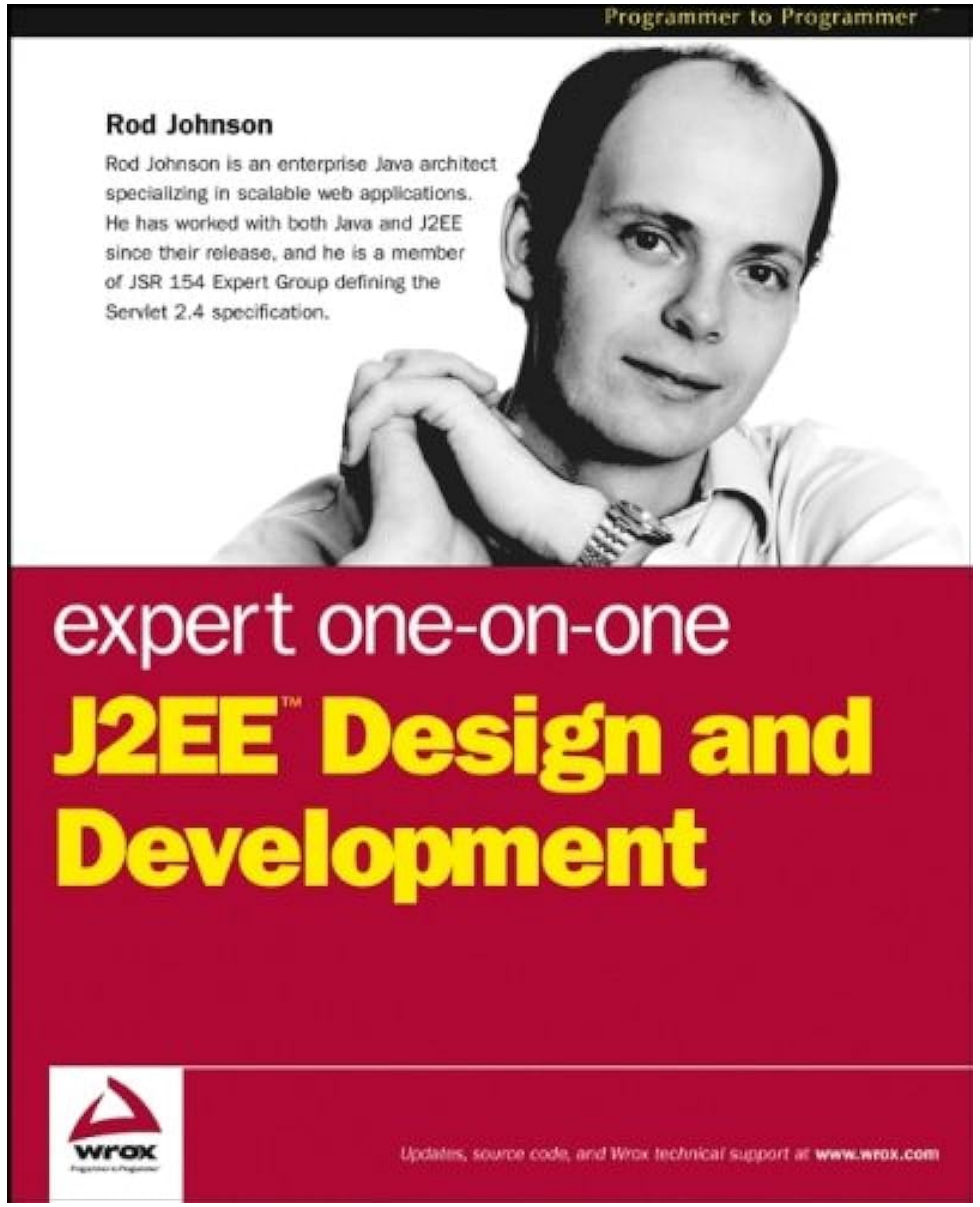
FAST DEVELOPMENT

WITH SPRING ECOSYSTEM

Long Tran - Sep 14th, 2023

SPRING HISTORY

The Beginnings



Programmer to Programmer™

Rod Johnson

Rod Johnson is an enterprise Java architect specializing in scalable web applications. He has worked with both Java and J2EE since their release, and he is a member of JSR 154 Expert Group defining the Servlet 2.4 specification.

expert one-on-one

J2EE™ Design and Development

wrox

Updates, source code, and Wrox technical support at www.wrox.com

October 2002, published by Wrox

- Proposed a simpler solution based on POJO and DI.
- Built high quality, scalable application without using EJB.
- It was an instant hit.
- It was used by a lot of developers.

SPRING HISTORY

Spring is Born

Juergen Hoeller

Yann Caroff

spring®

Rob Johnson

SPRING HISTORY

First Spring Version

2003

2004

2006

Version 0.9

In June 2003, spring 0.9 was released under Apache 2.0 license.

Version 1.0

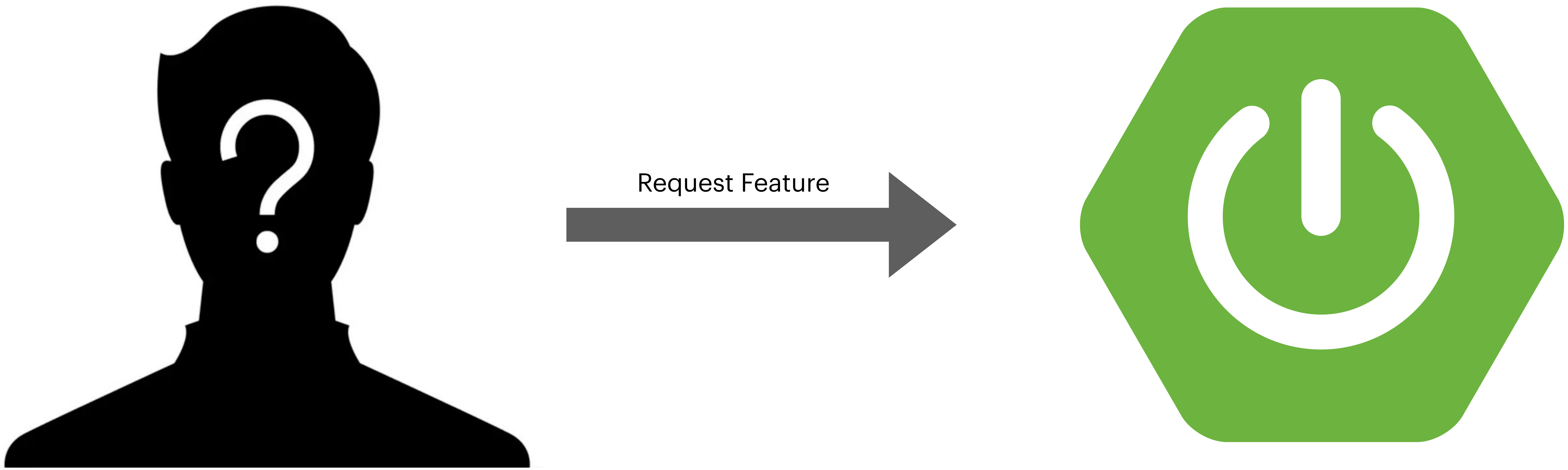
In March 2004, spring 1.0 was released. Interestingly, even before 1.0 release, Spring was widely adopted by developers.

Version 2.0

Spring 2.0 was released in October 2006 and by that time Spring downloads crossed the 1 million mark.

SPRING HISTORY

History of Spring Boot



Request Feature

Mike Youngstrom

In April 2014,
Spring Boot 1.0.0 was released

SPRING HISTORY

Features of Spring Boot

- Create stand-alone Spring applications
- Embed Tomcat, Jetty or Undertow directly (no need to deploy WAR files)
- Provide opinionated 'starter' dependencies to simplify your build configuration
- Automatically configure Spring and 3rd party libraries whenever possible
- Provide production-ready features such as metrics, health checks, and externalized configuration
- Absolutely no code generation and no requirement for XML configuration

SPRING BOOT USAGE

What companies are using it?

Netflix

Netflix uses Spring Boot for building its microservices. With Spring Boot, they are able to create scalable and fault-tolerant services.

Alibaba

Alibaba uses Spring Boot for its e-commerce platform. Spring Boot's simplicity and flexibility allow Alibaba to develop and deploy applications quickly.

SPRING BOOT USAGE

What companies are using it?

LinkedIn

LinkedIn uses Spring Boot for its real-time messaging platform. Spring Boot's robustness and high performance make it the perfect fit for such critical applications.

Uber

Uber uses Spring Boot for their driver and rider applications. Spring Boot's modular design enables Uber to develop and maintain its applications easily.

BUILDING APPLICATION

MEET OUR TEAM

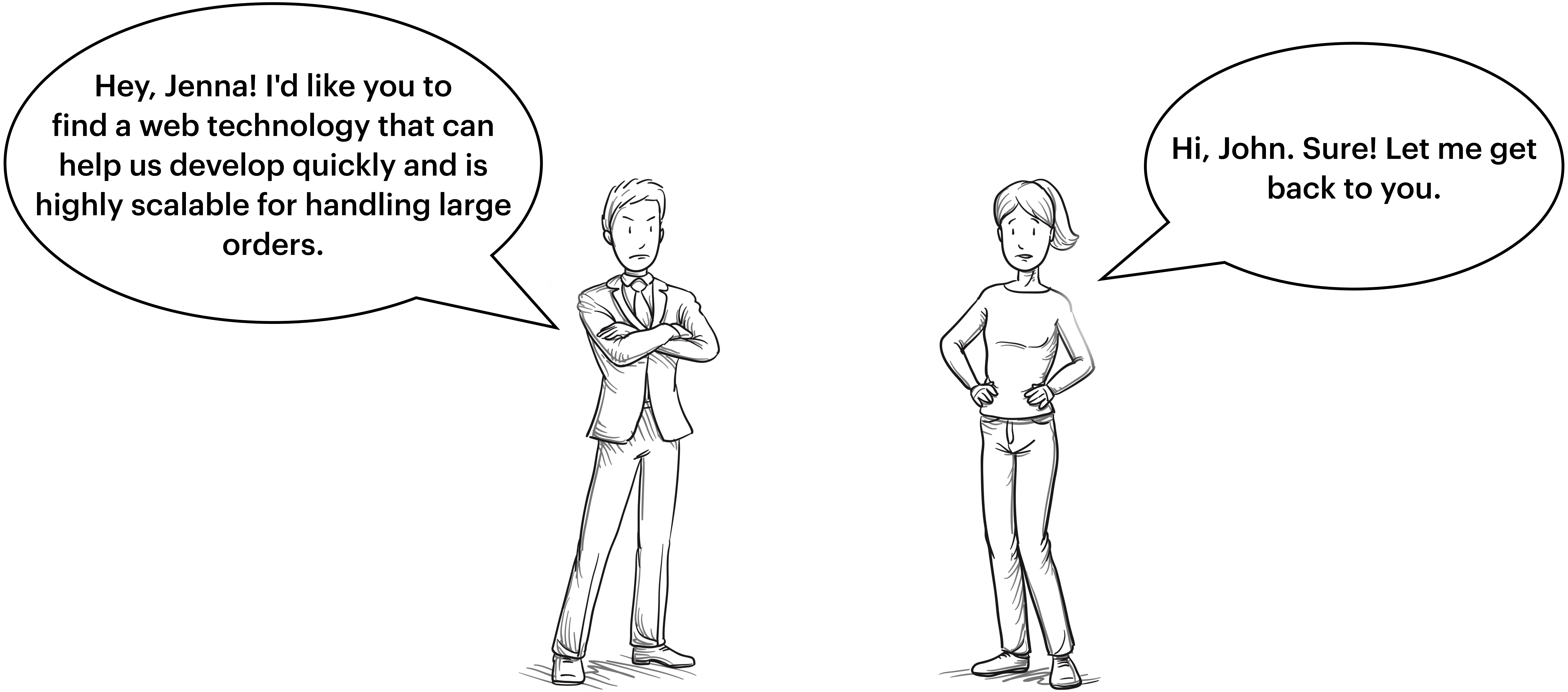
Hi, I’m John. I’m a PO trying to start up an online bookstore.
Hello, I’m Jenna. I’m a programmer. It’s very nice to meet you!

John - Product Owner

Jenna - Eager Programmer

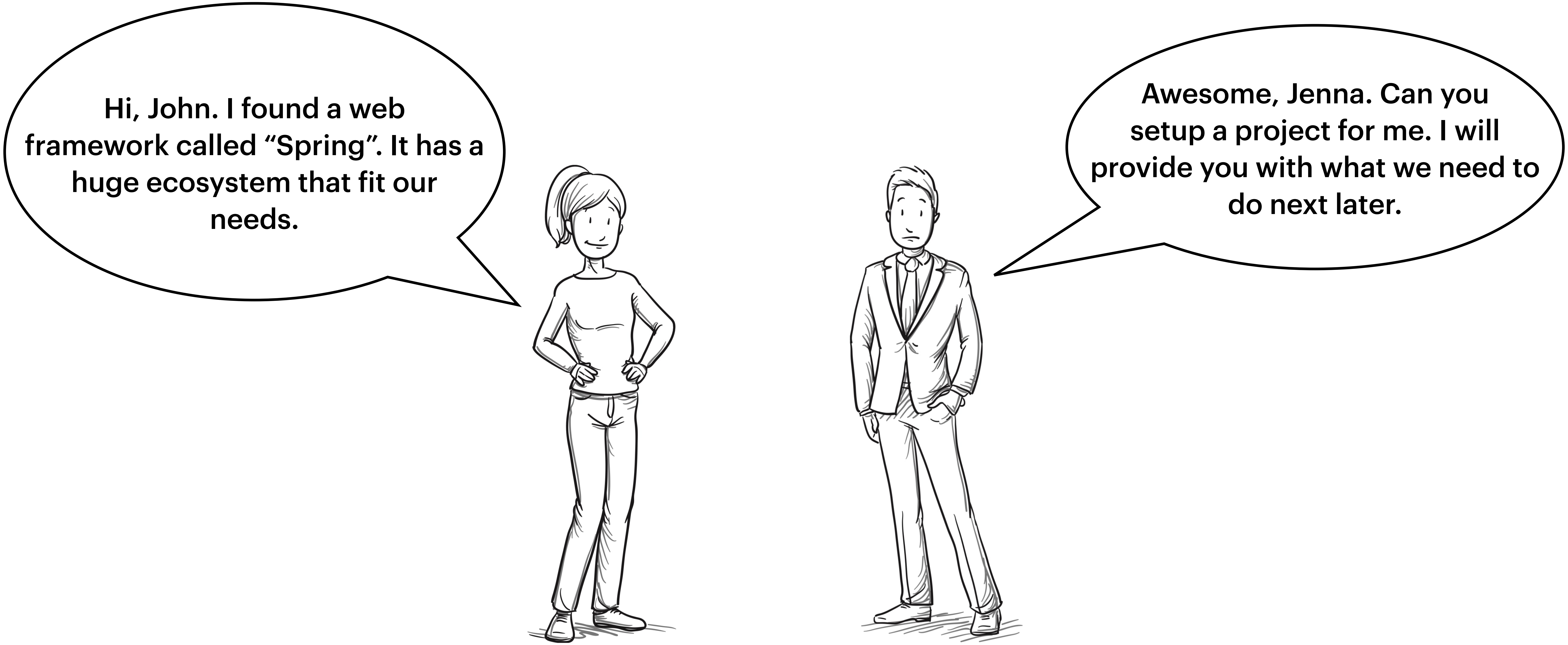
BUILDING APPLICATION

TASK 1: RESEARCH TECHNOLOGY


Hey, Jenna! I'd like you to find a web technology that can help us develop quickly and is highly scalable for handling large orders.
Hi, John. Sure! Let me get back to you.

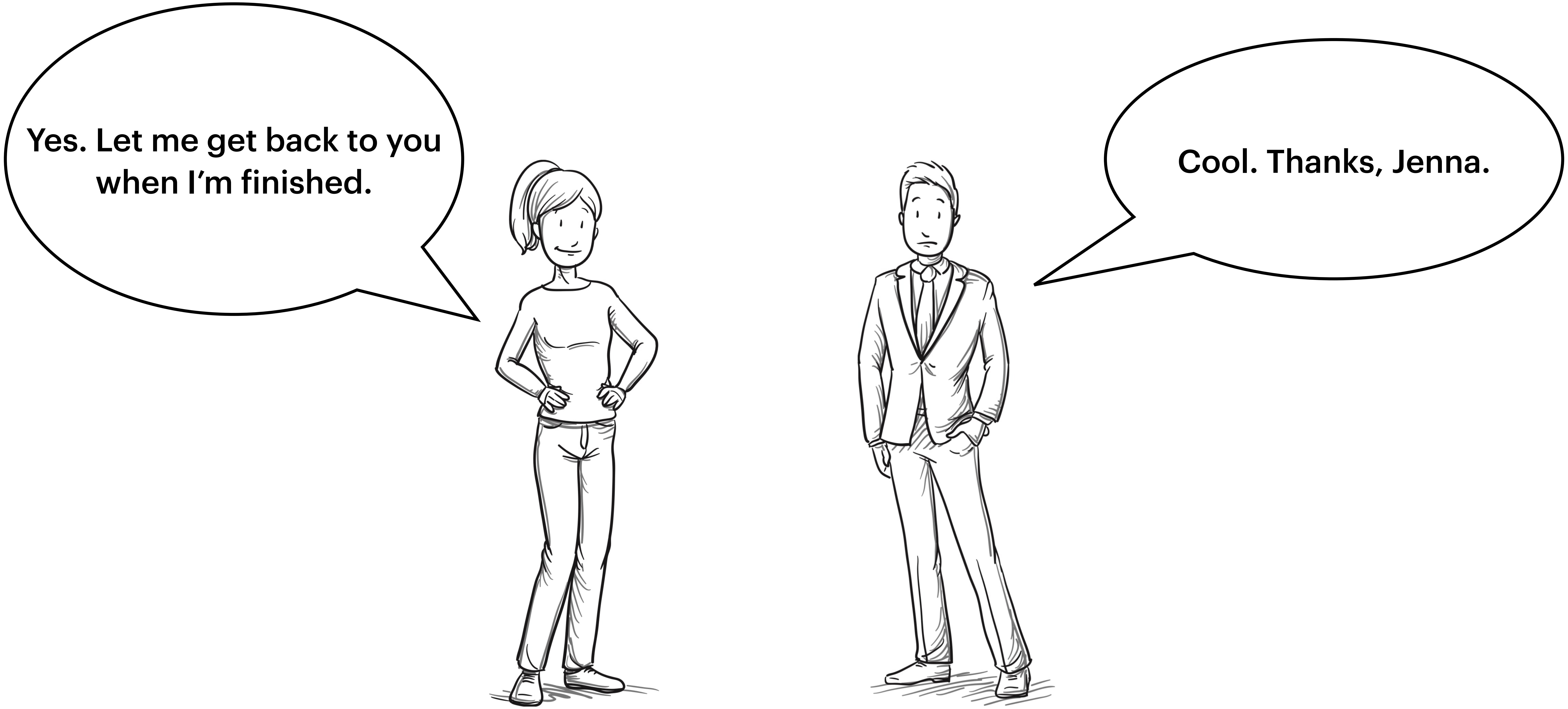
BUILDING APPLICATION

TASK 1: RESEARCH TECHNOLOGY


Hi, John. I found a web framework called “Spring”. It has a huge ecosystem that fit our needs.
Awesome, Jenna. Can you setup a project for me. I will provide you with what we need to do next later.

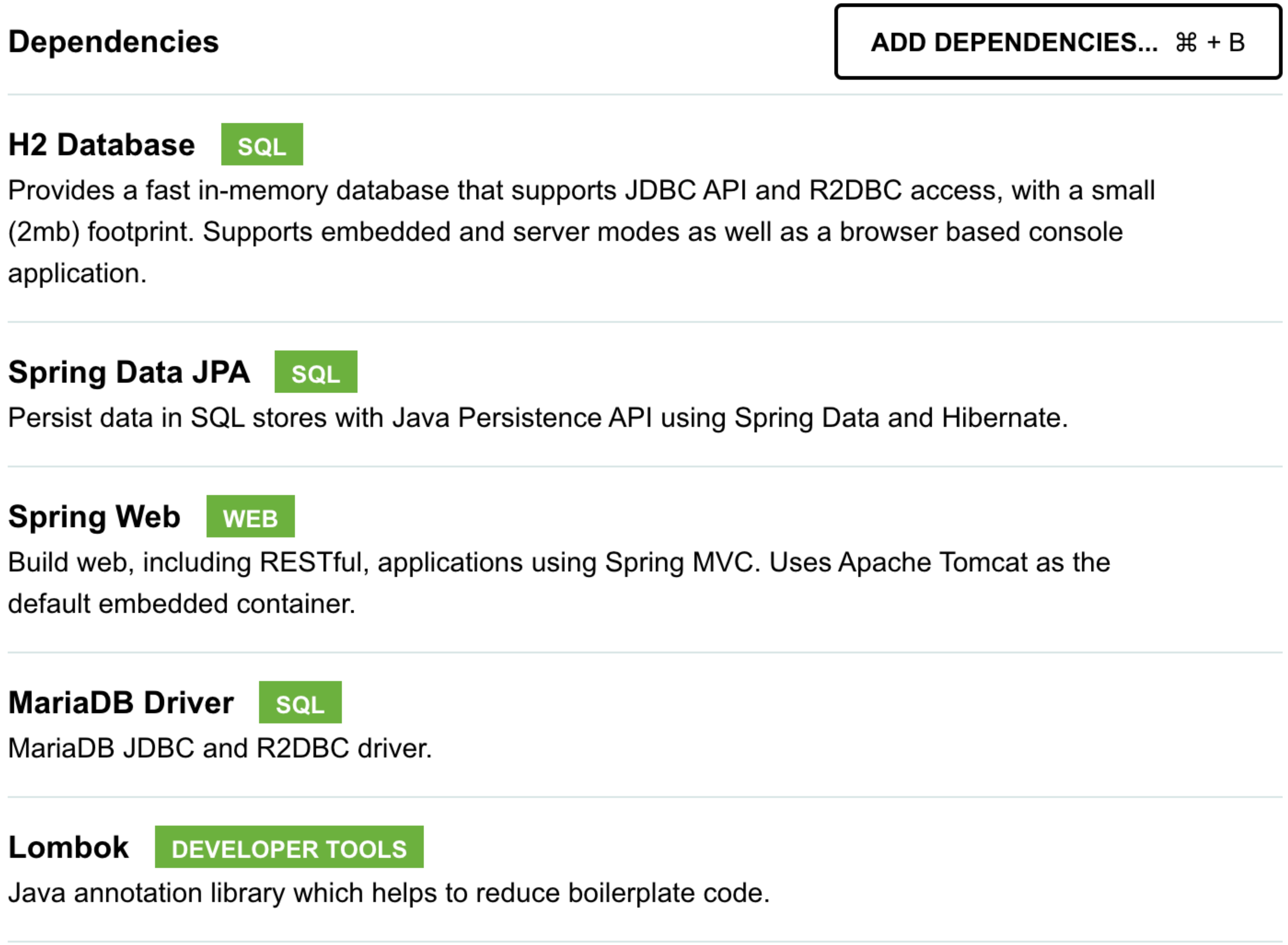
BUILDING APPLICATION

TASK 2: SETUP A PROJECT



BUILDING APPLICATION

What Jenna did?



Dependencies

H2 Database SQL

Provides a fast in-memory database that supports JDBC API and R2DBC access, with a small (2mb) footprint. Supports embedded and server modes as well as a browser based console application.

Spring Data JPA SQL

Persist data in SQL stores with Java Persistence API using Spring Data and Hibernate.

Spring Web WEB

Build web, including RESTful, applications using Spring MVC. Uses Apache Tomcat as the default embedded container.

MariaDB Driver SQL

MariaDB JDBC and R2DBC driver.

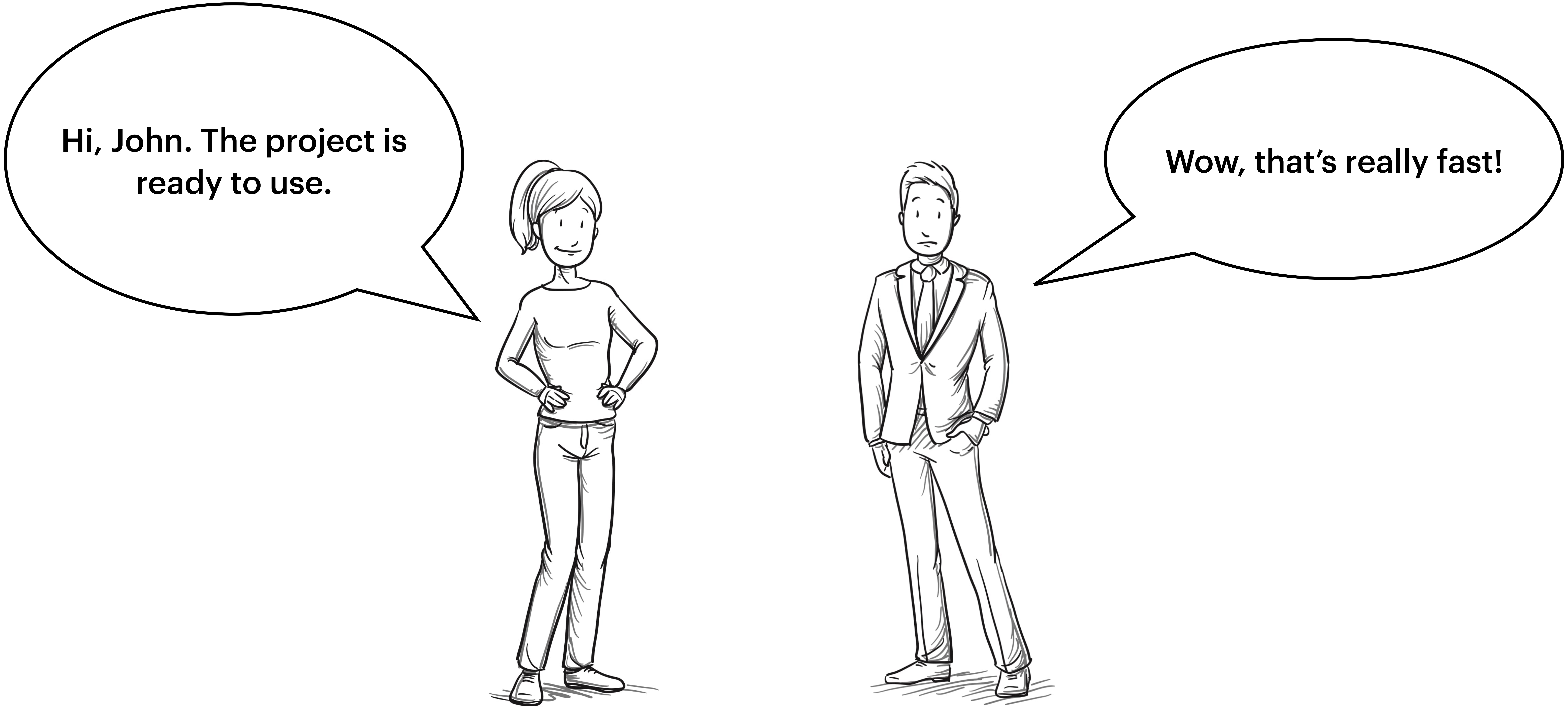
Lombok DEVELOPER TOOLS

Java annotation library which helps to reduce boilerplate code.

start.spring.io

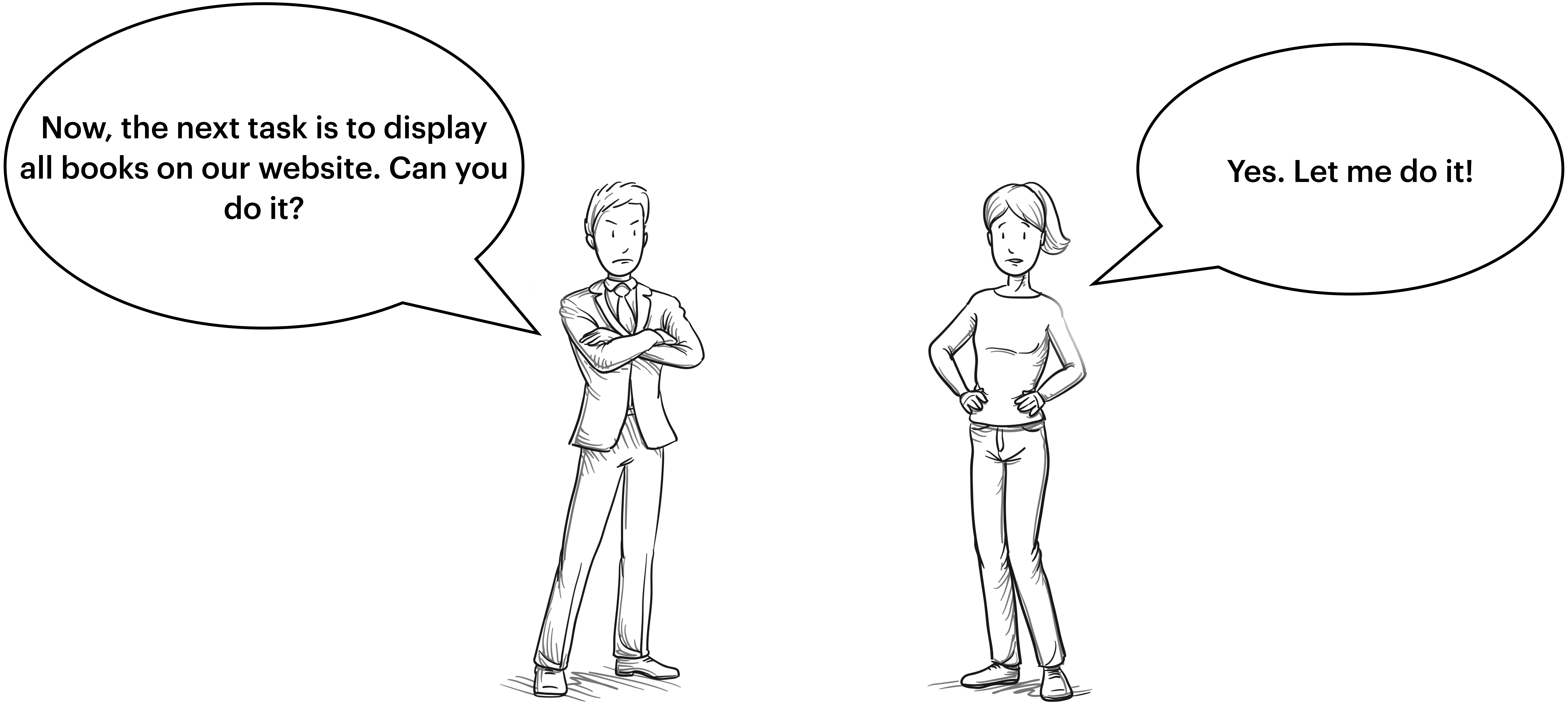
BUILDING APPLICATION

TASK 2: SETUP A PROJECT



BUILDING APPLICATION

TASK 3: DISPLAY ALL BOOKS


Now, the next task is to display all books on our website. Can you do it?
Yes. Let me do it!

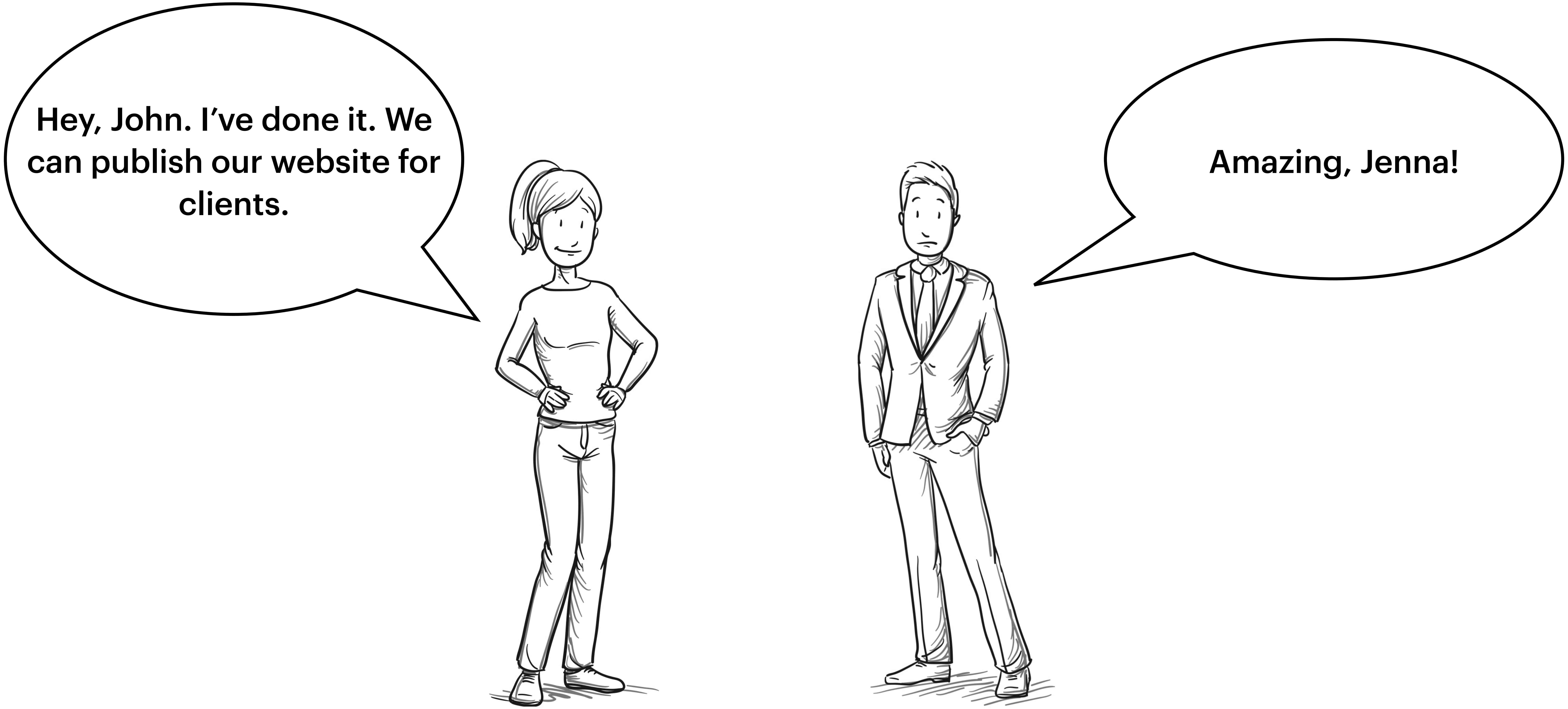
BUILDING APPLICATION

What Jenna did?

- Add a book entity class.
- Create database and insert book data.
- Setup database connection via application property files.
- Create a book repository class to execute SQL query.
- Create a book controller class to display all books.

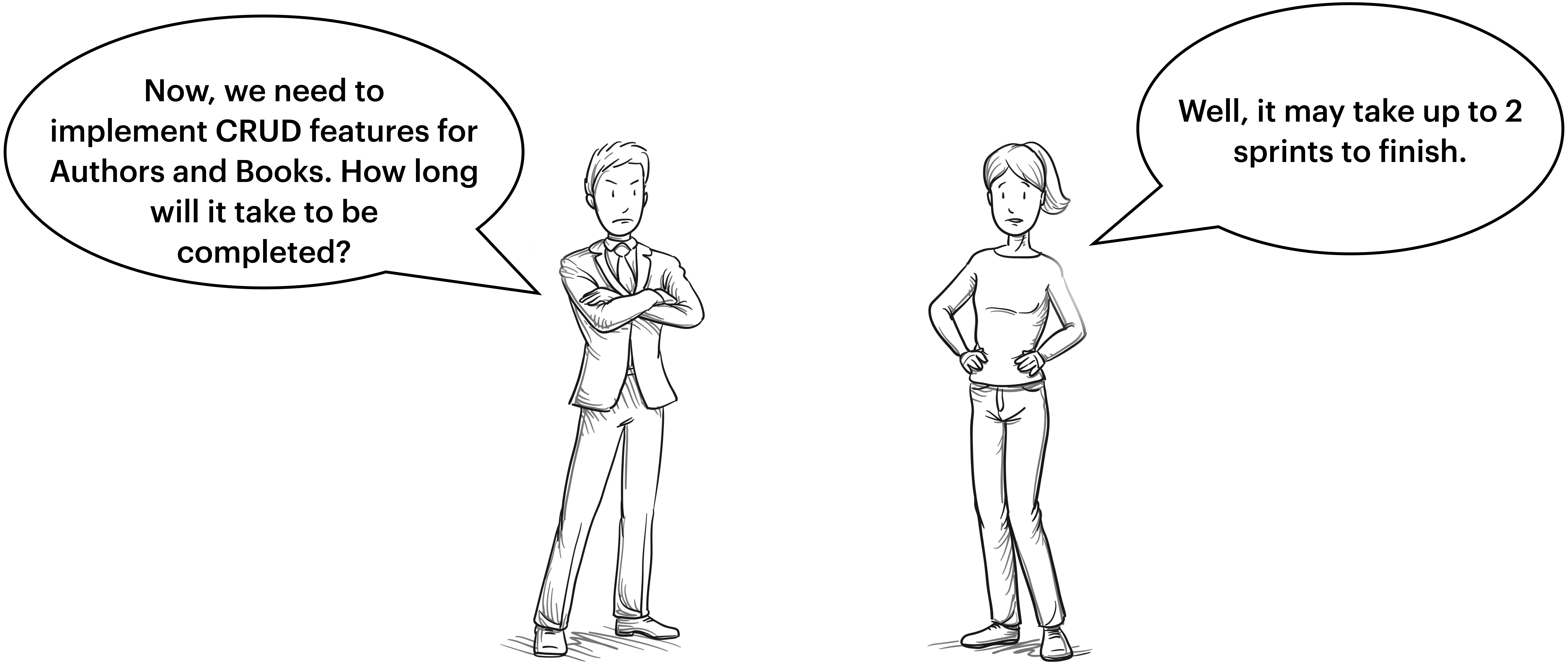
BUILDING APPLICATION

TASK 3: DISPLAY ALL BOOKS


Hey, John. I’ve done it. We can publish our website for clients.
Amazing, Jenna!

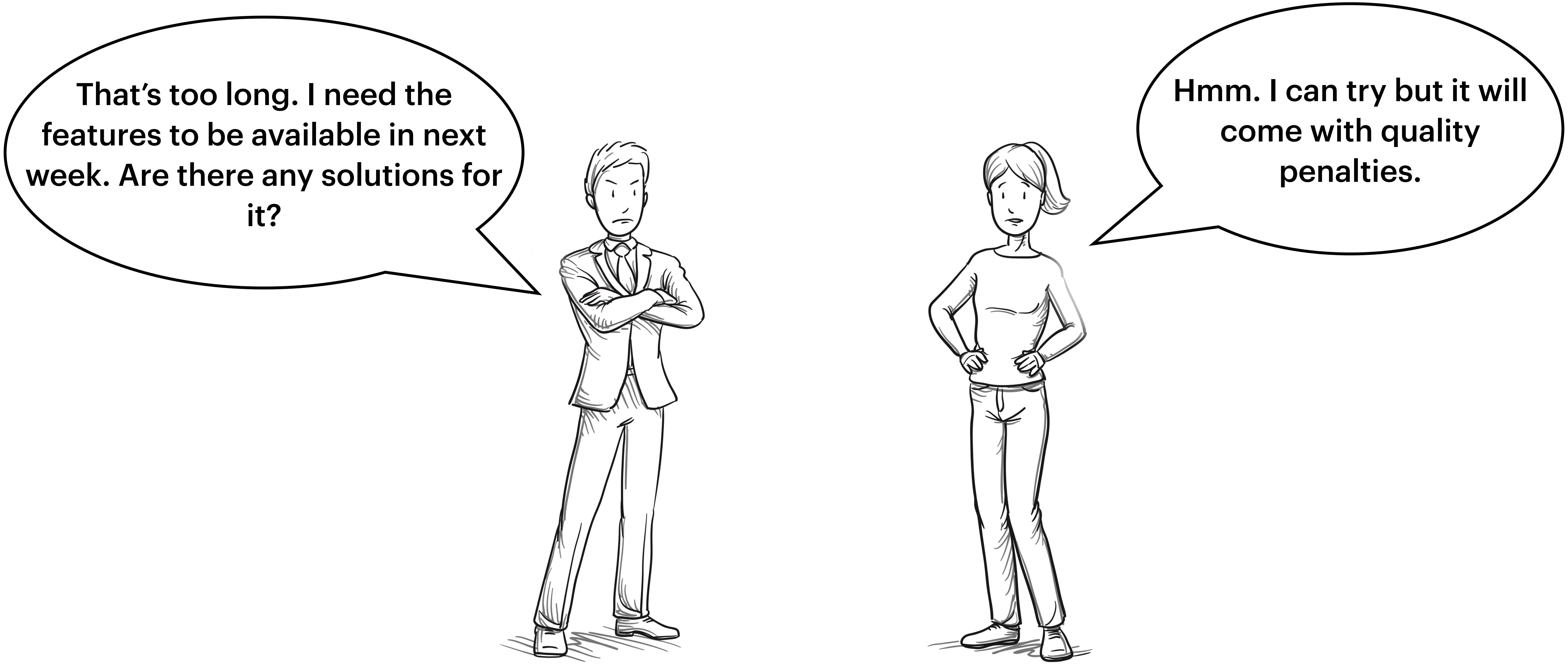
BUILDING APPLICATION

TASK 4: PROVIDER CRUD FOR AUTHORS AND BOOKS


Now, we need to implement CRUD features for Authors and Books. How long will it take to be completed?
Well, it may take up to 2 sprints to finish.

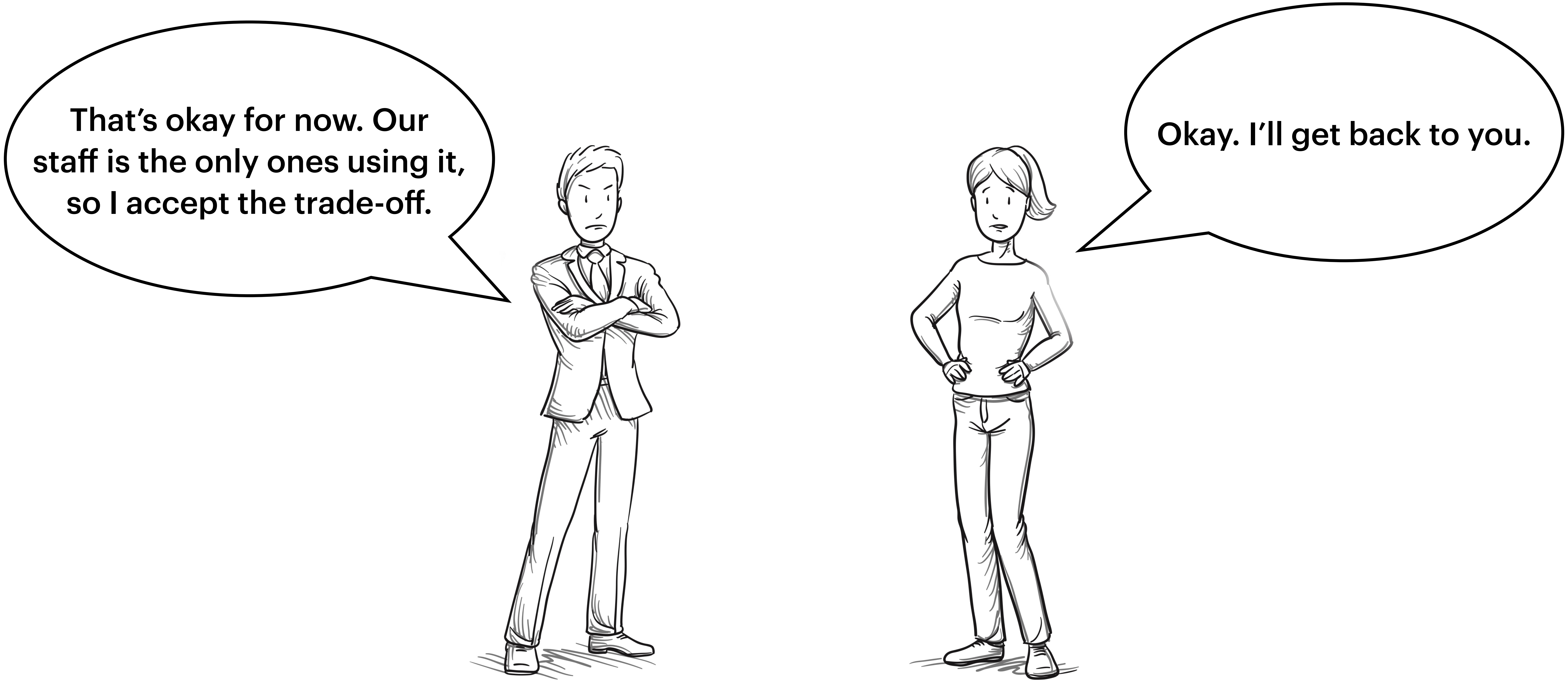
BUILDING APPLICATION

TASK 4: PROVIDER CRUD FOR AUTHORS AND BOOKS


That's too long. I need the features to be available in next week. Are there any solutions for it?
Hmm. I can try but it will come with quality penalties.

BUILDING APPLICATION

TASK 4: PROVIDER CRUD FOR AUTHORS AND BOOKS


That's okay for now. Our staff is the only ones using it, so I accept the trade-off.
Okay. I'll get back to you.

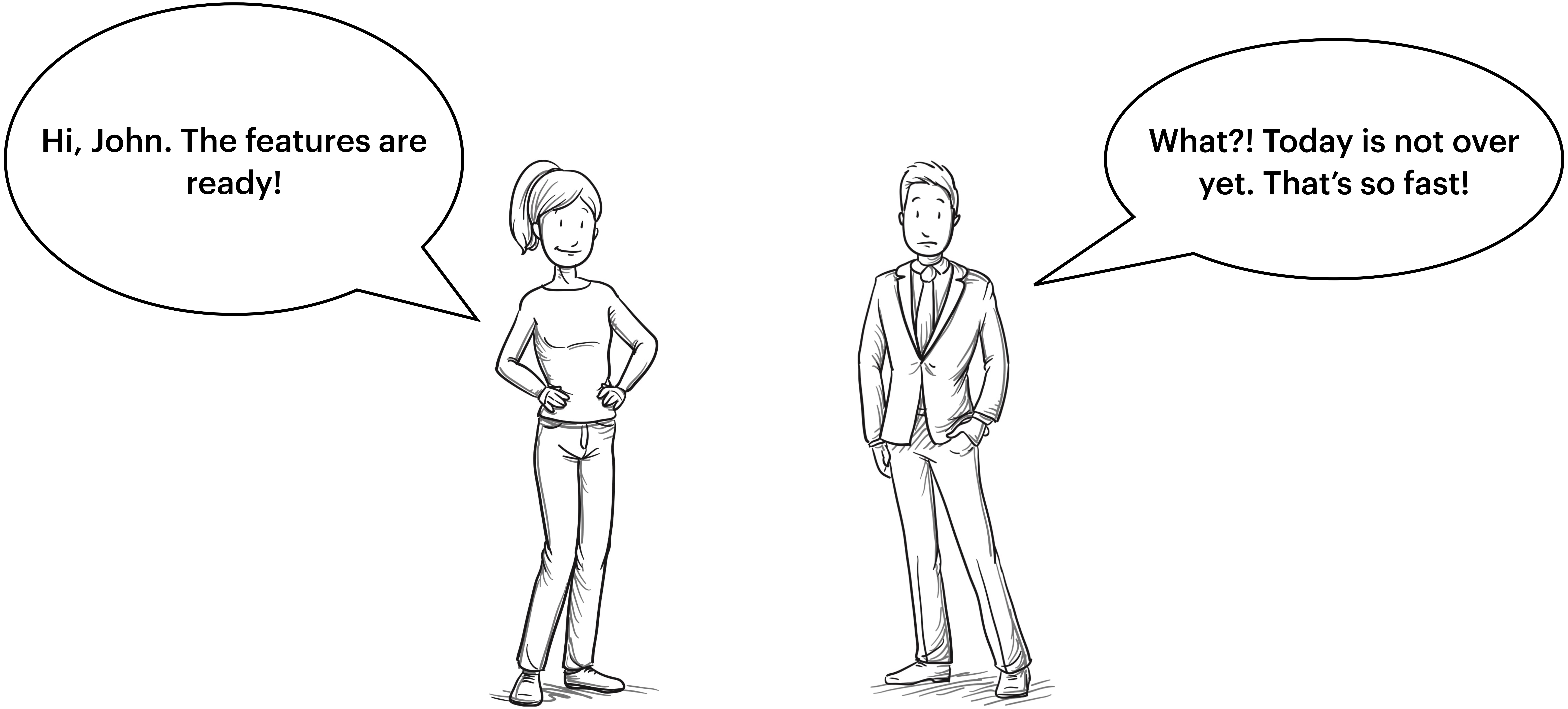
BUILDING APPLICATION

What Jenna did?

- Add the author entity class.
- Link the author with books.
- Insert author data into the database.
- Add a data-rest dependency.
- Add repositories classes for each entity to provider the data-rest API.

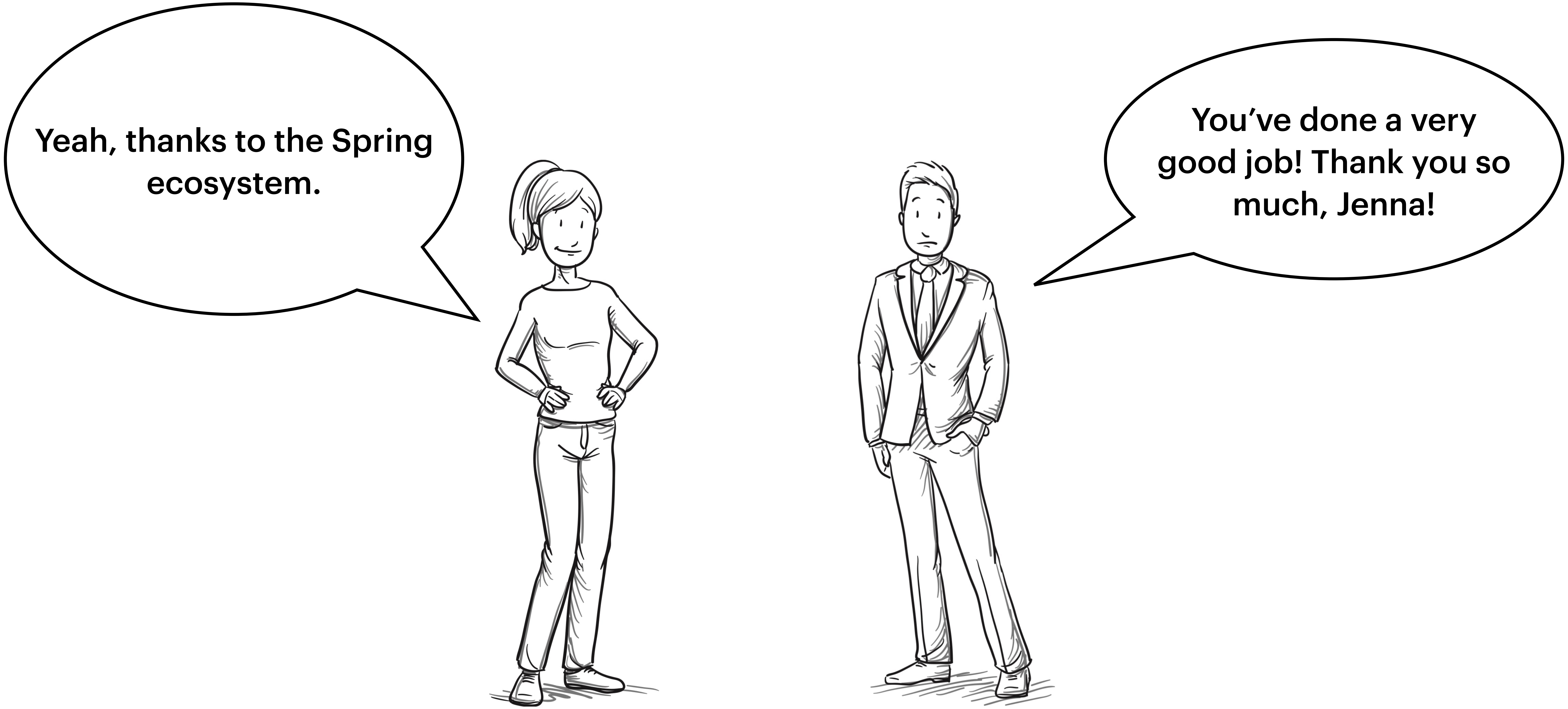
BUILDING APPLICATION

TASK 4: PROVIDER CRUD FOR AUTHORS AND BOOKS


Hi, John. The features are ready!
What?! Today is not over yet. That’s so fast!

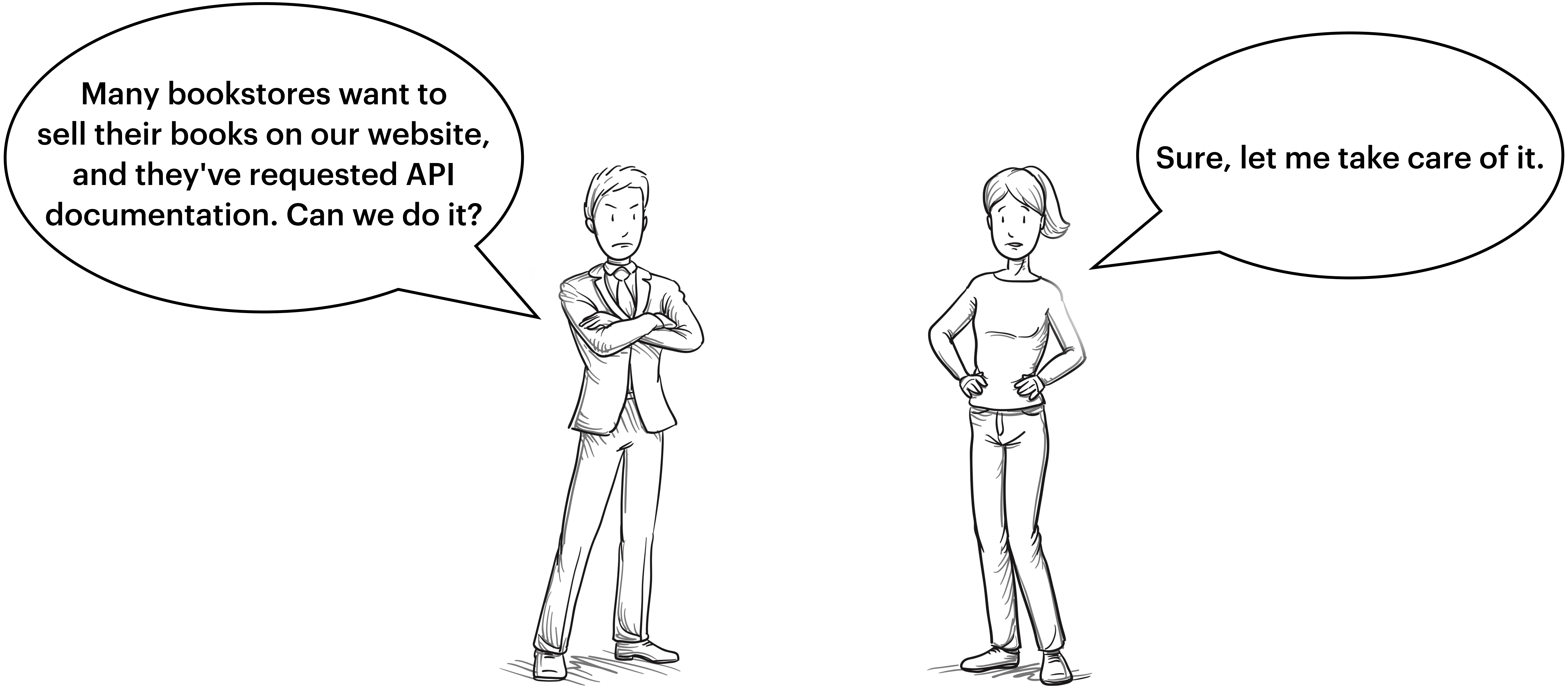
BUILDING APPLICATION

TASK 4: PROVIDER CRUD FOR AUTHORS AND BOOKS


Yeah, thanks to the Spring ecosystem.
You’ve done a very good job! Thank you so much, Jenna!

BUILDING APPLICATION

TASK 5: PROVIDER API DOCUMENTATION FOR THIRD PATRY


Many bookstores want to sell their books on our website, and they've requested API documentation. Can we do it?
Sure, let me take care of it.

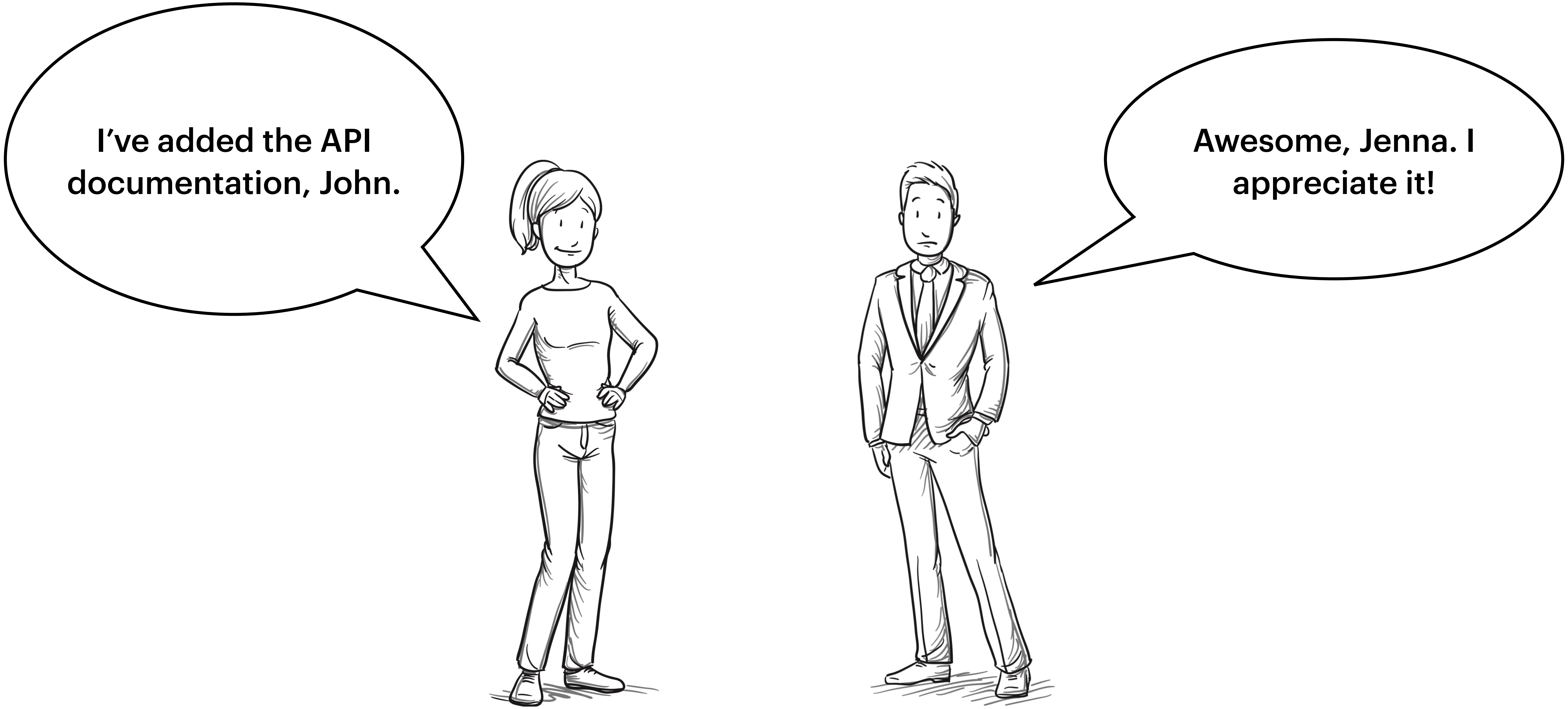
BUILDING APPLICATION

What Jenna did?

- Add the springdoc-openapi dependency ONLY.

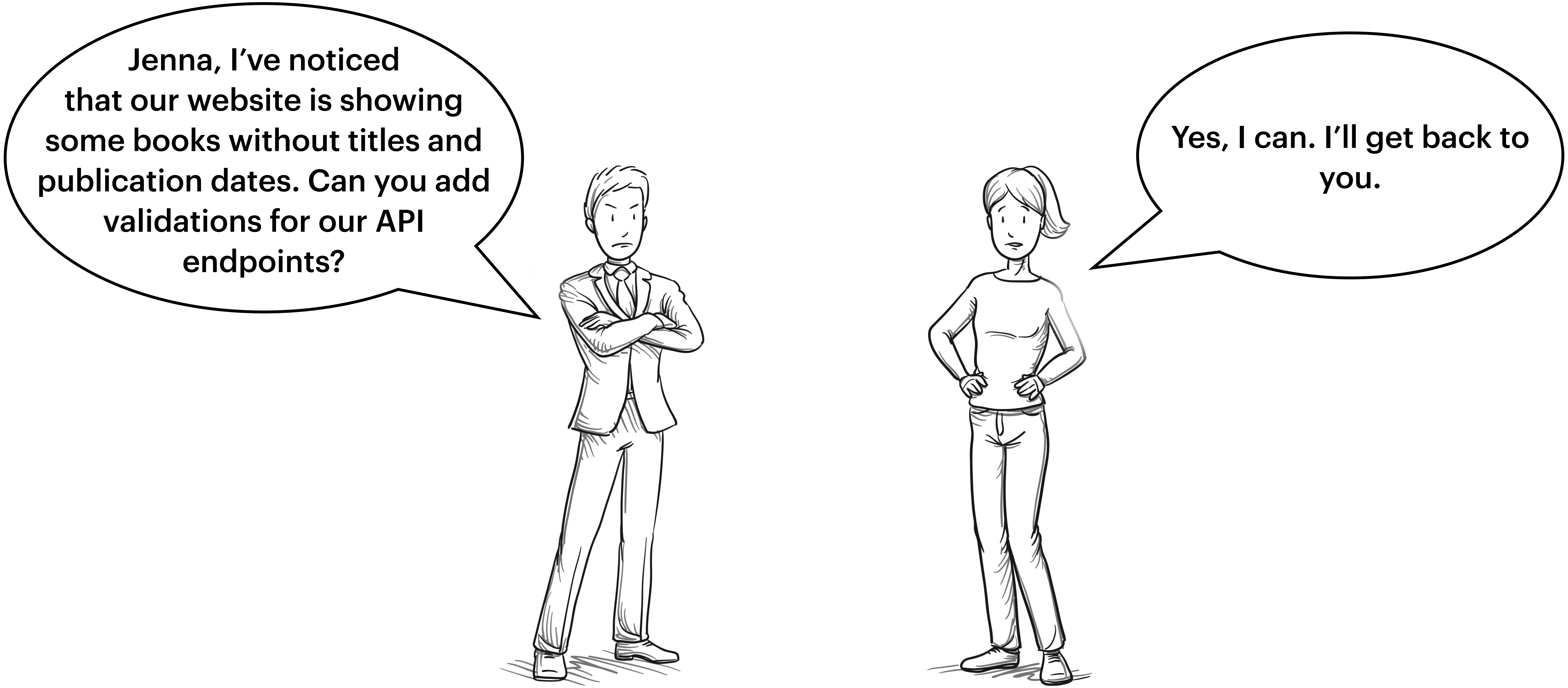
BUILDING APPLICATION

TASK 5: PROVIDER API DOCUMENTATION FOR THIRD PATRY


I’ve added the API documentation, John.
Awesome, Jenna. I appreciate it!

BUILDING APPLICATION

TASK 6: VALIDATE CLIENT REQUESTS


Jenna, I've noticed that our website is showing some books without titles and publication dates. Can you add validations for our API endpoints?
Yes, I can. I'll get back to you.

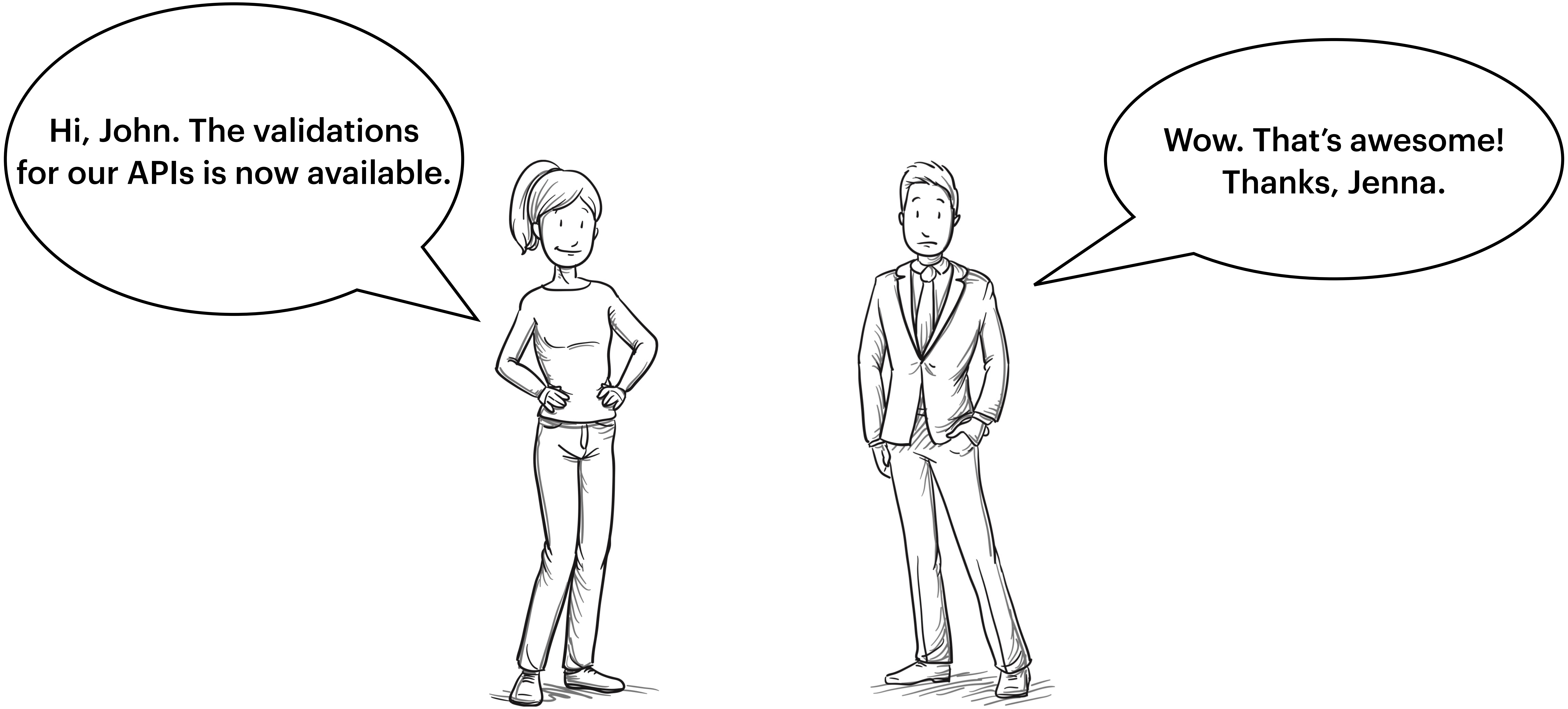
BUILDING APPLICATION

What Jenna did?

- Add the spring validation dependency.
- Validate requests by adding annotations of the spring validation.
- Create a class to handle exceptions.

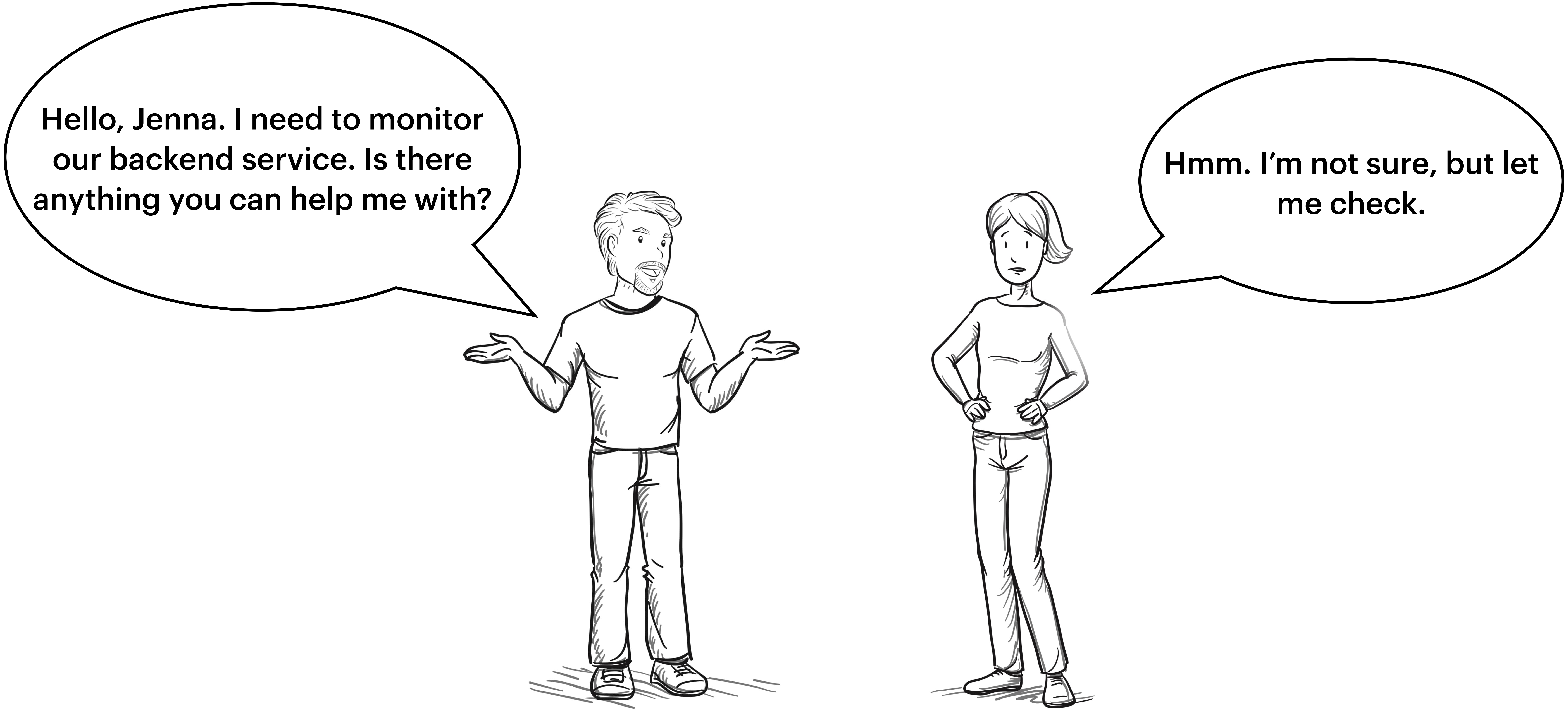
BUILDING APPLICATION

TASK 6: VALIDATE CLIENT REQUESTS


Hi, John. The validations for our APIs is now available.
Wow. That’s awesome! Thanks, Jenna.

BUILDING APPLICATION

TASK 7: MONITOR BACKEND SERVICE


Hello, Jenna. I need to monitor our backend service. Is there anything you can help me with?
Hmm. I’m not sure, but let me check.
Tim - System Admin

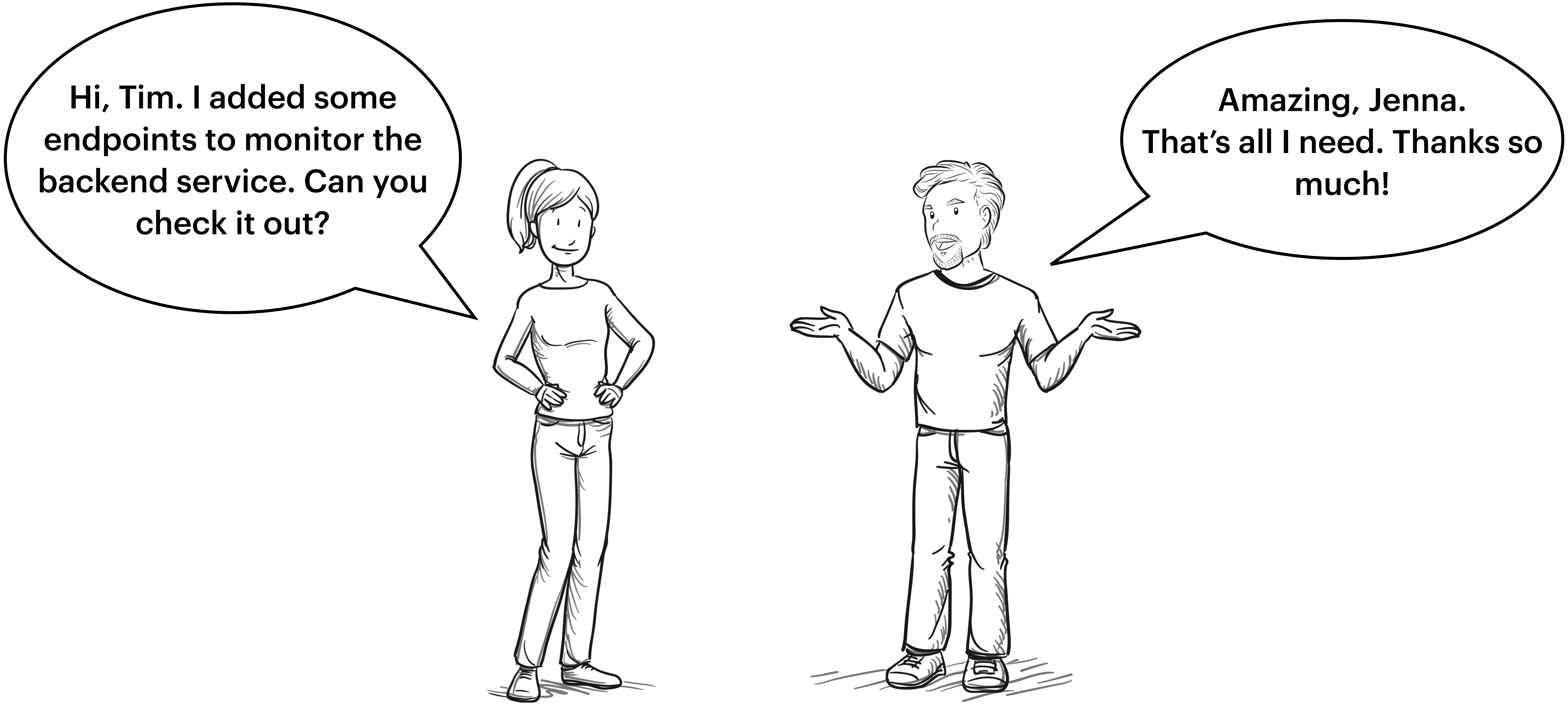
BUILDING APPLICATION

What Jenna did?

- Add the spring actuator dependency.
- Add some application properties to expose the system monitoring endpoints.

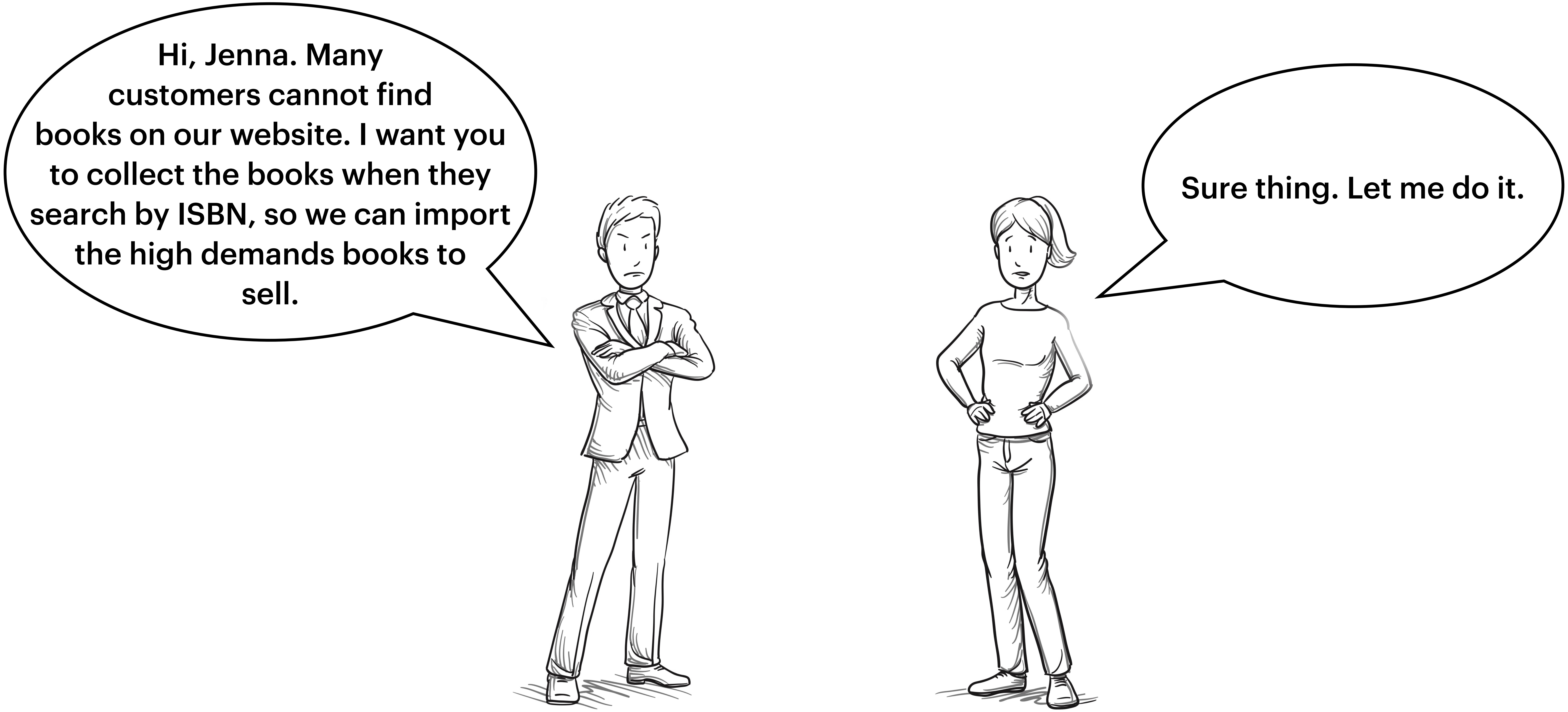
BUILDING APPLICATION

TASK 7: MONITOR BACKEND SERVICE


Hi, Tim. I added some endpoints to monitor the backend service. Can you check it out?
Amazing, Jenna. That’s all I need. Thanks so much!

BUILDING APPLICATION

TASK 8: COLLECT SEARCH DATA


Hi, Jenna. Many customers cannot find books on our website. I want you to collect the books when they search by ISBN, so we can import the high demands books to sell.
Sure thing. Let me do it.

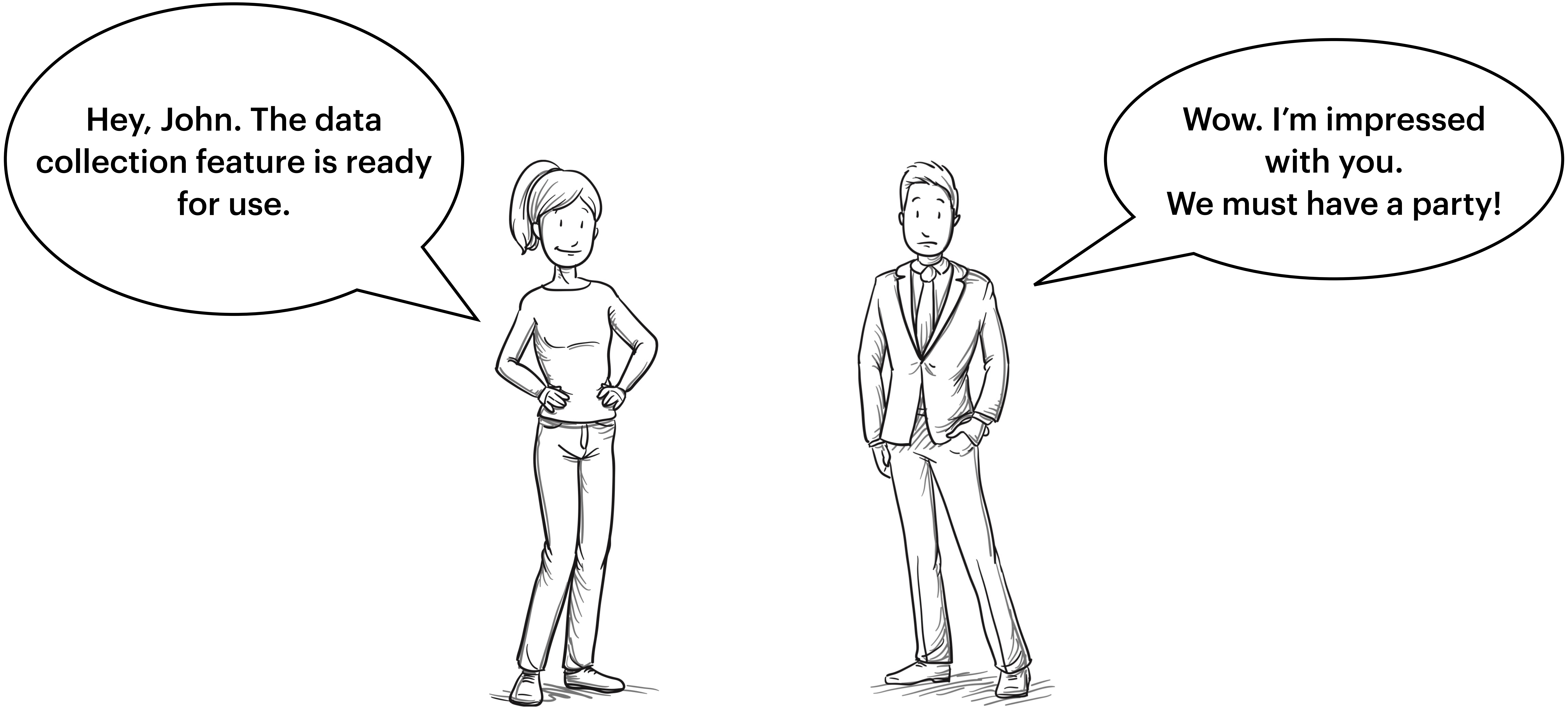
BUILDING APPLICATION

What Jenna did?

- Add spring cloud open feign dependency.
- Enable the open feign with the `@EnableFeignClients` annotation.
- Create a proxy class to call the ISBN system endpoint.
- Adding a new repository method.
- Adding a new endpoint for searching by ISBN number.

BUILDING APPLICATION

TASK 8: COLLECT SEARCH DATA


Hey, John. The data collection feature is ready for use.
Wow. I’m impressed with you. We must have a party!

RECAP

WHAT DID JENNA USE IN THE PROJECT?

- Spring Boot Web.
- Spring Boot Data JPA.
- Spring Boot Data Rest.
- Spring Boot Validation.
- Spring Boot Actuator.
- Spring Cloud Open Feign.
- Spring Doc Open API.

WHAT'S NEXT?

What else does Spring provide?

Microservices

Quickly deliver production-grade features with independently evolvable microservices.

Reactive

Spring's asynchronous, nonblocking architecture means you can get more from your computing resources.

Cloud

Your code, any cloud—we've got you covered. Connect and scale your services, whatever your platform.

Web apps

Frameworks for fast, secure, and responsive web applications connected to any data store.

Serverless

The ultimate flexibility. Scale up on demand and scale to zero when there's no demand.

Event Driven

Integrate with your enterprise. React to business events. Act on your streaming data in realtime.

Batch

Automated tasks. Offline processing of data at a time to suit you.

WHAT'S NEXT?

How can I start with Spring?

Laurentiu Spilca. *Spring Start Here,* Manning, 2021

THANK YOU FOR LISTENING!