

Introduction to TensorFlow and Keras



TensorFlow

What are TensorFlow?

TensorFlow is general purpose **Python programming language** based open-source end-to-end platform Developed by Google Brain Team for creating **Machine Learning applications**.

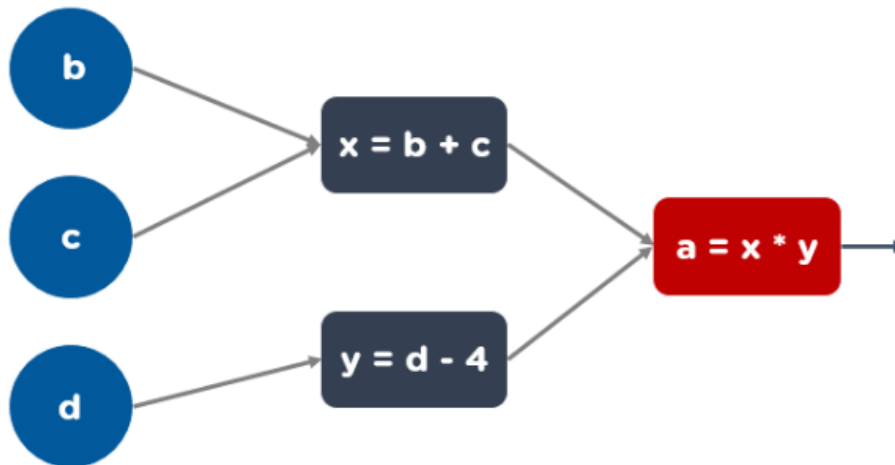
It is one of the most popular programming platform for high dimensional computation and implementing complex deep learning models.



TensorFlow

$$\begin{bmatrix} [1 & 2] & [3 & 4] \\ [5 & 6] & [7 & 8] \end{bmatrix}$$

Tensor



Data Flow Graph



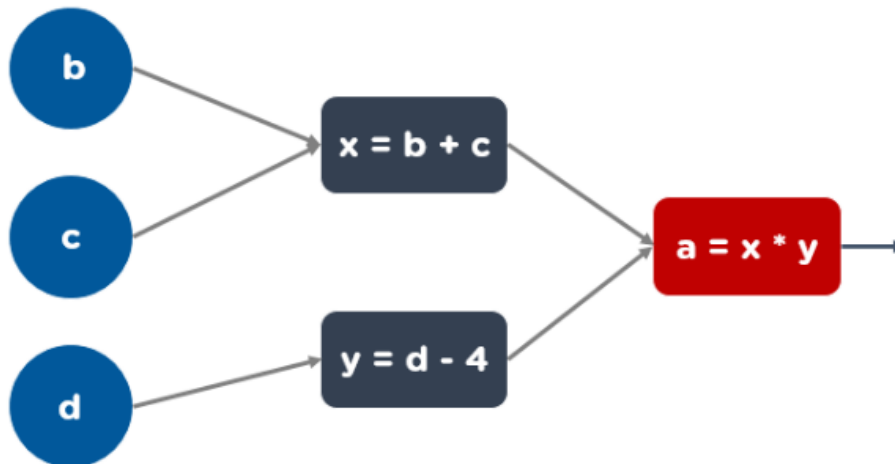
TensorFlow

Tensor + Data Flow Graph



Tensor

+



TensorFlow 2.0

- Eager execution, allowing to build the models and run instantly.
- Keras, high-level API for different Deep Learning Models, is incorporated with TensorFlow 2.0.
- Using Keras API, building complex deep learning models becomes a trivial task
- The size of the program becomes much smaller in 2.0 as compared to 1.0



TensorFlow



Keras

Different Deep Learning Frameworks



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However, because of open source availability, easy to use, and high portability other programming platforms, we will be using TensorFlow and Keras.

At the end of this module, you will learn

- **How to write algebraic programs using TensorFlow?**
- **How to visualize the computational flow using Data Flow Graph**
- **How to implement neural networks?**
- **How to estimate parameters?**
- **How to simplify implementation of neural models using Keras?**

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