Module 3

Development Environment

Overview

This module will explore the Corda Community, available resources, toolchain and walk through running some demos.

Learning outcomes:

- Learn about the Corda toolchain
- Set up development environment and resolve common issues
- Run some sample CorDapps
- Understand what resources are at your disposal

Repositories

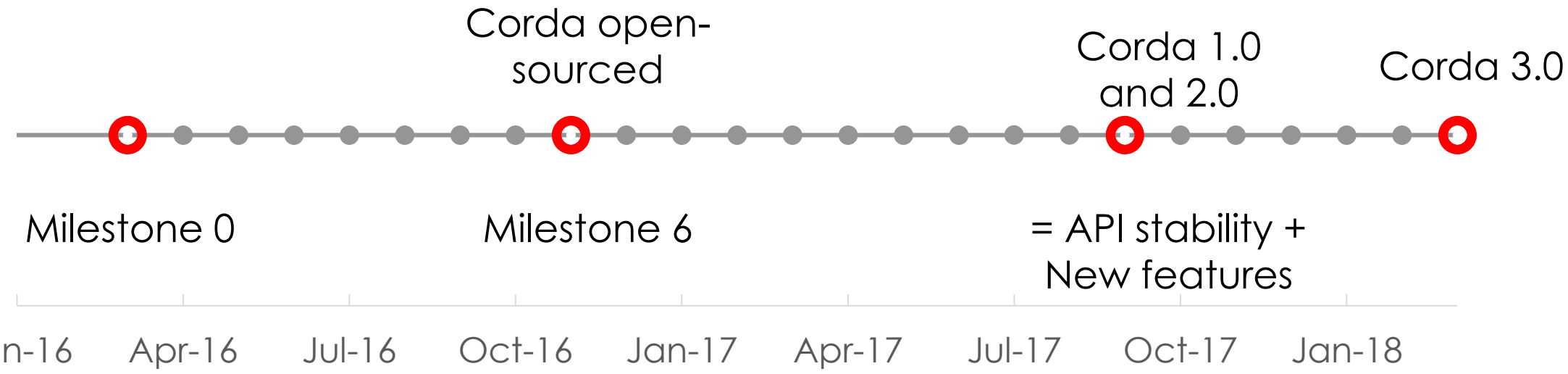
- The Corda code is hosted on Github:

https://github.com/corda

- Four key repositories:
  - **corda**: The open-source Corda platform code
  - **cordapp-template (Java or Kotlin)**: A boilerplate CorDapp in both languages to kick-start CorDapp development
  - **cordapp-tutorial**: A simple example CorDapp

Milestones

- Corda is updated through monthly “Milestone” releases
- R3 operate a time based release process
- Currently on **v3.0**



Snapshots

- Throughout the month, the R3 platform team merge reviewed pull requests to master
- Building the **HEAD** of master results in a **SNAPSHOT** release
- SNAPSHOTS are numbered one higher than the last milestone
- Therefore, as we are on v3.0, new snapshots are created as **3.1-SNAPSHOT**
- Snapshots are the **latest version** of the code base
- Snapshots can be unstable!

Prefer milestones

- Unless you require new the functionality offered by a SNAPSHOT release, **always use the latest MILESTONE release**
- Milestones are thoroughly tested before release
- Although SNAPSHOTS are continuously tested, sometimes mistakes slip through the net

Always remember to check out the latest MILESTONE before deploying your CorDapps or running the demos.

Choosing a release

- Milestone releases are available as branches in all repos
- Check out a given Milestone using:

```
git checkout release-M[**MILESTONE-NUMBER**]
```

- Milestones can also be enumerated with:

```
git tag
```

- Corda Milestones are published to Maven, so Corda does not need to be installed to compile CorDapps
- SNAPSHOTs are always on master

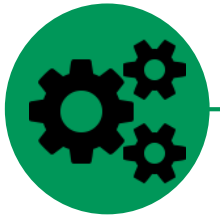
Toolchain

The following is required run/develop CorDapps:

- **JVM** Oracle JDK 8 (latest version ideally – u131 min)
- **IDE** IntelliJ IDEA Community Edition 2017.2.x
- **Source control** Git
- **Build system** Gradle

CorDapps can be written in any JVM language although Corda itself is written in **Kotlin**, which has excellent Java interoperability

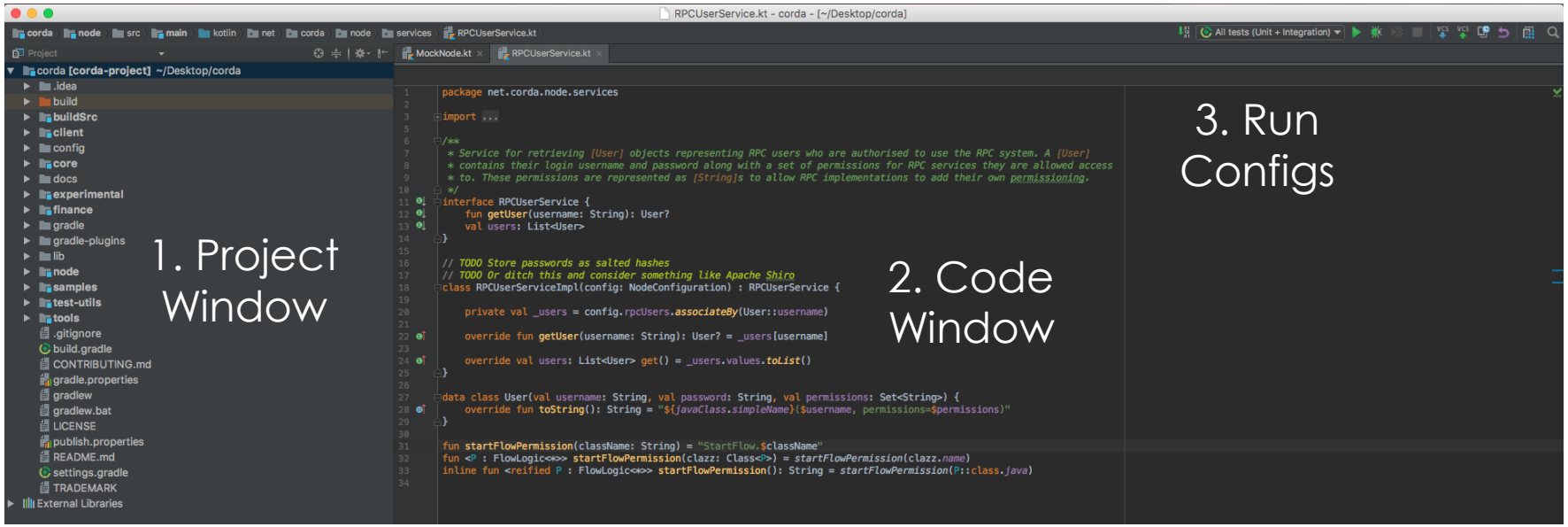
Getting set up - instructions



Goal	Get your machine set up for Corda development
Steps	1. Follow the instructions on getting set up: https://docs.corda.net/quickstart-index.html 2. Clone the main Corda repo 3. Check out v3.0 (“release-V3.0”) 4. Open the main Corda repo in IDEA intelliJ 5. If you encounter any issues, refer to the Troubleshooting page: https://docs.corda.net/troubleshooting.html

IntelliJ IDEA

- The IDE is divided into a project window and a code window
- If the project window is hidden, show it using ⌘1/Alt + 1
- Demos and debugging can accessed via “Run Configs” menu



Gradle

- Corda and CorDapps are **built using Gradle**
- If there are no folders or modules in the IDEA project window, the **Gradle project must first be imported**
- Instructions on how to do this can be found here:

https://docs.corda.net/troubleshooting.html#no-source-files-are-present

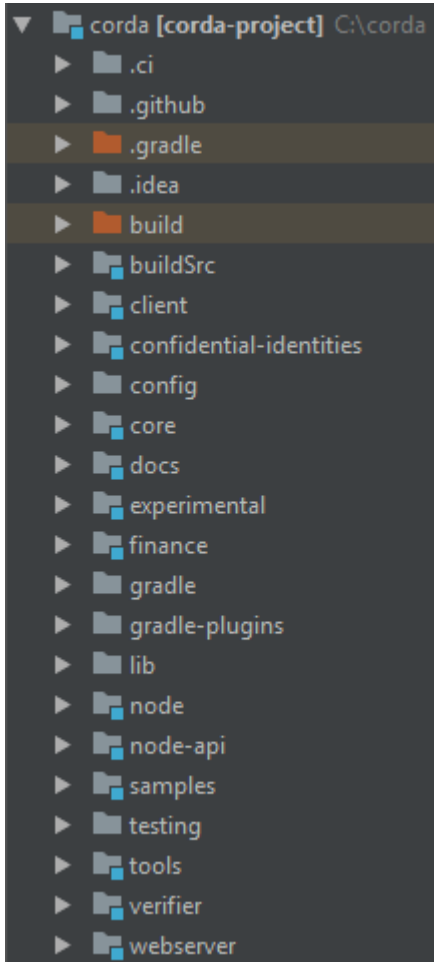
Key IDEA shortcuts

IDEA provides some useful shortcuts:

- **Search everywhere (double-press Shift):** Allows you to find the declarations for classes, functions, etc. by name

- **See declaration** (**Ctrl+B and click**/**⌘B and click**): Allows you to navigate to the declaration of a class or function to see its fields, methods, params, etc.

The Corda repository

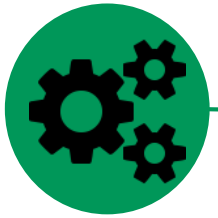


- Gradle plugins source code
- Security flows (new from v1.0)
- Corda core classes
- The platform documentation (also on docs.corda.net)
- The Gradle plugins used to deploy Corda nodes
- Node implementation internals (non-public APIs)
- Sample CorDapps, demonstrating cash, oracles…
- Testing DSLs and utilities

Exploring the Corda repo

- There are quite a few modules defined in the main Corda repo!
- We'll now spend a bit of time walking through the content of the main Corda repo and the CorDapp template repo
- There is a lot going on – we can help you focus on the most relevant areas

Running a sample CorDapp - instructions



Goal	Run the Corda Example
Steps	1. Follow the instructions on running the Corda example demo here: https://docs.corda.net/tutorial-cordapp.html 2. Run the demo from both IDEA and the command line 3. If you encounter any issues, refer to the Troubleshooting page: https://docs.corda.net/troubleshooting.html or ask us!

Resources

1. **Documentation (https://docs.corda.net/)**
   - Has tutorials (e.g. https://docs.corda.net/tutorial-contract.html)
   - API reference (https://docs.corda.net/api/javadoc/index.html)
2. **Slack (https://slack.corda.net/)**
   - Great for quick questions about design and implementation
   - Our entire dev team hangs out there
3. **Stack Overflow (https://stackoverflow.com/questions/tagged/corda)**
   - Replaces "discourse" for technical Q&A
   - Discourse is still used for non-tech discussions
   - Only recently started migrating; not many questions there yet
4. **Corda.net**
   - Key announcements (e.g. Milestone releases)
   - Blog posts on key topics

Summary

- Corda release process
- Milestones versus Snapshots
- The available repos
- Gradle – build automation
- IntelliJ IDE
- Running a demo