Preparation for
TensorFlow Developer Certificate

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Learning Objectives

1. Recognize important information about TensorFlow Developer Certificate

2. Recognize basic information about exam simulation

3. Elaborate how success in TensorFlow Developer Certificate exam

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Today's Agenda

- ❏ Introduction to **TFD Certification**

- ❏ Exam **Simulation**

- ❏ Exam **Tips**

- ❏ TBD

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Introduction to TFD Certification

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TensorFlow Developer Certification

TensorFlow Developer (TFD) Certification demonstrates your proficiency in using TensorFlow to solve deep learning and ML problems.

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About TFD Certification Exam

|	
Length	Five hours
Registration Fee	$100
Languages	English
Exam format	• This exam is an online, performance-based test that requires implementing TensorFlow • In order to take the exam, you will install the TensorFlow Exam plugin using the PyCharm

Skills Checklist

The TFD Certification exam will test you on this set of skills:

✅ TensorFlow developer skills

✅ Building and training neural network models using TF 2.x

✅ Image classification

✅ Natural language processing (NLP)

✅ Time series, sequences, and predictions

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* please refer to the Candidate Handbook for the details of each category
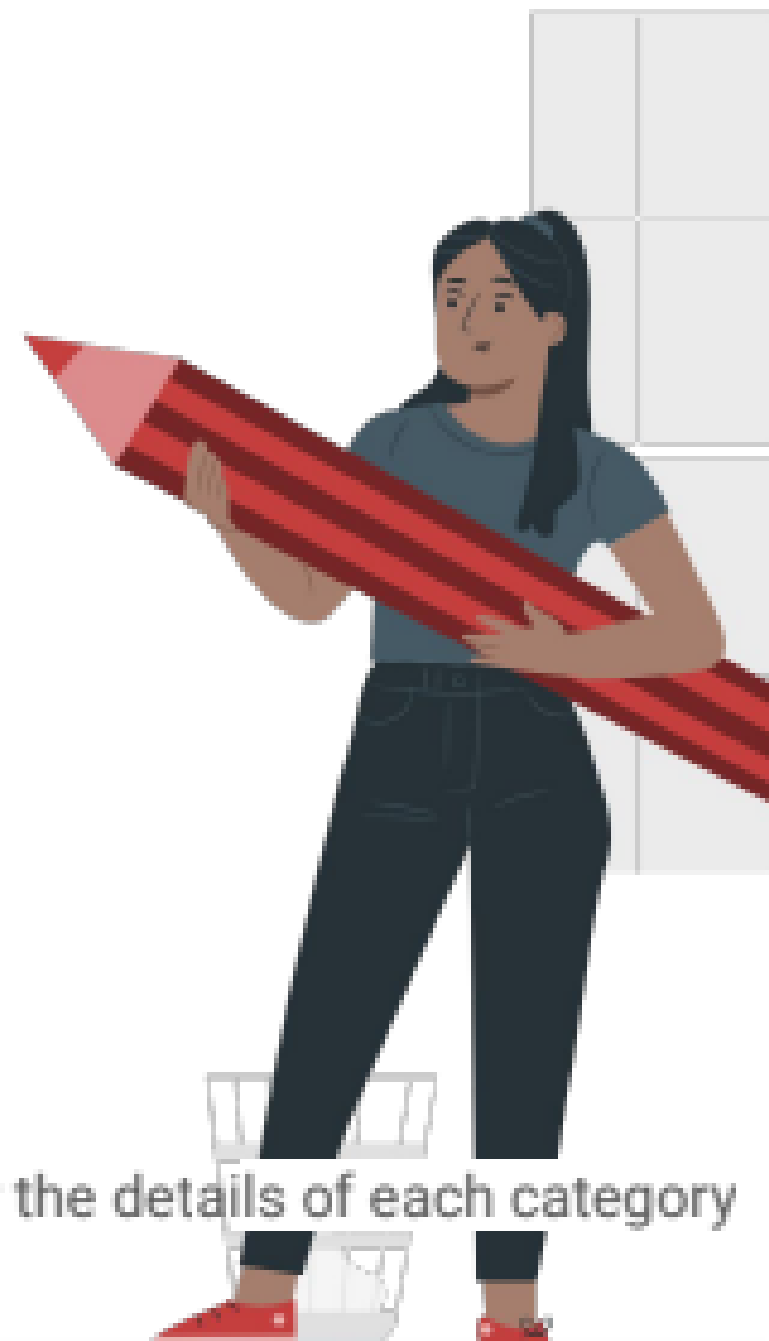
Setting Environment

- Install Python 3.8
- Install PyCharm 2021.3
- Check your GPU driver
- Create a Test Virtual Environment that uses TensorFlow in PyCharm
  - Create a new PyCharm project
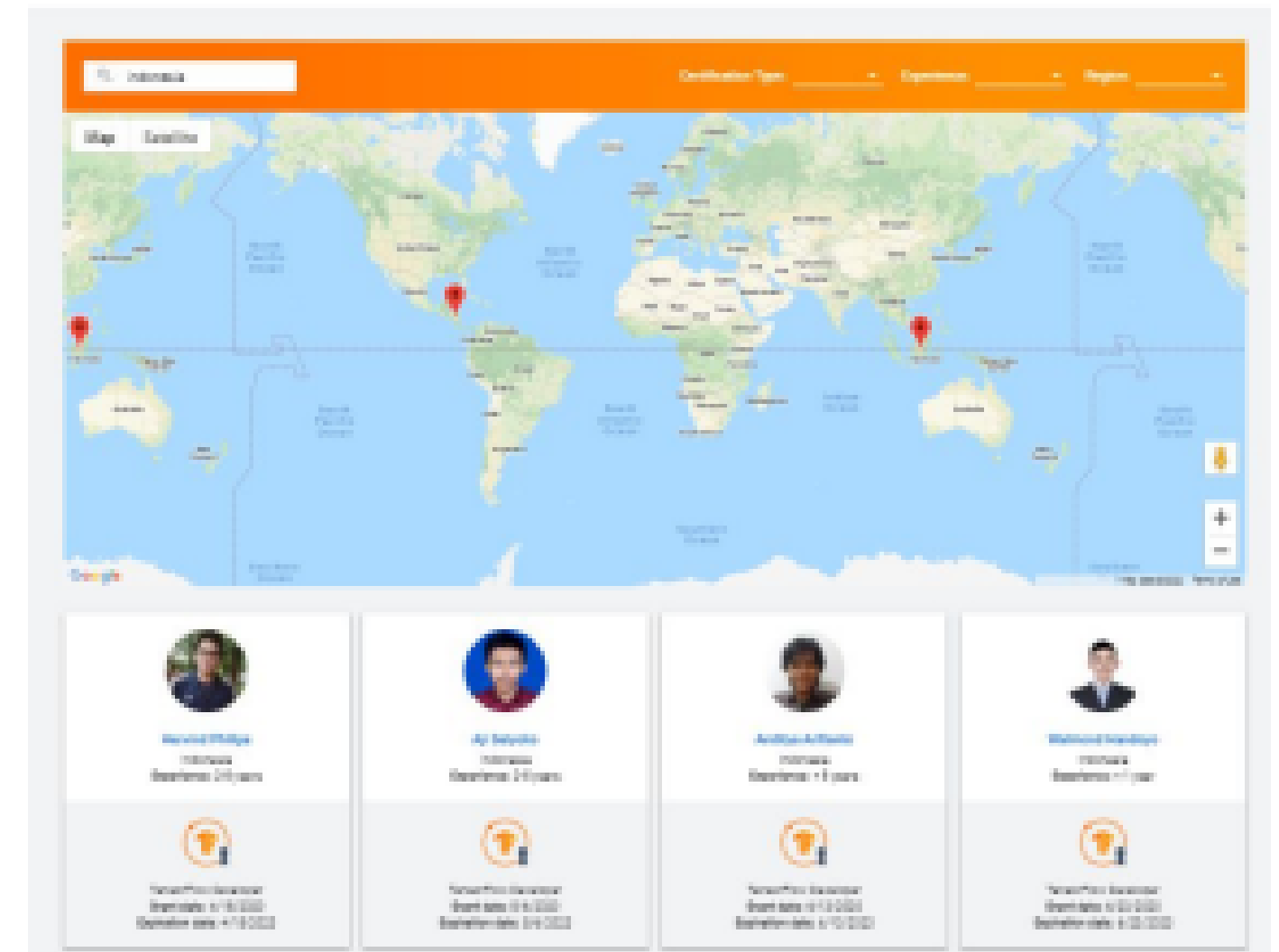 - Install TensorFlow and related packages

```
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
```

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TensorFlow Developer Certification **Benefits**

1. Learn **something new**

2. Showcase **your skills**

3. Receive **community recognition**

4. Find **TensorFlow talent**

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What They Say about TFD Certification

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Google goto traveloka*

Kampus Merdeka
INDONESIA JAYA

Developing AI Products
for Coral Reefs with
Indonesia Research Agency

Bagus Satya Mas

Bangkit 2021 Graduate, Certified TFD
Data Scientist at BISA AI

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*A story of Bangkit 2021 Graduate turning the sourness of his life into a desirable achievement
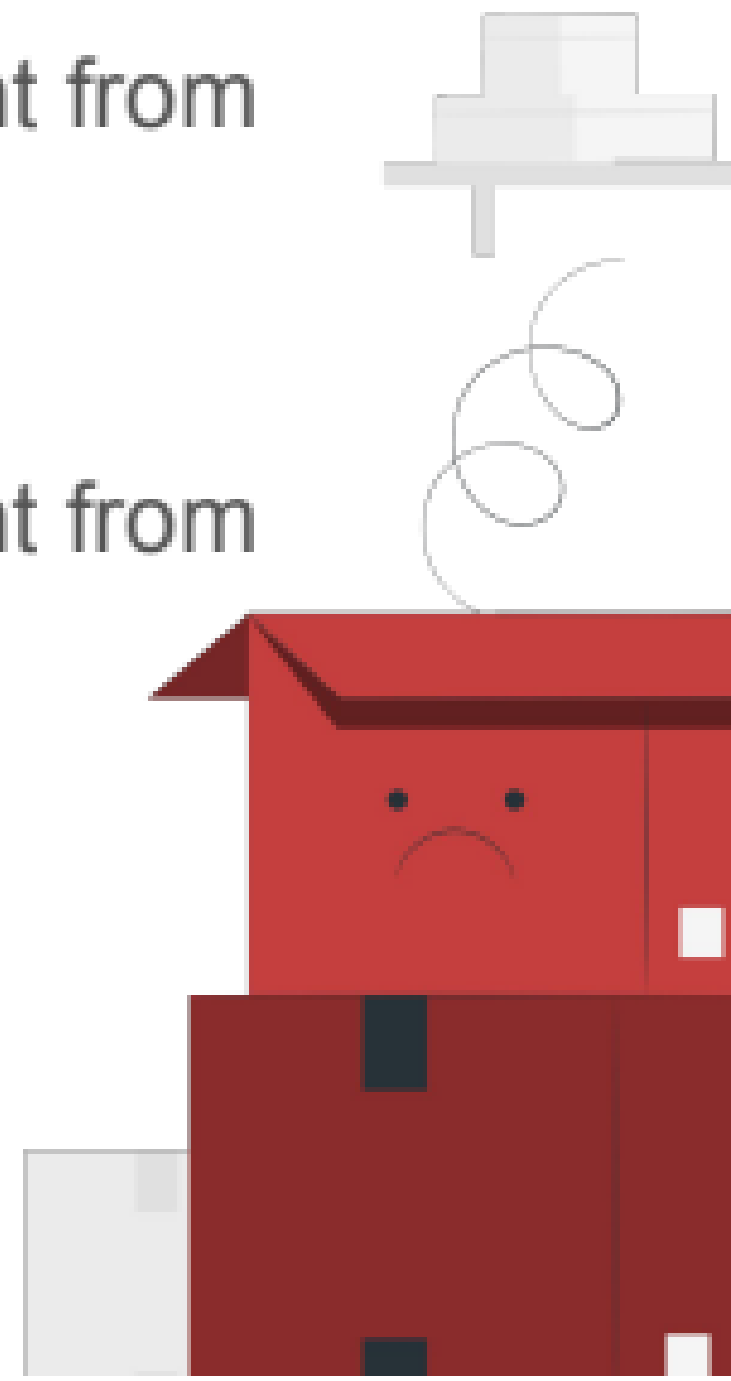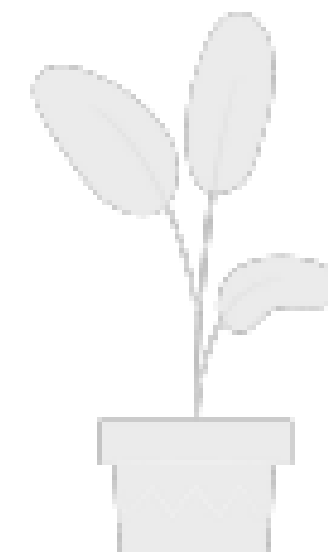
Exam Simulation

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TFDC **Exam Simulation**

This will provide **three different packages** that simulate what you will be facing when taking the actual TDC exam from the Google Developers Program

Simulasi Ujian TensorFlow Developer Certificate

Latihan ujian sebagai persiapan pengambilan ujian sertifikasi TensorFlow Developer Certificate pada program Google Developers Certification.

Pastikan kamu sukses mendapatkan sertifikasi global yang diakui langsung oleh Google. Materi disusun oleh Dicoding sebagai Google Authorized Training Partner.

Level Menengah

dicoding

<> Google Developers
Authorized Training Partner

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Simulation Packages

Simulation A
- Consist of 5 Machine Learning Problems

Simulation B
- Consist of 5 machine learning problems.
- The datasets used in Simulation B are different from the dataset in Simulation B.

Simulation C
- Consist of 5 machine learning problems.
- The datasets used in Simulation B are different from the dataset in Simulation A.

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Simulation Guideline

- Ensure that your computer meets the system requirement:
    - OS: Windows, Linux, or MacOS
    - Processor: Intel Dual Core (Recommended Core i3 and above)
    - RAM 4GB (Recommended 8GB)
    - Disk Space: 2.5 GB (Recommended minimum to have 5GB of free space)
    - Software: PyCharm IDE
- Python 3.8 installed on your computer
- Undertake this Exam Simulation in PyCharm IDE
- [Setting up your Environment](#)

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Simulation Guideline

- Exam Time Limit: 5 hours
- Whatever Learning Resources is Allowed
- Complete the Exam on your Own
- Do not Share your Exam Code or Talk about the Exam Content with Anyone
- Be Aware that the Size of the Dataset and the Saved Model in the .h5 file extension are Big
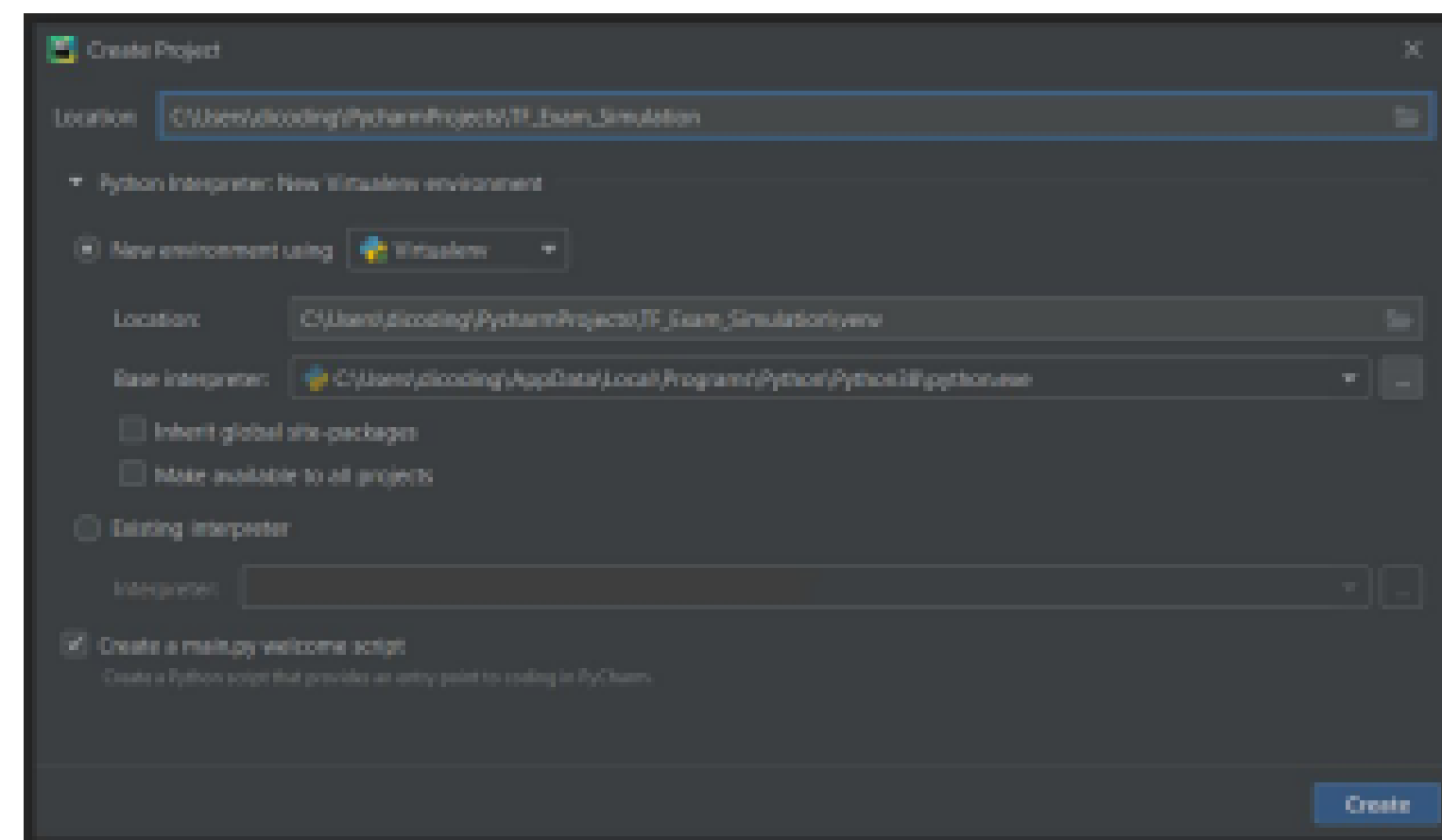
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Simulation Workflow
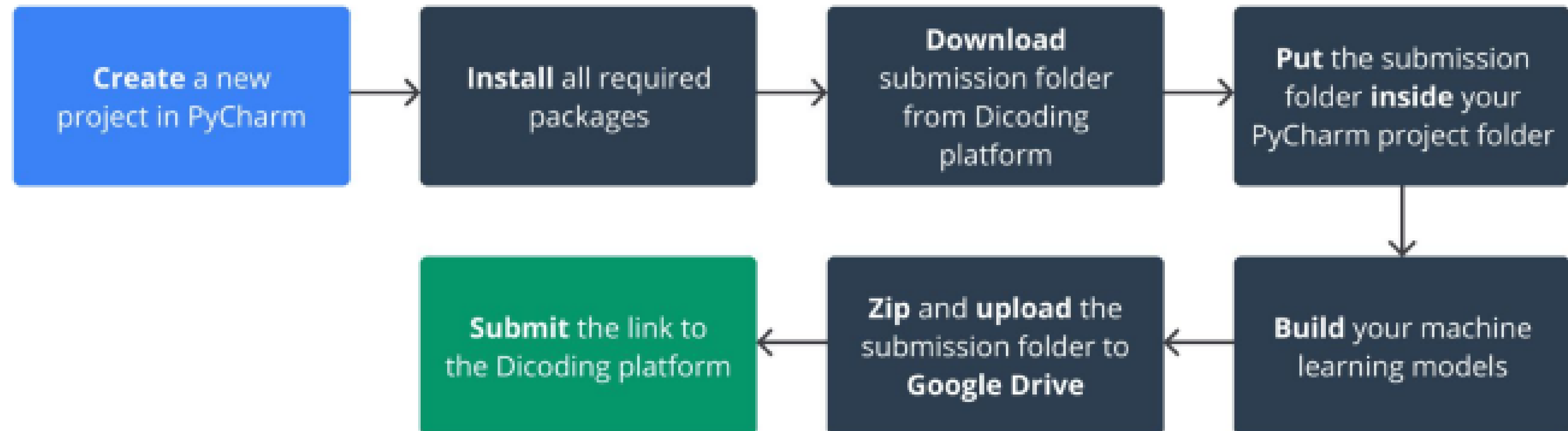
Create a Project in your PyCharm IDE

Open PyCharm and start a new project in PyCharm.

You can name it Exam-Simulation-A or whatever you like.

Make sure that the Base Interpreter is Python 3.8 as shown in the picture.

We don't recommend you to use Python Anaconda as your base interpreter since the real TF exam does not support this.

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Install All Required Packages

You need to install all required libraries (the same libraries used in a real TF Exam Simulation):

- TensorFlow,
- TensorFlow-dataset,
- NumPy,
- pillow,
- urllib3

Refer to this document: Setting Environment for the detailed installation guide.

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Download the Submission Folder

- The Exam Packages are inside a folder (Submission Folder), i.e Submission A, Submission B, and Submission C.
- This folder contains the starter code for each problem.
- Download the folder to your machine.
- Place the Submission Folder Inside your PyCharm Project Folder

Build your Machine Learning Model

- Open each starter code in the submission folder
- Build a machine learning model according to the instructions
- If your machine learning model is built successfully, it will save your model as a .h5 file
- This .h5 file model is automatically saved in the same folder with your .py file

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Compressed (ZIP) the Submission Folder

- Select all of 10 files (5 of code.py and 5 of model.h5)
- Right-click on the Files, then point to Send to and Select Compressed (zipped) folder.
- Your folder structure must be like this:

  Submission_xx.zip
  - \- Problem_xx.py
  - \- Model_xx.h5
  - ...
  - \- Model_xx.h5

- Upload the Submission Folder to your Google Drive
- Then Submit the Link to Dicoding Platform

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Submission Checklist

✅ Submission link could be accessed by our reviewer teams

✅ Submission is in ZIP format

✅ Submission folder contains 5 of .py codes and 5 of .h5 models (1 code and 1 model for each problem)

✅ Meet the requirement of accuracy metrics in each problems

✅ Follow the instructions of each problem

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* please refer to the Candidate Handbook for the details of each category

Exam Tips

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Example Problem 1

```
# PROBLEM 1
#
# Given two arrays, train a neural network model to
match the X to the Y.
# Predict the model with new values of X [-2.0, 10.0]
# We provide the model prediction, do not change the
code.
#
# The test infrastructure expects a trained model that
accepts
# an input shape of [1].
# Do not use lambda layers in your model.
#
# Please be aware that this is a linear model.
# We will test your model with values in a range as
defined in the array to make sure your model is
linear.
#
# Desired loss (MSE) < 1e-4
```

Metrics: Loss (MSE) < 1e-4

Example Problem 2

```
# PROBLEM 2
#
# Build a classifier for the Fashion MNIST dataset.
# The test will expect it to classify 10 classes.
# The input shape should be 28x28 monochrome. Do not
resize the data.
# Your input layer should accept (28, 28) as the input
shape.
#
# Don't use lambda layers in your model.
#
# Desired accuracy AND validation_accuracy > 83%
```

accuracy &
validation_accuracy > 83%

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Example Problem 3

```
# PROBLEM 3
#
# Build a CNN based classifier for Cats vs Dogs
dataset.
# Your input layer should accept 150x150 with 3 bytes
color as the input shape.
# This is unlabeled data, use ImageDataGenerator to
automatically label it.
# Don't use lambda layers in your model.
#
# The dataset used in this problem is originally
published in
https://www.kaggle.com/c/dogs-vs-cats/data
#
# Desired accuracy and validation_accuracy > 72%
```

accuracy &
validation_accuracy > 72%

Example Problem 4

```
# PROBLEM 4
#
# Build and train a classifier for the sarcasm
dataset.
# The classifier should have a final layer with 1
neuron activated by sigmoid.
#
# Do not use lambda layers in your model.
#      > 75%
# Dataset used in this problem is built by Rishabh
Misra (https://rishabhmisra.github.io/publications).
#
# Desired accuracy and validation_accuracy > 75%
```

accuracy &
validation_accuracy > 75%

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Example Problem 5

```
# PROBLEM 5
#
# Build and train a neural network model using the
Daily Min Temperature.csv dataset.
# Use MAE as the metrics of your neural network model.
# We provided code for normalizing the data. Please do
not change the code.
# Do not use lambda layers in your model.
#
# The dataset used in this problem is downloaded from
https://github.com/jbrownlee/Datasets
#
# Desired MAE < 0.19 on the normalized dataset.
```

MAE < 0.19 on the normalized dataset

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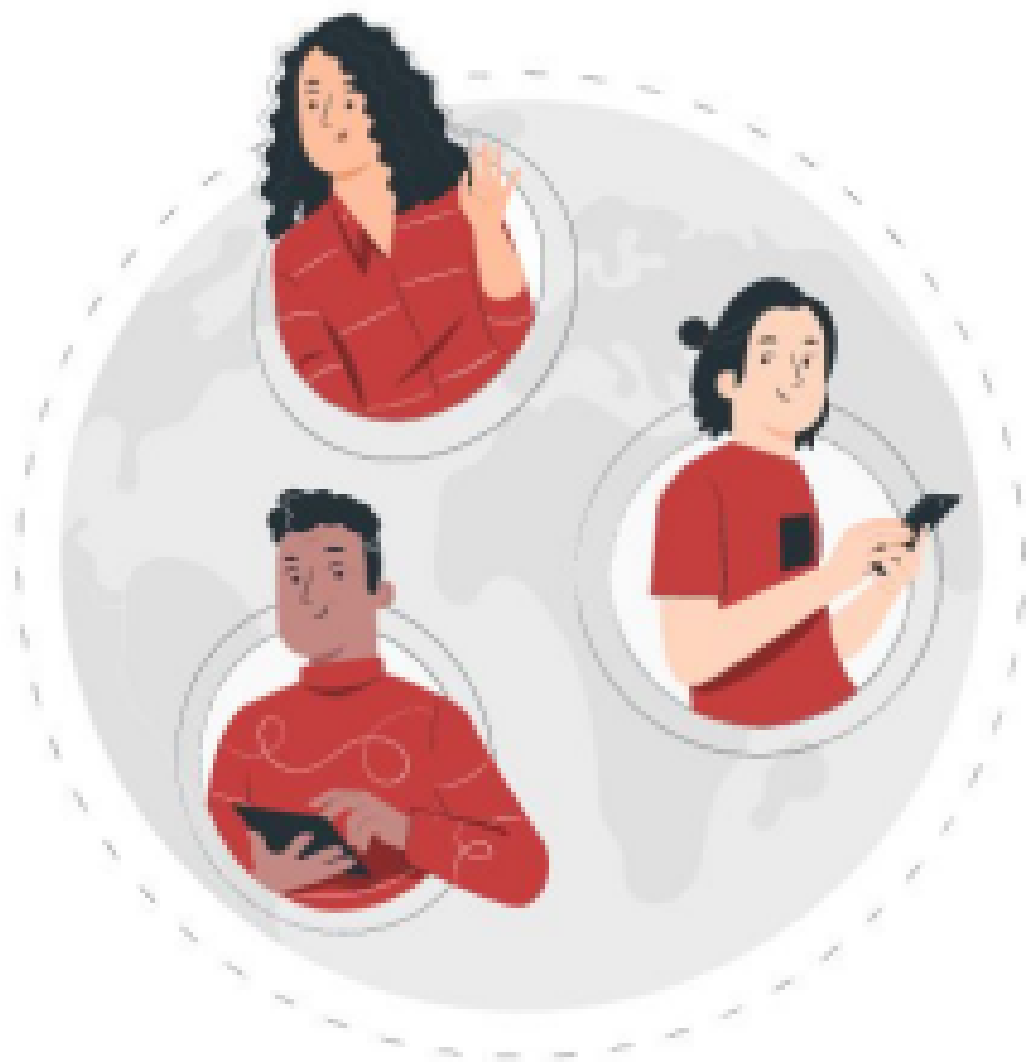
You've learned everything you need to know to take the **TensorFlow Developer certification exam**. Now, are you ready to **take the exam**?

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"Whatever it takes to finish things, finish. You will learn more from a **glorious failure** than you ever will from something you **never finished.**"

— Neil Gaiman

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