# 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

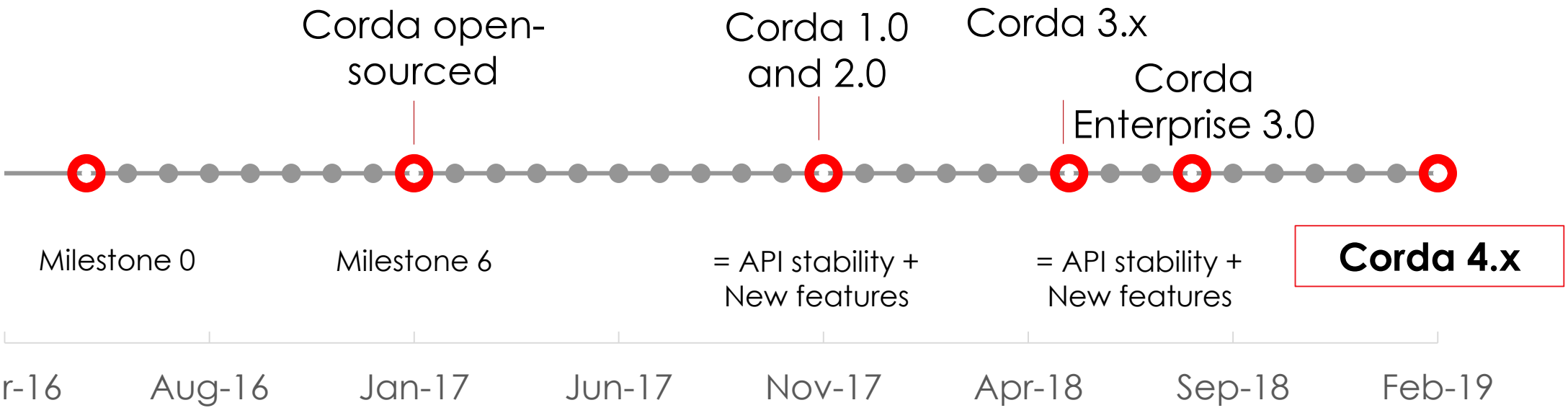
- The Corda code is hosted on Github:

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-example**: A simple example CorDapp

# Releases

- Corda no longer follows a basis of monthly releases following Corda v1.0
- Currently on **v4.x**



# 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 v4.x, new snapshots are created as 5.**x-SNAPSHOT**
- Snapshots are the **latest version** of the code base
- Snapshots can be unstable!

# Prefer releases

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

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

# Choosing a release

- Releases are available as branches in all repos
- Check out a given stable Release using:

```
git checkout release-V[**VERSION-NUMBER**]
```

- Releases can also be enumerated with:

```
git tag
```

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

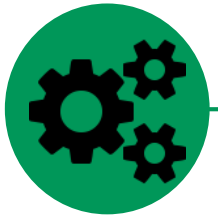
# Toolchain

The following is required run/develop CorDapps:

- **JVM** Oracle JDK 8 (latest version ideally – u171 min)
- **IDE** IntelliJ IDEA Community Edition 2017.2.x and 2018.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

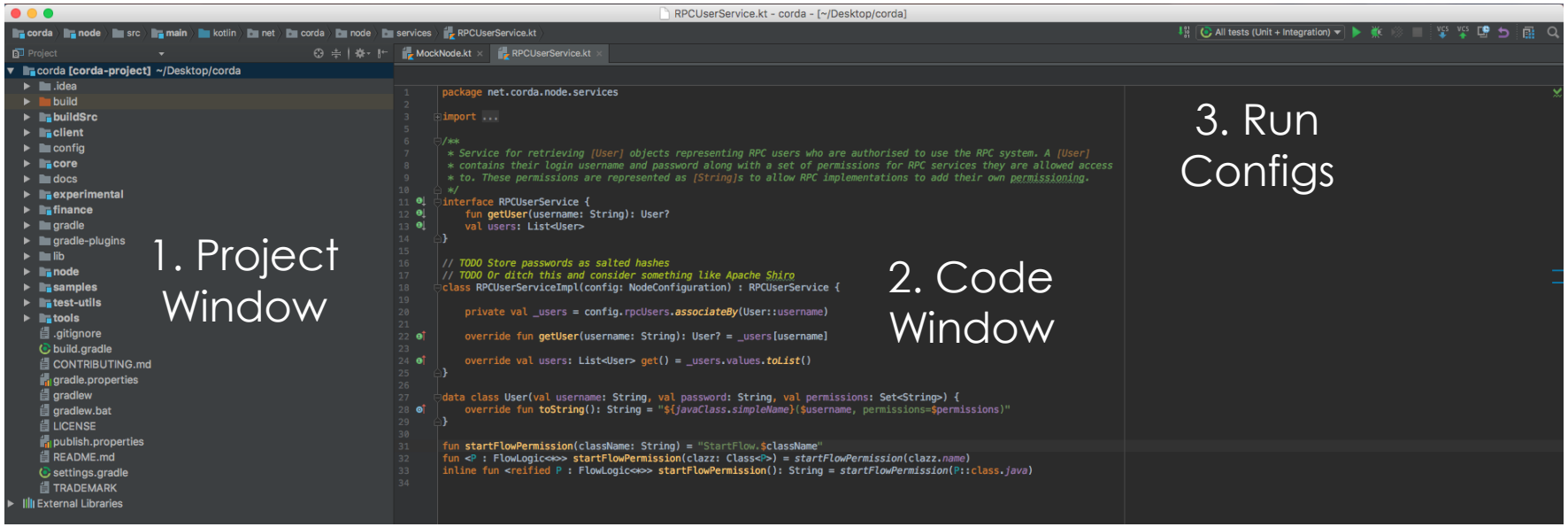
# Getting set up - instructions



| | |
|---|---|
| **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<br>2. Clone the main Corda repo<br>3. Check out v4.x ("release-V4.x")<br>4. Open the main Corda repo in IDEA intelliJ<br>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

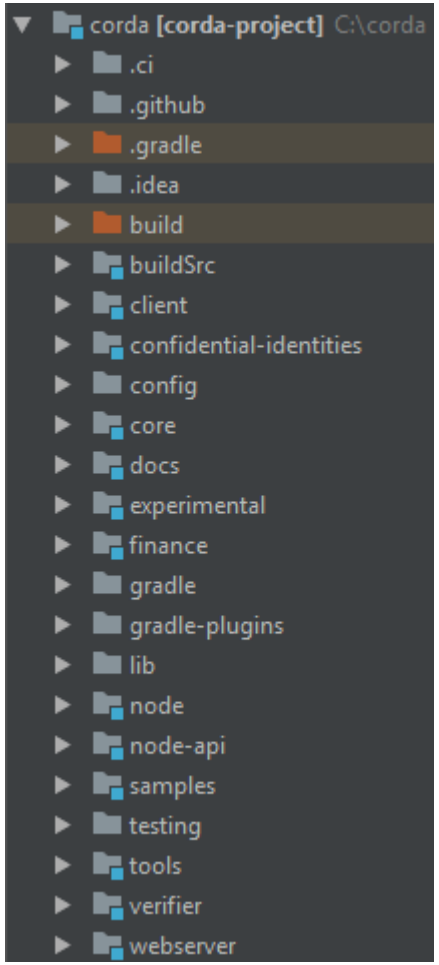
# Key IDEA shortcuts

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

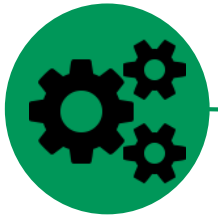



- Gradle plugins source code
- Security flows (new from v1.0)
- Corda core classes
- The platform documentation (also on docs.corda.net)
- The Gradle plugins used to deploy Corda nodes
- Node implementation internals (non-public APIs)
- Sample CorDapps, demonstrating cash, oracles…
- Testing DSLs and 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<br>2. Run the demo from both IDEA and the command line<br>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. Releases)
   - Blog posts on key topics

# Summary

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