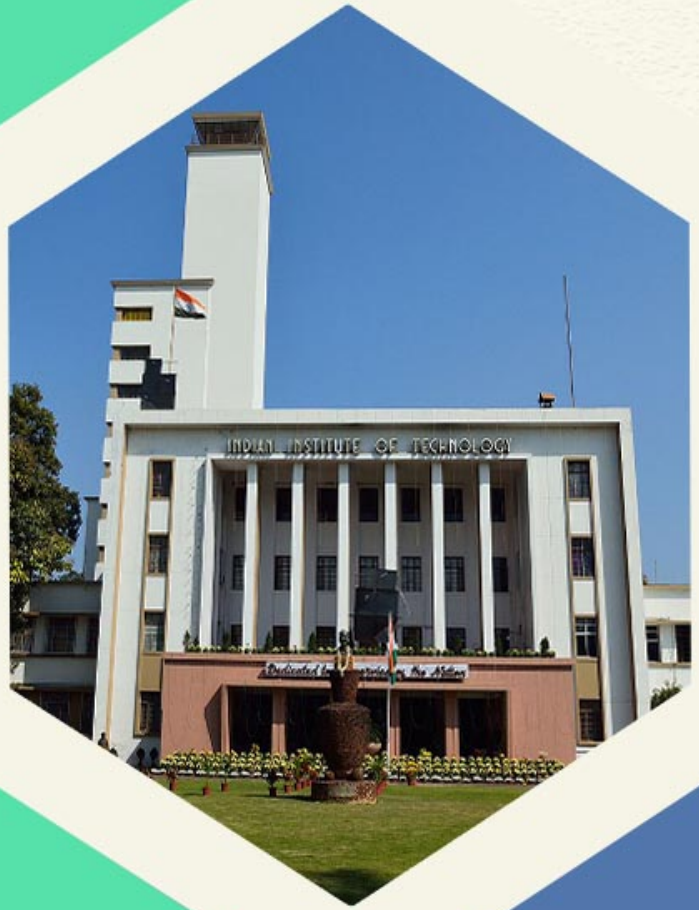


NPTEL ONLINE CERTIFICATION COURSES

Blockchain and its applications

Bishakh Chandra Ghosh

Department of Computer Science & Engineering
Indian Institute of Technology Kharagpur

Lecture 34: Hyperledger Fabric 1

CONCEPTS COVERED

- Hyperledger Foundation
- Hyperledger Fabric Introduction
- Fabric Installation

KEYWORDS

- Hyperledger
- Fabric
- Permissioned Network

Hyperledger Foundation

HYPERLEDGER
FOUNDATION

https://www.hyperledger.org/

- Open source community - focused on **enterprise-grade blockchain deployments**.
- Home for various distributed ledger frameworks including: Hyperledger Fabric, Sawtooth, Indy, etc.

Hyperledger Foundation

HYPERLEDGER FOUNDATION

https://www.hyperledger.org/

- Open source community - focused on **enterprise-grade blockchain deployments**.
- Home for various distributed ledger frameworks including: Hyperledger Fabric, Sawtooth, Indy, etc.

  - Different companies / organizations want to collaborate
  - Closed group: members know each other
  - Do not fully trust each other
  - Distributed shared ledger – based on permissioned consensus

Hyperledger Foundation Projects

Tooling to serve as operational dashboard for Blockchains

Tooling to invoke, deploy or query blocks

Permissioned Enterprise Blockchain

Permissioned, EVM Based, BFT Consensus

Identity Management

Hyperledger Fabric

- **Open source,** enterprise-grade
- **Permissioned** DLT platform

- **Modular blockchain framework**
  - Designed for developing blockchain-based products, solutions, and applications using plug-and-play components that are aimed for use within private enterprises.
- Pluggable Components: Including **consensus and membership services**.
- **Smart contracts in general purpose languages** such as **Java, Go and Node.js**.

https://hyperledger-fabric.readthedocs.io/

Install Hyperledger Fabric - Prerequisites

Install Prerequisites

- **Git**
  - https://git-scm.com/downloads
- **cURL**
  - https://curl.se/download.html
- **Docker** (Docker version 17.06.2-ce or greater is required)
  - https://docs.docker.com/engine/install/
- **Go**
  - https://golang.org/doc/install
- **Docker Compose** (Docker Compose version 1.14.0 or greater installed)
  - https://docs.docker.com/compose/install/

https://hyperledger-fabric.readthedocs.io/en/release-2.2/prereqs.html

Install Hyperledger Fabric - Prerequisites

Install Prerequisites

- **Git**
  - `sudo apt install git`
- **cURL**
  - `sudo apt install curl`
- **Go**
  - wget https://golang.org/dl/go1.17.3.linux-amd64.tar.gz
  - sudo rm -rf /usr/local/go
  - sudo tar -C /usr/local -xzvf go1.17.3.linux-amd64.tar.gz

https://hyperledger-fabric.readthedocs.io/en/release-2.2/prereqs.html

Install Hyperledger Fabric - Prerequisites

Install Prerequisites

Docker

```
sudo apt install ca-certificates gnupg lsb-release

curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg
--dearmor -o /usr/share/keyrings/docker-archive-keyring.gpg

echo "deb [arch=$(dpkg --print-architecture)
signed-by=/usr/share/keyrings/docker-archive-keyring.gpg]
https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable"
| sudo tee /etc/apt/sources.list.d/docker.list > /dev/null

sudo apt update
sudo apt install docker-ce docker-ce-cli containerd.io

sudo groupadd docker
sudo usermod -aG docker $USER
```

https://hyperledger-fabric.readthedocs.io/en/release-2.2/prereqs.html

Install Hyperledger Fabric - Prerequisites

Install Prerequisites

Docker Compose

```
sudo curl -L
"https://github.com/docker/compose/releases/download/1.29.2/docker-
compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose

sudo chmod +x /usr/local/bin/docker-compose
```

https://hyperledger-fabric.readthedocs.io/en/release-2.2/prereqs.html

Install Hyperledger Fabric 2.2

Install Samples, Binaries, and Docker images

Determine a location on your machine where you want to place the *fabric-samples* repository and enter that directory in a terminal window.

```
mkdir fabric
cd fabric
curl -sSL https://bit.ly/2ysbOFE | bash -s -- <fabric_version> <fabric-ca_version>
```

Example:

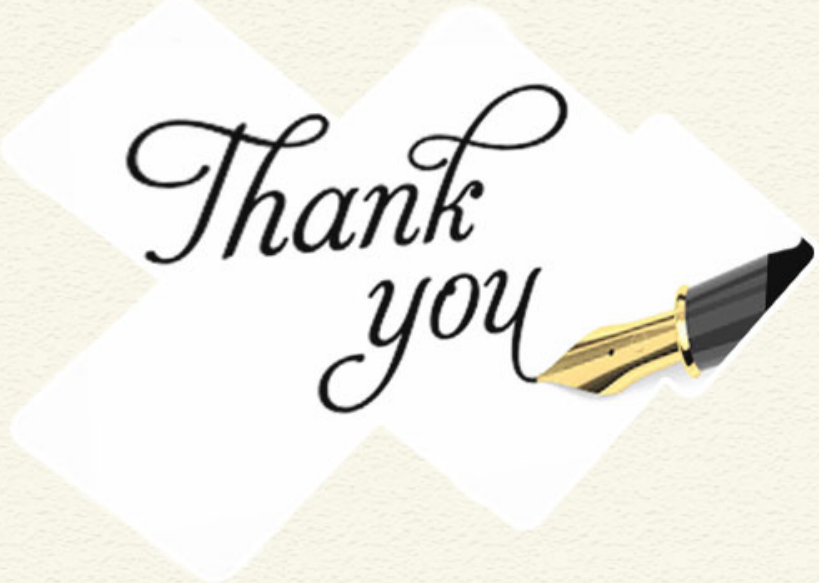
```
curl -sSL https://bit.ly/2ysbOFE | bash -s -- 2.2.4 1.5.2
```

```
export PATH=<path to download location>/bin:$PATH
```

https://hyperledger-fabric.readthedocs.io/en/release-2.2/prereqs.html

Conclusion

- Hyperledger Foundation
- Enterprise blockchain – Fabric
- Installation of Hyperledger Fabric


Thank
you