlow for you. However, we strongly recommend that you practice using TensorFlow in PyCharm before you start the exam, so that you are familiar with the environment that you will work in while taking the exam, and also to mitigate any configuration issues.

There are many varied computers with different operating systems, GPUs, and other dependencies. It's **strongly recommended** that you follow these steps to ensure that you have a well-configured PyCharm environment that TensorFlow works on before starting the exam.

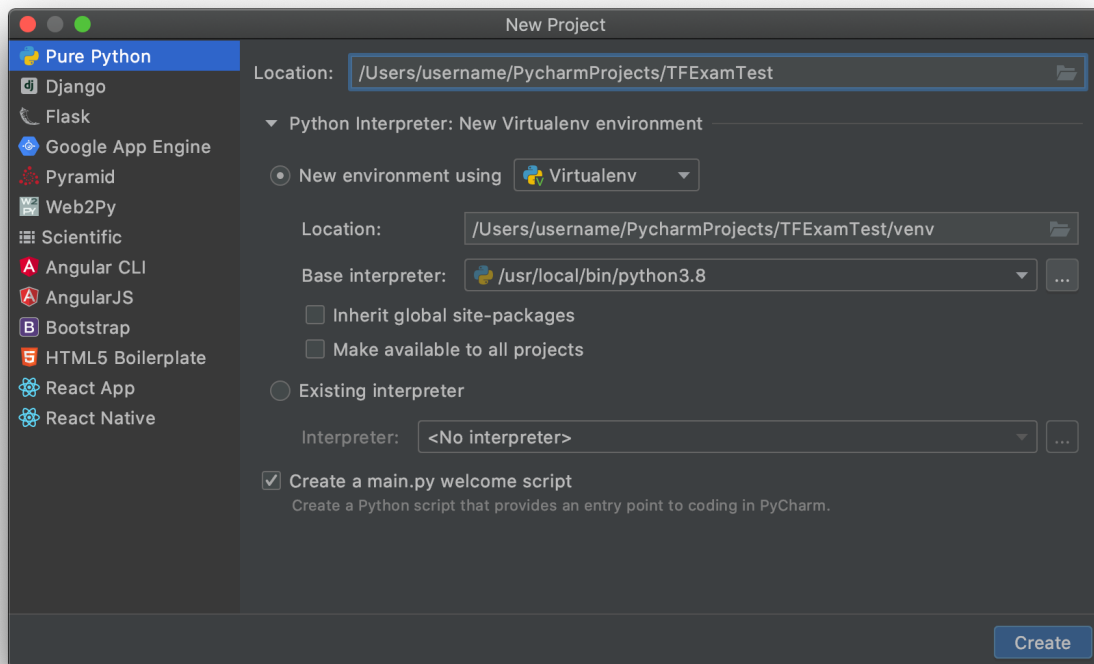
This will help you ensure that you have the right Python environment, that your GPU drivers work correctly, and that you are able to install the required dependencies.

Create a new PyCharm project

Open PyCharm and start a new project in PyCharm. Call it TFExamTest (or whatever you like).

When asked for the Project Interpreter, select 'New Virtualenv Environment' as shown here.

Make sure that the Base Interpreter is Python 3.8.

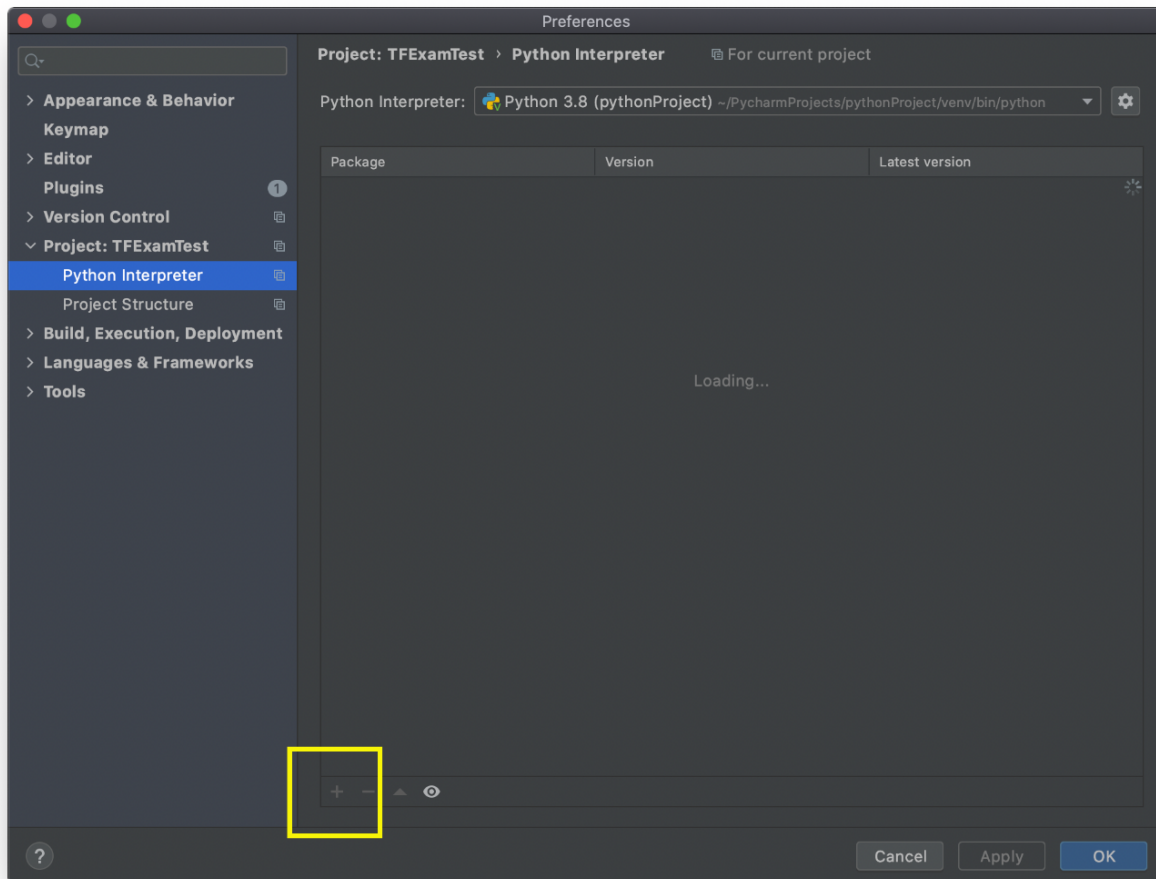


If it is a Python 3.8 (as shown in the screenshot above), click Create. **If it isn't, exit PyCharm, and install Python 3.8 on your machine and then try this step again. In particular, if you are a Mac user check the section above.**

Install TensorFlow and related packages

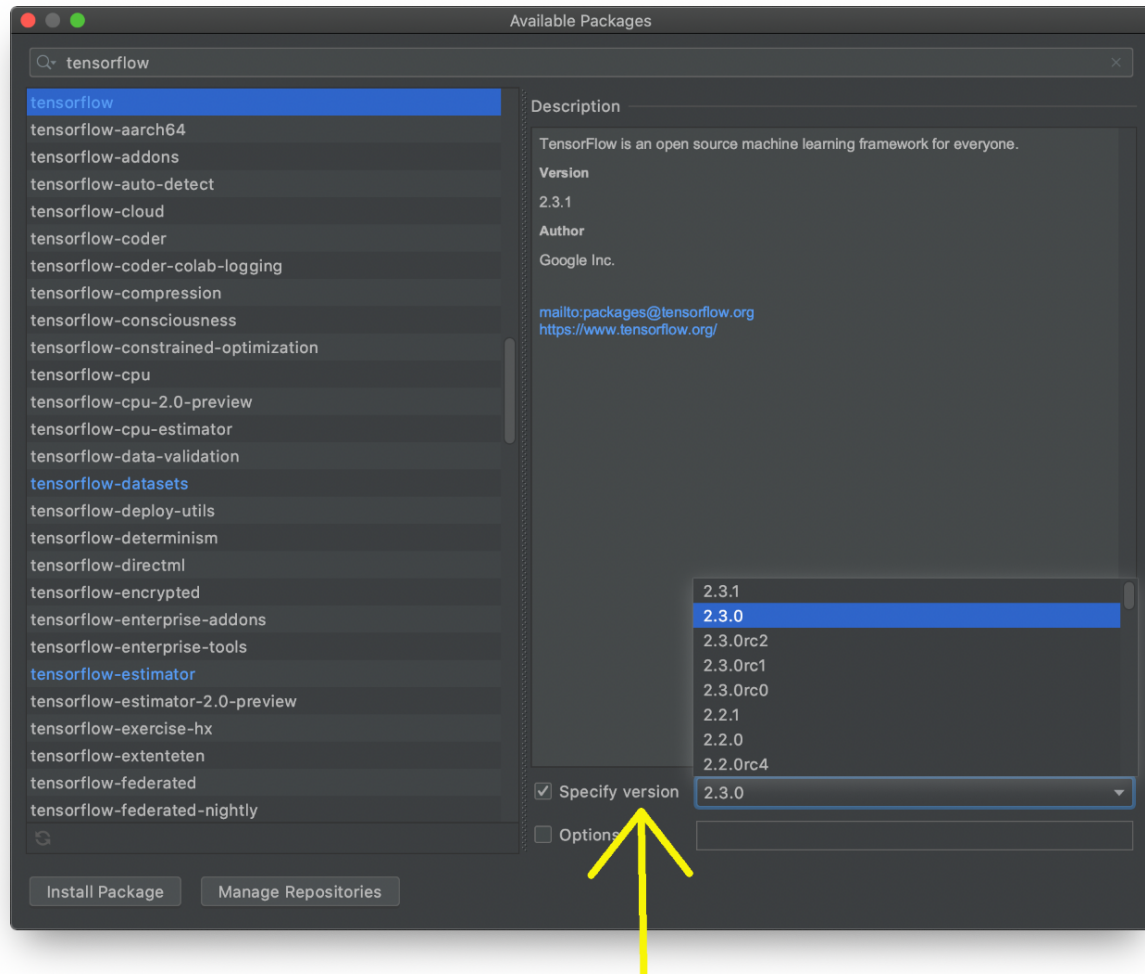
If you were able to create the environment, open the PyCharm preferences dialog. (Windows and Linux: File → Settings. On Mac it is PyCharm → Preferences)

Choose the Project, and then Project Interpreter as shown here:



Press the + button. It's at the bottom of the screenshot above, but in some cases it might be on the right hand side. This will open the 'Available Packages' window, with details on packages that you can install.

Search for “tensorflow”. Note that the exam uses a [specific version](#), so change the version (if appropriate) if you want to emulate the exam environment.



To install TensorFlow, click the ‘Install Package’ link at the bottom. Repeat this process for the following packages:

- tensorflow
- tensorflow-datasets
- numpy
- Pillow
- pandas

- `scipy`

You will now have a working environment with all the dependencies required for the exam. You can test the environment with some simple Python and TensorFlow code to be sure.

If you are a Windows or Linux GPU user, a simple Python script you can try is:

```
import tensorflow as tf
print(tf.__version__)
```

If your drivers are configured correctly, this script will execute. If not, check your driver dependencies, and the dependencies listed at [tensorflow.org/install](https://www.tensorflow.org/install).

Check the supported version of Python in PyCharm

If you aren't sure what version of Python is being used in your PyCharm environment, go to the 'Python Console' window in PyCharm, which will usually be a tab at the bottom of your screen, and type

```
print(sys.version)
```

The terminal will report back the Python version as shown here:

```
PyDev console: starting.

>>>sys.version
'3.8.0 (v3.8.0:db455296be, Sep 23 2020, 13:31:39)'
```

Practice training TensorFlow models

The TensorFlow Developer Certificate exam will require you to create and train models similar to those found on [tensorflow.org/tutorials](https://www.tensorflow.org/tutorials), such as:

- [Image classification](#)
- [Word embeddings](#)

We recommend that you practice running the code from these tutorials in PyCharm to become familiar with using PyCharm to train TensorFlow models.

FAQs

How do I start the exam?

This document does not cover how to take the exam. Please go to tensorflow.org/certificate for more information about the TensorFlow Developer Certificate program and for links to start the exam.

What version of TensorFlow is used in the exam?

The exam will test you on your ability to define, train and test models with **TensorFlow 2.7.x**.

Regardless of what TensorFlow version you install on your machine, the exam infrastructure requires, and will install, the version listed in [What libraries will the exam infrastructure install?](#)

Is there a minimum hardware requirement?

We do not specify a minimum hardware requirement. We rely on you, as an experienced ML practitioner, to know the capabilities of your own environment with regard to training ML models with TensorFlow.

The TensorFlow Developer Certificate exam will require you to create and train models similar to those found on tensorflow.org/tutorials (such as [Example 1](#), [Example 2](#)). We recommend that you practice these to make sure your hardware can handle them.

You will take the exam inside PyCharm. You can get your environment ready following the instructions in this document and then run your practice models in PyCharm. You can do this before you purchase the exam.

We allow 5 hours for the exam because we know that it will take some time to train the models.

During the exam, you are welcome to experiment with training models using GCP, AWS, Jupyter Notebooks or Google Colab, but you will still need to define, train and save your models within the exam environment, inside PyCharm, in order to submit it for grading.

How do I set up GPU and CUDA?

If you use GPU and CUDA, see the official TensorFlow installation pages:

- [tensorflow.org/install](https://www.tensorflow.org/install)
- [tensorflow.org/install/gpu](https://www.tensorflow.org/install/gpu)

See the section [GPU: Software Requirements](#) for information on what version of CUDA is used by TensorFlow. Regardless of what TensorFlow version you install on your machine, the exam infrastructure requires, and will install, the version listed in [What libraries will the exam infrastructure install?](#) So make sure that you have installed the appropriate version of CUDA (If you use it) for the version of TensorFlow that the exam uses.

Also see github.com/tensorflow/docs/blob/r2.4/site/en/install/gpu.md for information on using CUDA and GPU with TensorFlow 2.x.

Where is the candidate handbook?

The candidate handbook is linked from [tensorflow.org/certificate](https://www.tensorflow.org/certificate).