Becoming a full stack java web developer

Karen Rahmeier, Codecinella

Madison WI, May 2017

Who is this presenter?

My Qualifications

- B.A. in Physics, Dartmouth College
- Employed full time as software developer since 1998
- Java web application developer since 2007
- Two-time graduate of Madison College Enterprise Java course
  - Fall, 2007
  - Fall, 2016
- Four-time attendee of No Fluff Just Stuff
  - Greater Wisconsin Software Symposium
- Enthusiastic learner

Who is this talk for?

Computer science and information technology students

Adults seeking a career change into a tech field

Tech bootcamp grads and others with 1-3 years employment in the tech sector

Outline

1%	Qualifications of presenter
20%	Introduction to software development field
20%	What does it take to build a java web application? (fairly tech)
40%	Demonstrate the process (most technical portion)
10%	What other skills were assumed?
10%	What proficiency required to begin work/identify as developer?
1%	Resources for continued learning

So you want to be a software developer…

Where to even start?

So many choices…

Write software or use it?

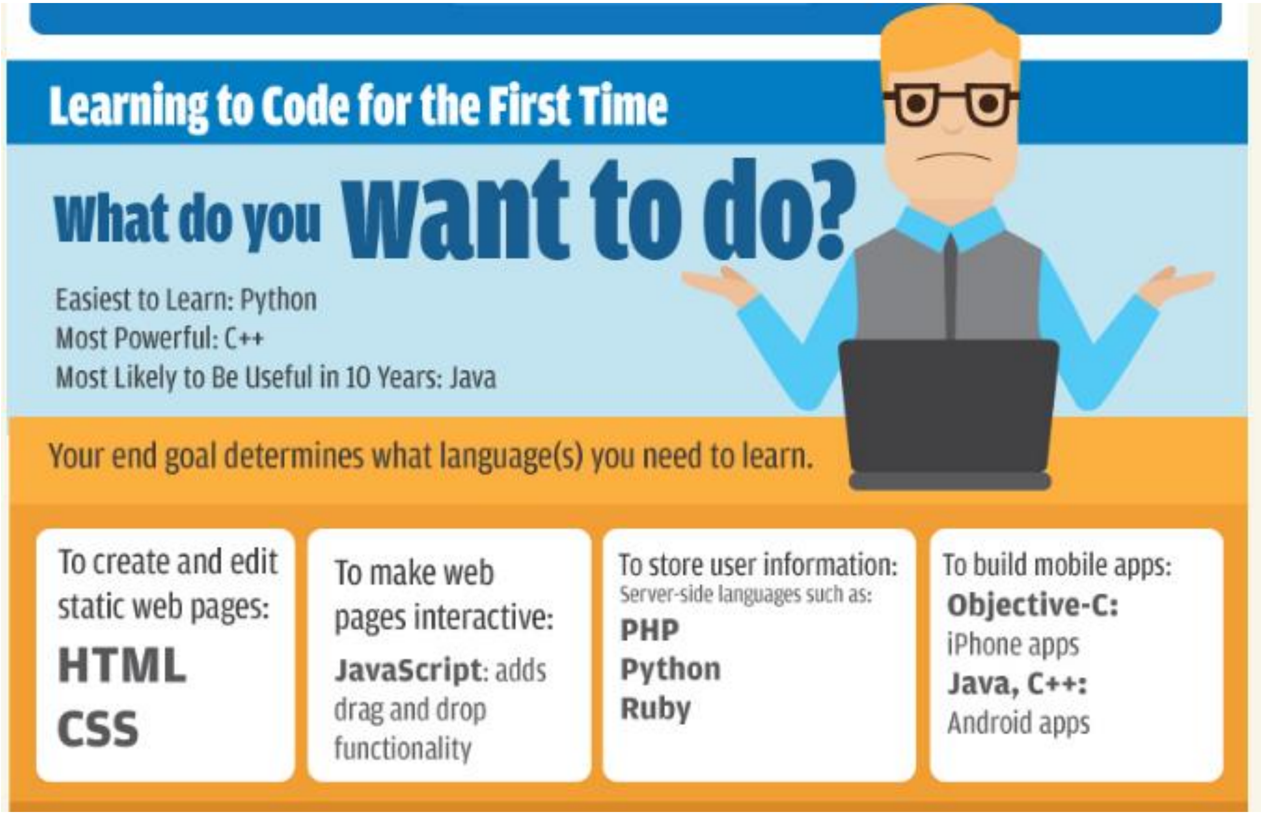
Create or write code

- Mobile apps
- Websites
- Games
- Back-end functionality
- Front-end functionality
- User-interface designer
- SQL developer
- Data scientist/Business Intelligence

IT-related job, not coding

- Project manager
- Business analyst
- Data scientist
- Database Administrator
- Security, networks, helpdesk
- QA, testing
- Education
- Academic research
- Scientific research

I want to write code



Learning to Code for the First Time

What do you want to do?

Easiest to Learn: Python
Most Powerful: C++
Most Likely to Be Useful in 10 Years: Java

Your end goal determines what language(s) you need to learn.

To create and edit static web pages:
HTML
CSS

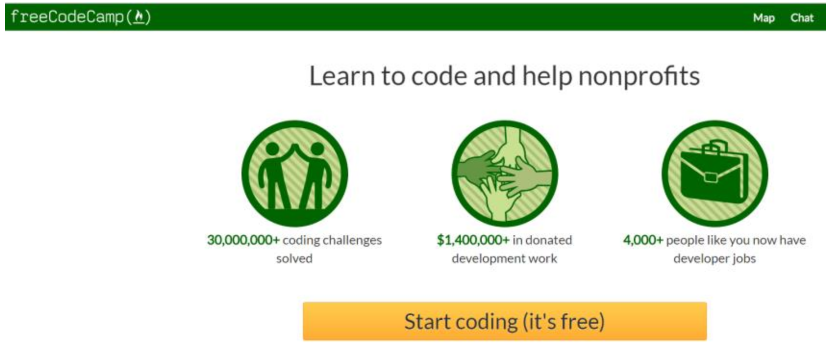
To make web pages interactive:
JavaScript: adds drag and drop functionality

To store user information:
Server-side languages such as:
PHP
Python
Ruby

To build mobile apps:
Objective-C:
iPhone apps
Java, C++:
Android apps

http://tech.co/code-learn-2015-infographic-2014-12

Where and how should I learn?



Learn to code and help nonprofits

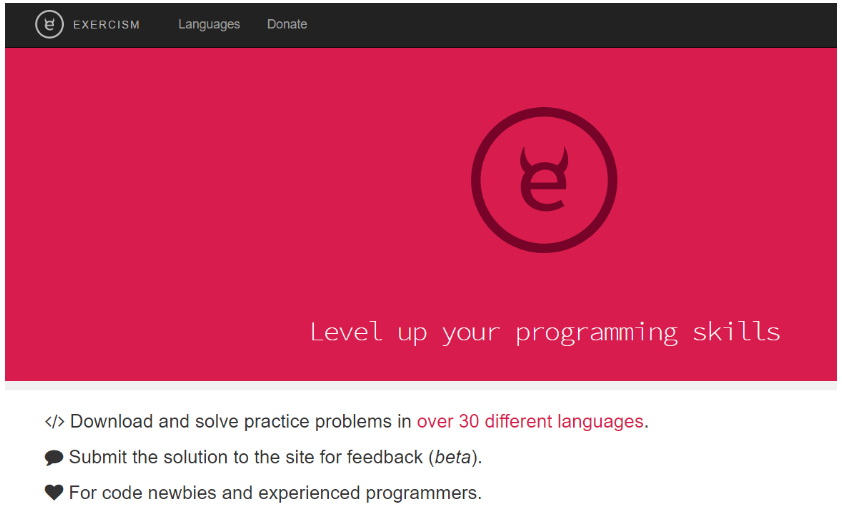
30,000,000+ coding challenges solved

$1,400,000+ in donated development work

4,000+ people like you now have developer jobs

Start coding (it's free)

- https://www.freecodecamp.com/
- http://exercism.io/
- https://www.learnenough.com/

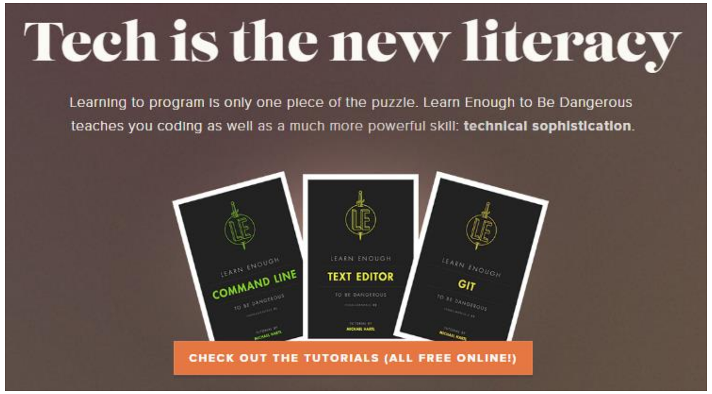


Level up your programming skills

</> Download and solve practice problems in over 30 different languages.

💬 Submit the solution to the site for feedback (*beta*).

❤ For code newbies and experienced programmers.



Tech is the new literacy

Learning to program is only one piece of the puzzle. Learn Enough to Be Dangerous teaches you coding as well as a much more powerful skill: **technical sophistication**.

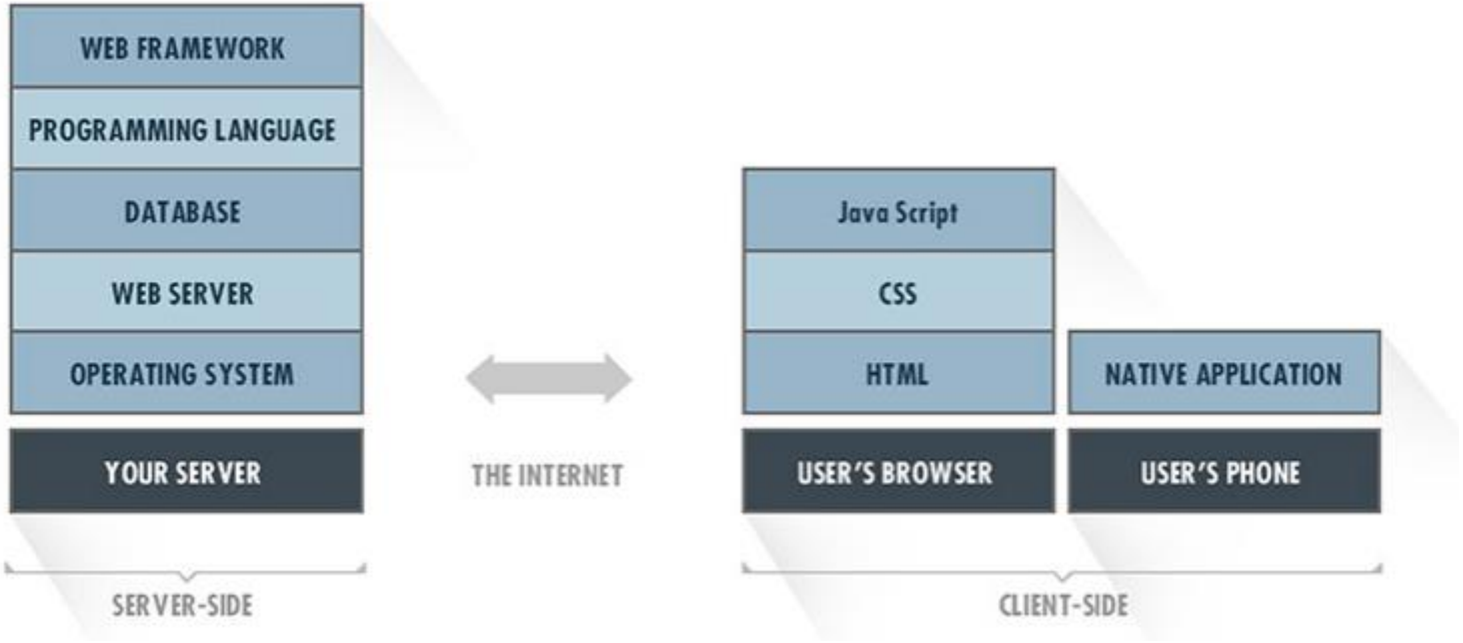
CHECK OUT THE TUTORIALS (ALL FREE ONLINE!)

What should I learn?

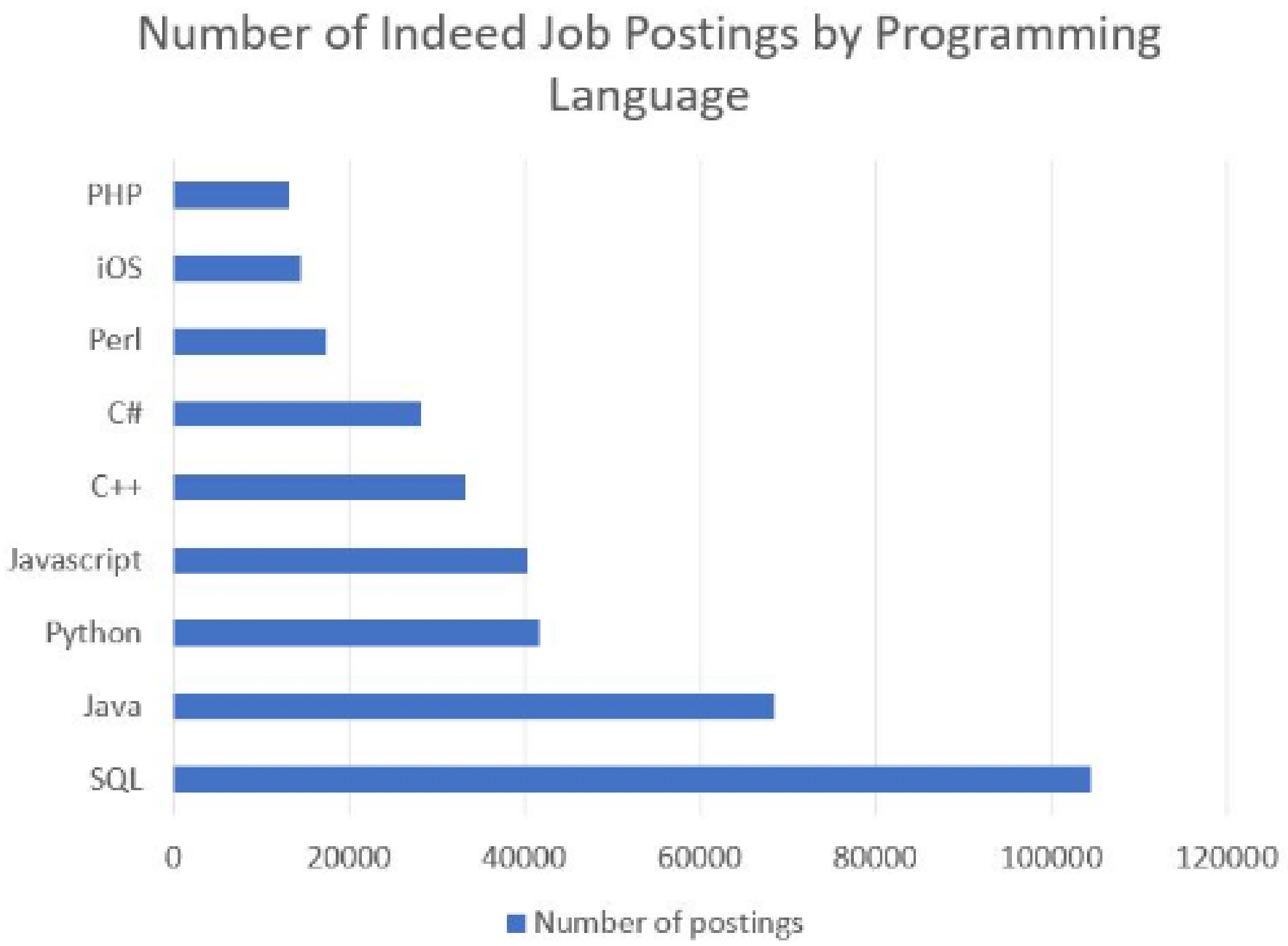
How to Choose Your Tech Stack

https://svsg.co/how-to-choose-your-tech-stack/

What’s a tech stack?

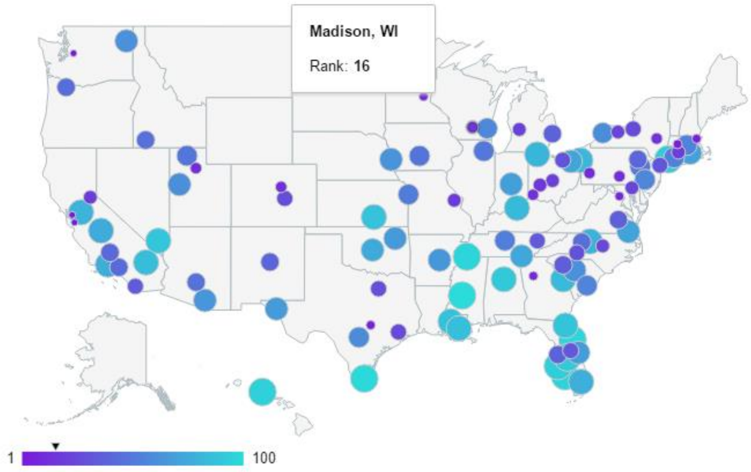


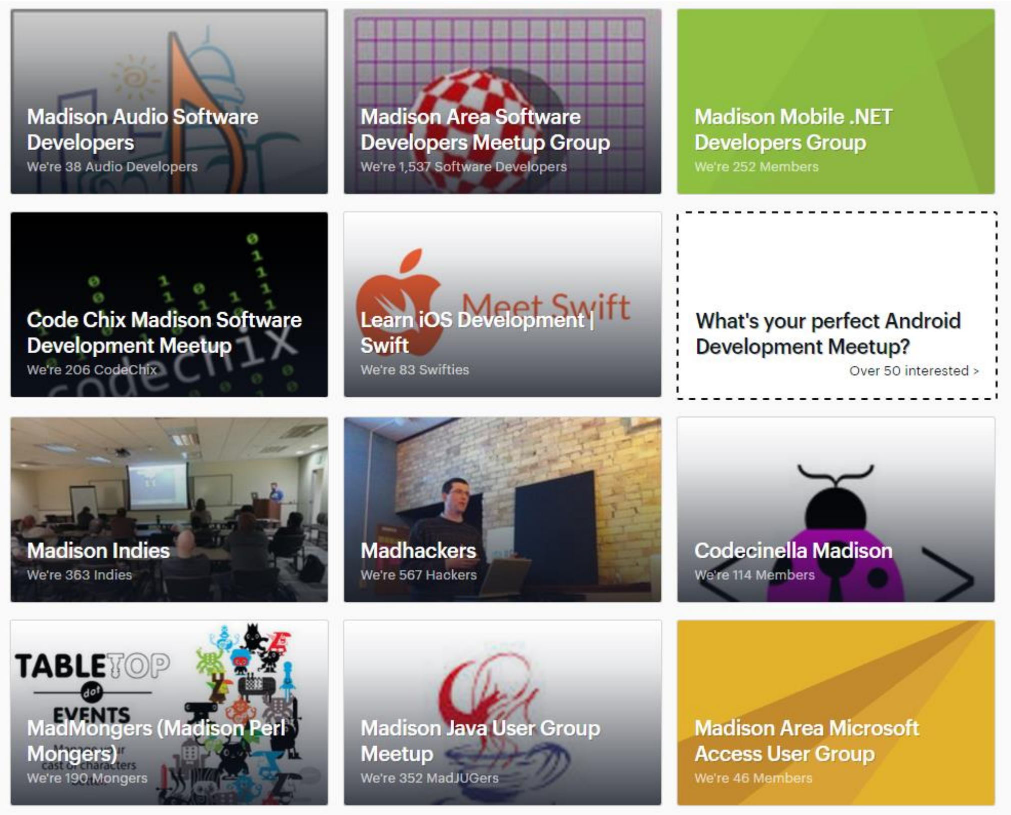
I want to get a job



http://www.codingdojo.com/blog/9-most-in-demand-programming-languages-of-2017/

I mean, a job in Madison!





Madison Audio Software Developers
We're 38 Audio Developers

Madison Area Software Developers Meetup Group
We're 1,537 Software Developers

Madison Mobile .NET Developers Group
We're 252 Members

Code Chix Madison Software Development Meetup
We're 206 CodeChix

Learn iOS Development | Swift
We're 83 Swifties

What's your perfect Android Development Meetup?
Over 50 interested >

Madison Indies
We're 363 Indies

Madhackers
We're 567 Hackers

Codecinella Madison
We're 114 Members

MadMongers (Madison Perl Mongers)
We're 190 Mongers

Madison Java User Group Meetup
We're 352 MadJUGers

Madison Area Microsoft Access User Group
We're 46 Members

https://wallethub.com/edu/best-worst-metro-areas-for-stem-professionals/9200/

My short story…

How I became a java web application developer

One sample career path

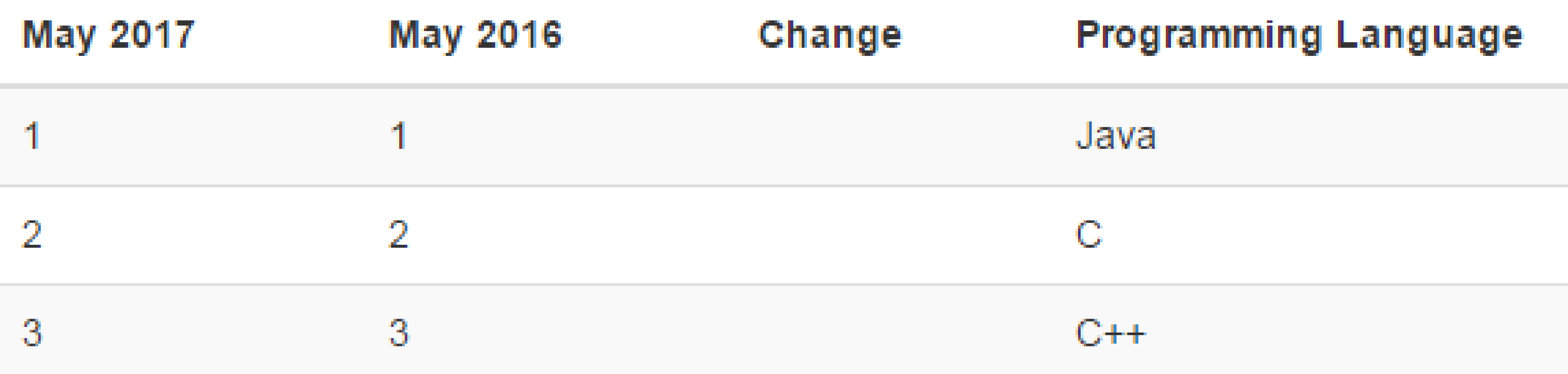
- STEM degree (physics)
- Science-related job (DNR)
- Y2K
- Consulting firm hired and trained me (client-server, Oracle database)
- Returned to State of WI, built wiscjobs (classic ASP, web, Microsoft)
- Dog park offer to learn java and change jobs
- Enterprise-level java web applications (DOT)
- Moved to smaller agency

Why did I choose java?

- At every fork, I take the best option available
- Always keeping my skills current; move in order to grow, learn
- Always watching for my next ‘best job fit yet!’

- SQL has served me in every job since I learned it
- Java has remained current and relevant longer than any other language I learned
- Java remains one of the top sought-after job skills

Java popularity



May 2017	May 2016	Change	Programming Language
1	1		Java
2	2		C
3	3		C++

https://www.tiobe.com/tiobe-index/

Decision…

Java web application developer

Outline

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1%	Resources for continued learning

What does it take…

…to build a java web application?

Application requirements

- Persistence of data (need database)
- Functionality provided through browser (need web app server)
- Secure (logged-on users can do more things)

Desirable features:

- User interface
  - Attractive layout, works in most browsers, quick to build, easy to maintain, looks modern

- Free to develop
  - mySql, Tomcat, Eclipse or IntelliJ, Github

- Source code repository
  - backed up, can be shared

Create it!

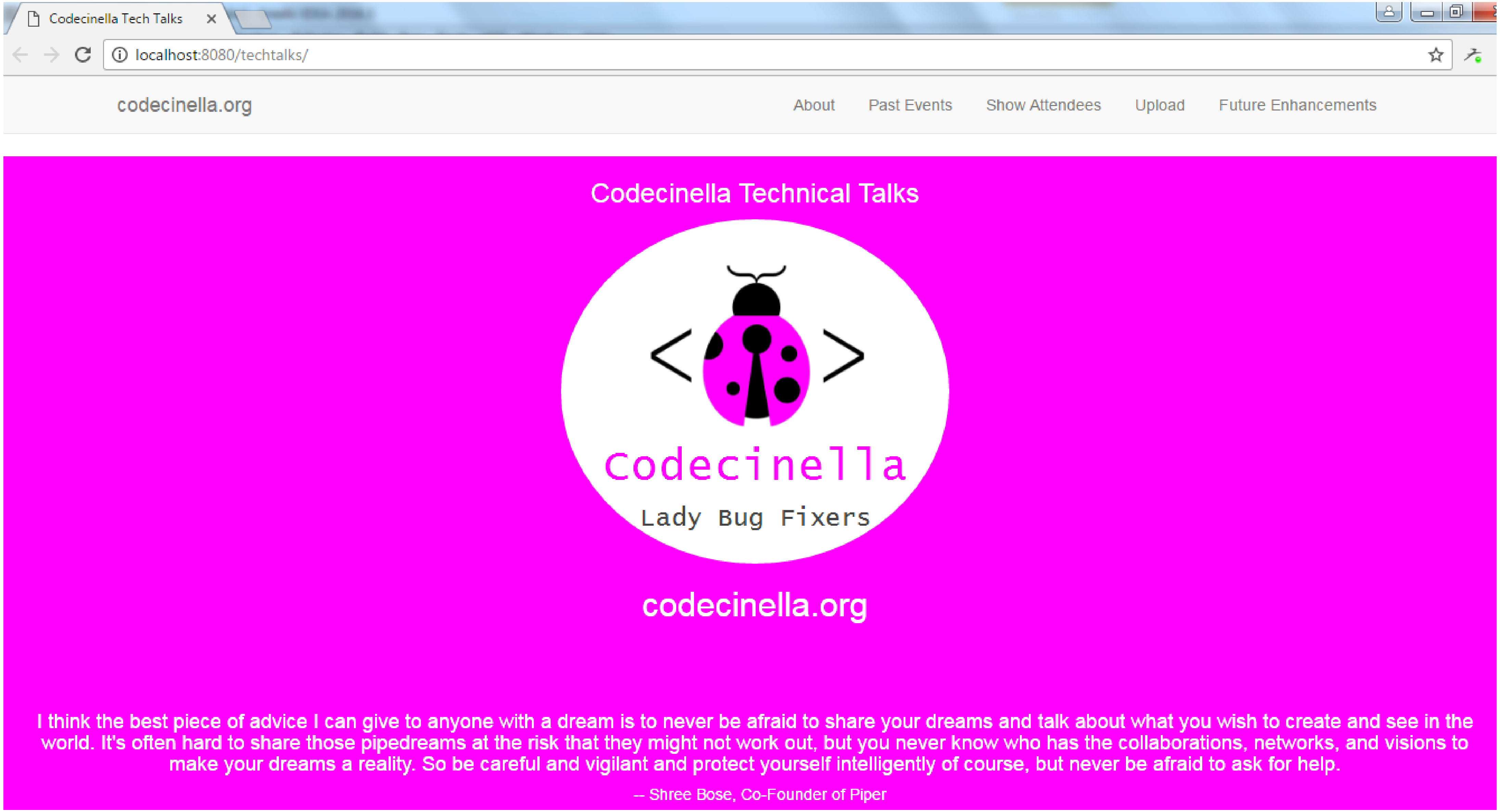
Codecinella event-and-attendee tracking application

Sketch or outline your project plan

- Event and attendee tracking application

- Required functionality:
  - Show past events
  - Add new event
  - Upload attendees of specific event
  - Show attendees

- Optional functionality:
  - Search
  - Sort
  - Display total attendees at event
  - Display total events by attendee



Codecinella Technical Talks

codecinella.org

I think the best piece of advice I can give to anyone with a dream is to never be afraid to share your dreams and talk about what you wish to create and see in the world. It's often hard to share those pipedreams at the risk that they might not work out, but you never know who has the collaborations, networks, and visions to make your dreams a reality. So be careful and vigilant and protect yourself intelligently of course, but never be afraid to ask for help.

-- Shree Bose, Co-Founder of Piper

Design your test plan
(Why does testing matter?)

- Junior developers: “If it works the first time, it must be right!”
- Senior developers: “If it works the first time, I missed something big!”

- End users always use the code differently than developers
- People think differently: you only built and tested according to your way of thinking
- There are lots of moving parts and interdependencies, therefore many possible failure points

Design your test plan
(What IS testing?)

- Unit tests
- Integration Tests
- Functional Tests
- Automated Tests
- Manual Tests
- User-interface Tests
- User-acceptance Tests
- Load Tests

Design your test plan
(How will you know you have succeeded?)

- Minimum test requirements:
  - Show past events
  - Add new event
  - Upload attendees of specific event
  - Show attendees

- Code coverage requirements:
  - All data access methods tested
  - All complex application methods tested

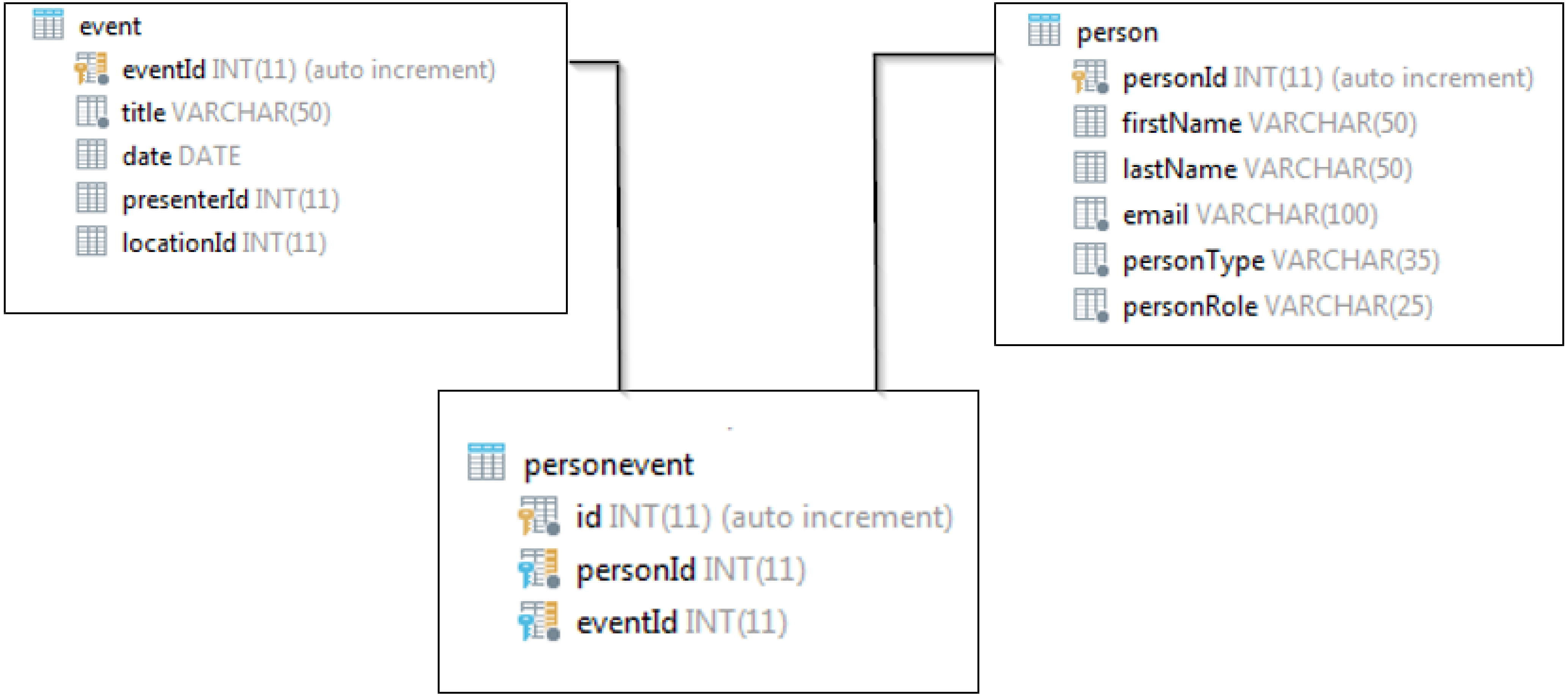
Set up your laptop environment

- Install Eclipse or IntelliJ
- Download MySql
- Download Tomcat (not tomee)
- Download java jdk, jre version 1.8

Set up your database

- Open SqlWorkbench
- Create root account/user
- Create new database
- Create tables in the database
- Enter a little test data

Design your database



event

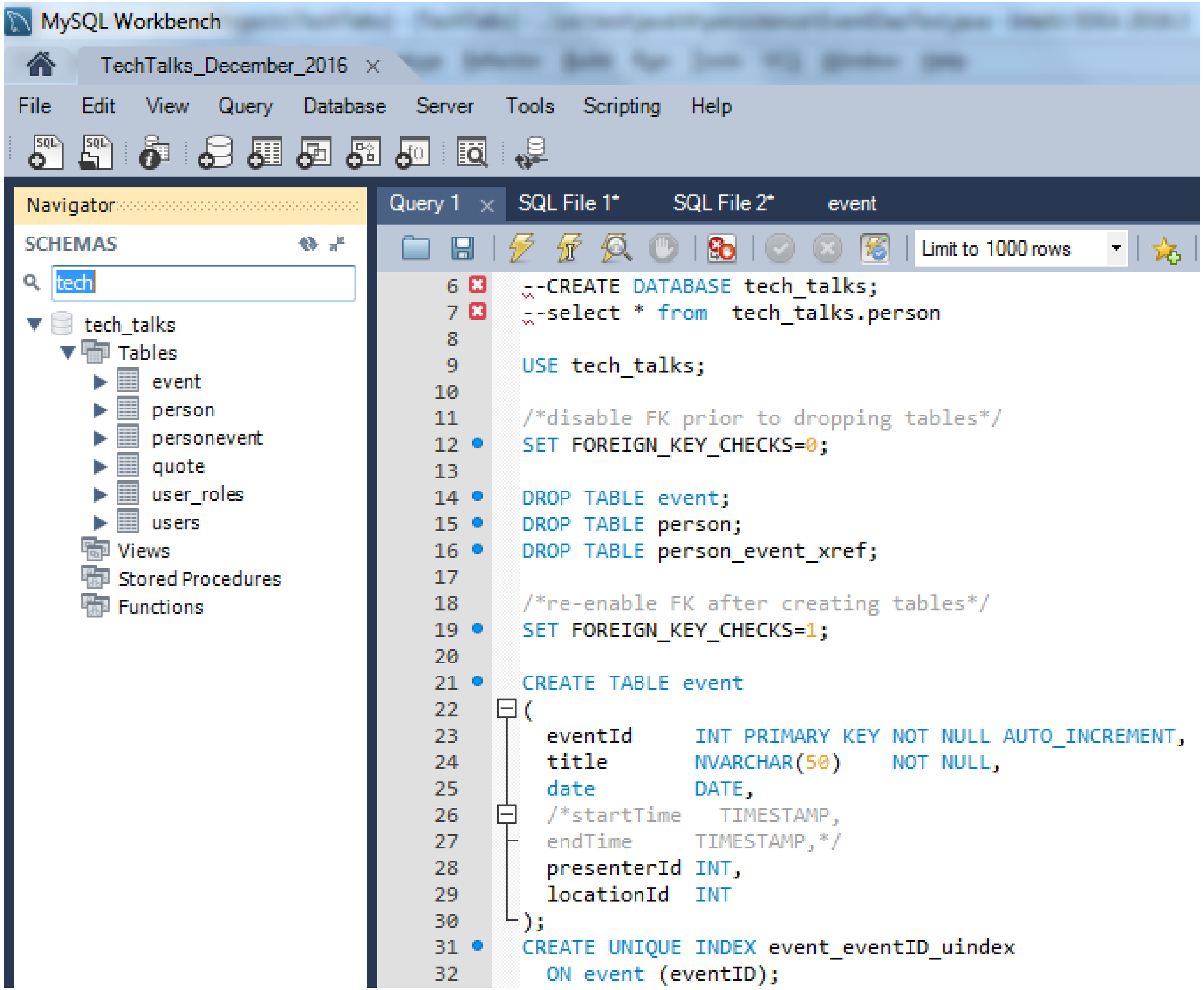
- eventId INT(11) (auto increment)
- title VARCHAR(50)
- date DATE
- presenterId INT(11)
- locationId INT(11)

person

- personId INT(11) (auto increment)
- firstName VARCHAR(50)
- lastName VARCHAR(50)
- email VARCHAR(100)
- personType VARCHAR(35)
- personRole VARCHAR(25)

personevent

- id INT(11) (auto increment)
- personId INT(11)
- eventId INT(11)

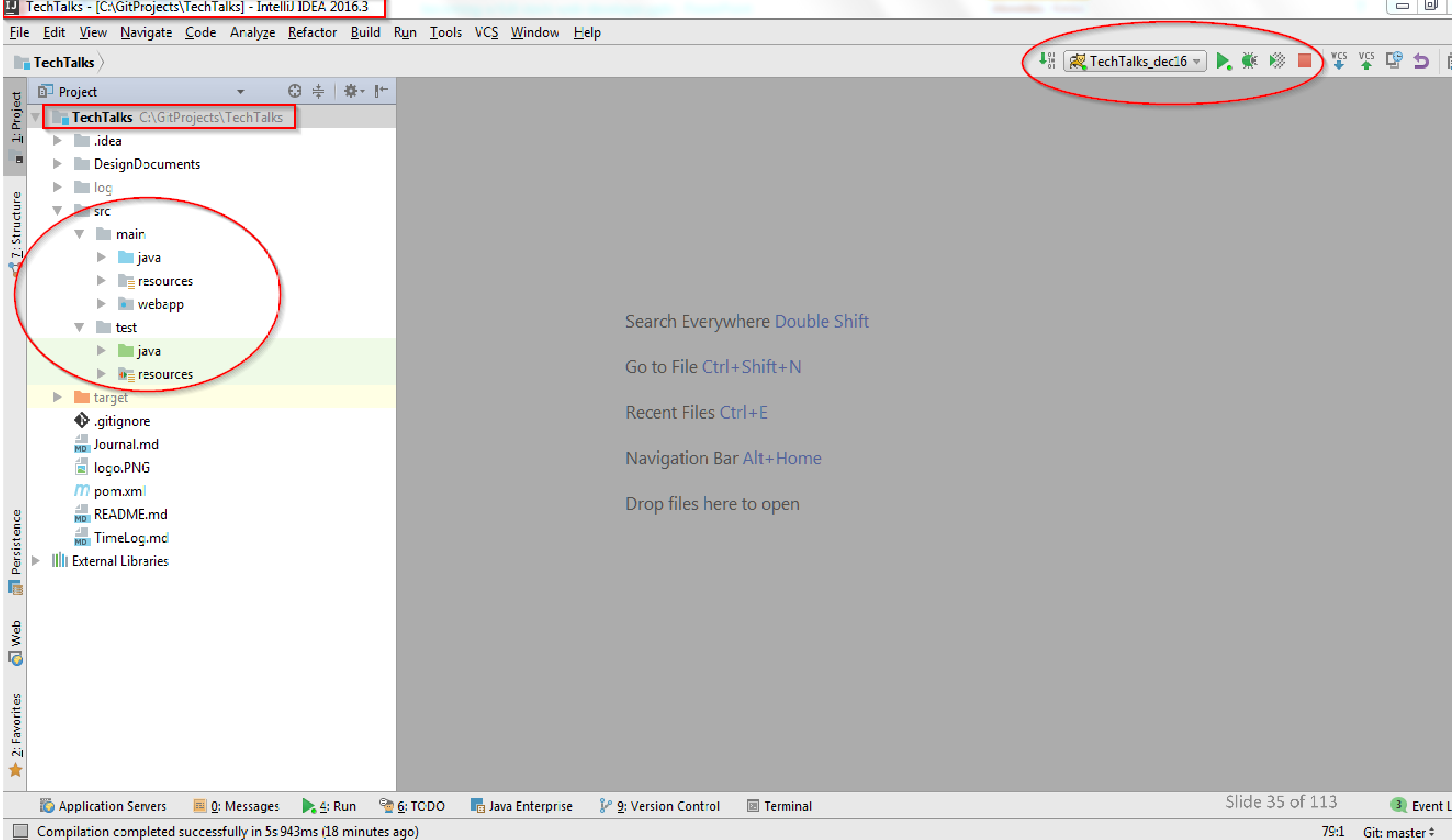


```
--CREATE DATABASE tech_talks;
--select * from  tech_talks.person

USE tech_talks;

/*disable FK prior to dropping tables*/
SET FOREIGN_KEY_CHECKS=0;

DROP TABLE event;
DROP TABLE person;
DROP TABLE person_event_xref;

/*re-enable FK after creating tables*/
SET FOREIGN_KEY_CHECKS=1;

CREATE TABLE event
(
  eventId     INT PRIMARY KEY NOT NULL AUTO_INCREMENT,
  title       NVARCHAR(50)    NOT NULL,
  date        DATE,
  /*startTime   TIMESTAMP,
  endTime     TIMESTAMP,*/
  presenterId INT,
  locationId  INT
);
CREATE UNIQUE INDEX event_eventID_uindex
  ON event (eventID);
```

Open/Launch your IDE
(integrated development environment)

- Create a new project
- Consider saving it on github
- Add and test functionality in modular blocks
  - Show past events
  - Navigation via menu links
  - Logon security
  - Add event with attendees

- Optional features
  - Change the look and feel with Bootstrap
  - Add a web service to look up inspirational quotes by women in tech



```
TechTalks  C:\GitProjects\TechTalks
    .idea
    DesignDocuments
    log
    src
        main
            java
            resources
            webapp
        test
            java
            resources
    target
    .gitignore
    Journal.md
    logo.PNG
    pom.xml
    README.md
    TimeLog.md
External Libraries
```

Search Everywhere Double Shift

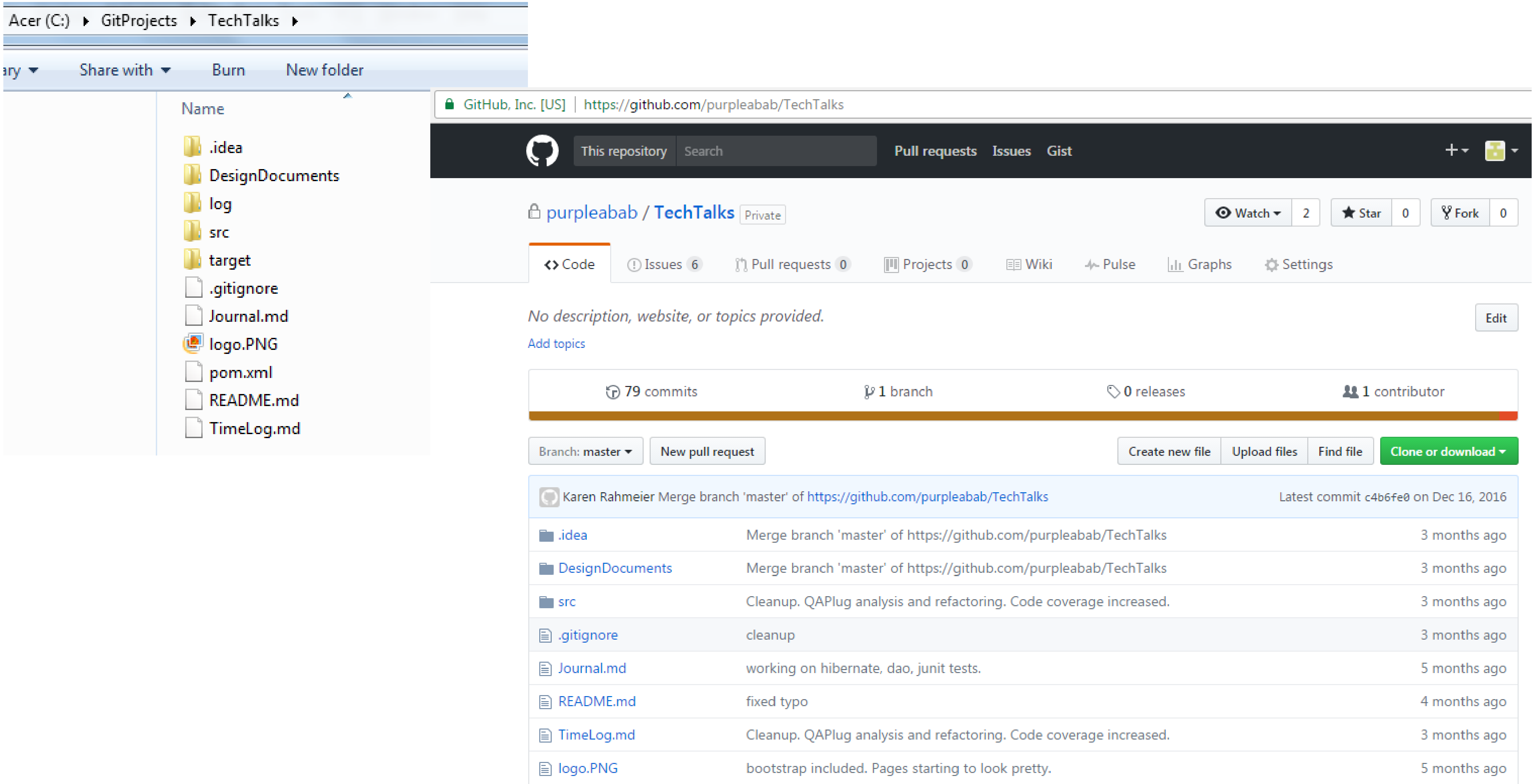
Go to File Ctrl+Shift+N

Recent Files Ctrl+E

Navigation Bar Alt+Home

Drop files here to open

Compilation completed successfully in 5s 943ms (18 minutes ago)



Acer (C:) ▸ GitProjects ▸ TechTalks ▸

Name

- .idea
- DesignDocuments
- log
- src
- target
- .gitignore
- Journal.md
- logo.PNG
- pom.xml
- README.md
- TimeLog.md

GitHub, Inc. [US] | https://github.com/purpleabab/TechTalks

purpleabab / TechTalks Private

No description, website, or topics provided.

79 commits · 1 branch · 0 releases · 1 contributor

Karen Rahmeier Merge branch 'master' of https://github.com/purpleabab/TechTalks · Latest commit c4b6fe0 on Dec 16, 2016

.idea	Merge branch 'master' of https://github.com/purpleabab/TechTalks	3 months ago
DesignDocuments	Merge branch 'master' of https://github.com/purpleabab/TechTalks	3 months ago
src	Cleanup. QAPlug analysis and refactoring. Code coverage increased.	3 months ago
.gitignore	cleanup	3 months ago
Journal.md	working on hibernate, dao, junit tests.	5 months ago
README.md	fixed typo	4 months ago
TimeLog.md	Cleanup. QAPlug analysis and refactoring. Code coverage increased.	3 months ago
logo.PNG	bootstrap included. Pages starting to look pretty.	5 months ago

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Functionality: Show past events

- Build events jsp page
- Read from database and display all events

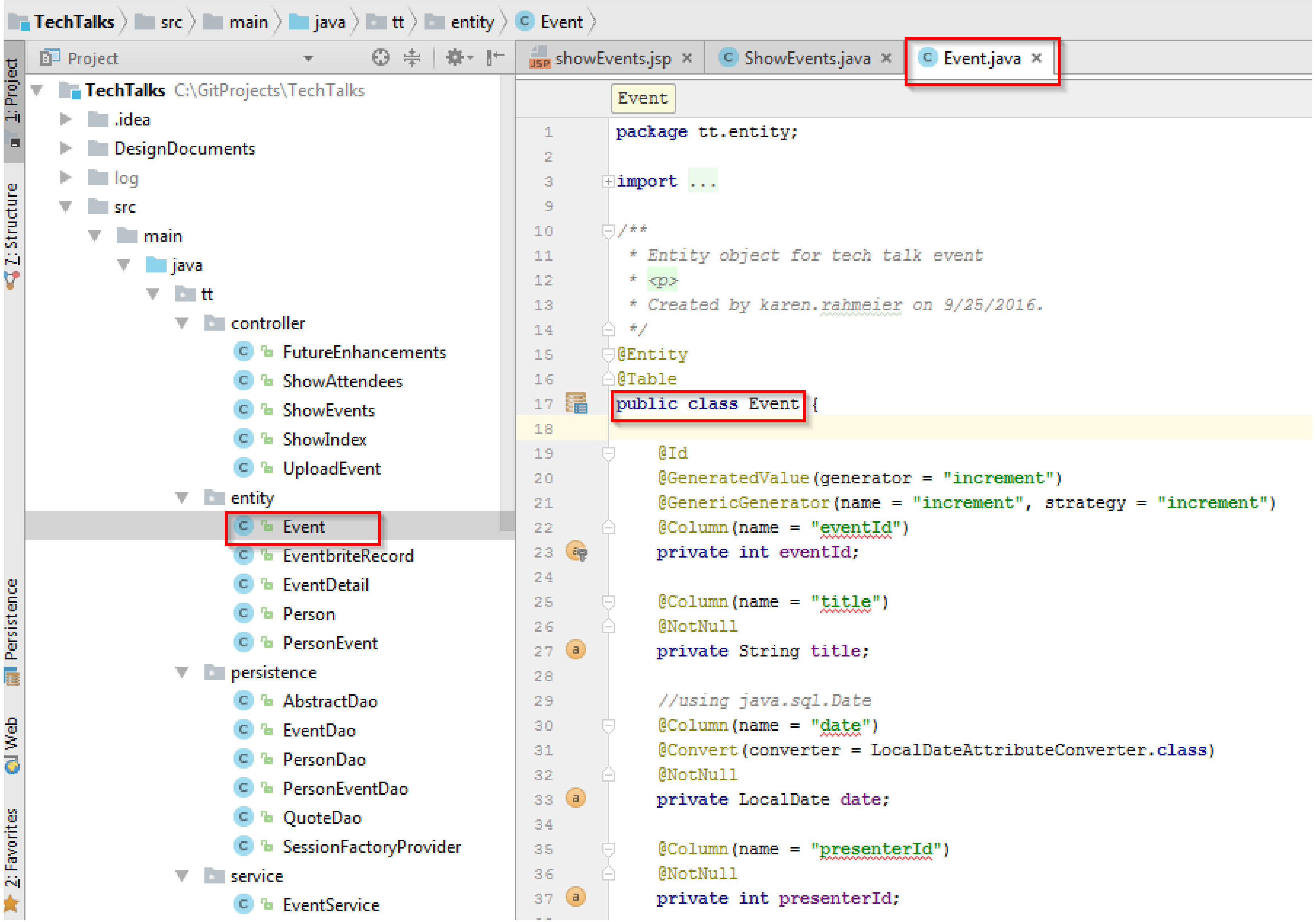
- Optional:
  - Allow searching by past event

Functionality: show past events

Functionality: Show past events

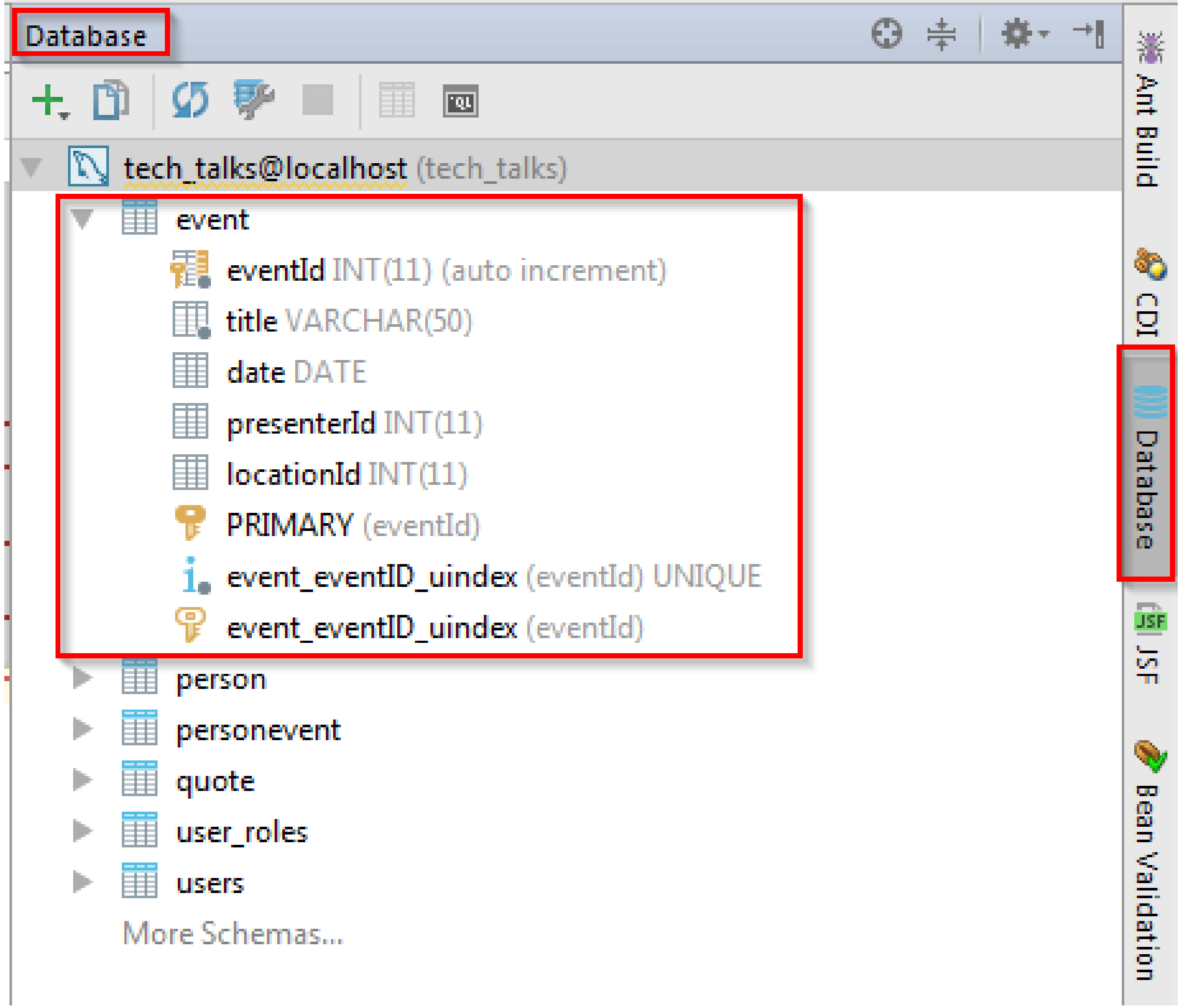
- Create Event.java (includes hibernate mapping annotations)
- Create showEvents.jsp (the display page)
- Create showEvents.java (controller)
- Create EventDao.java

- Create and run unit tests
- Test via application as deployed locally to browser



```
TechTalks C:\GitProjects\TechTalks
    .idea
    DesignDocuments
    log
    src
        main
            java
                tt
                    controller
                        FutureEnhancements
                        ShowAttendees
                        ShowEvents
                        ShowIndex
                        UploadEvent
                    entity
                        Event
                        EventbriteRecord
                        EventDetail
                        Person
                        PersonEvent
                    persistence
                        AbstractDao
                        EventDao
                        PersonDao
                        PersonEventDao
                        QuoteDao
                        SessionFactoryProvider
                    service
                        EventService
```

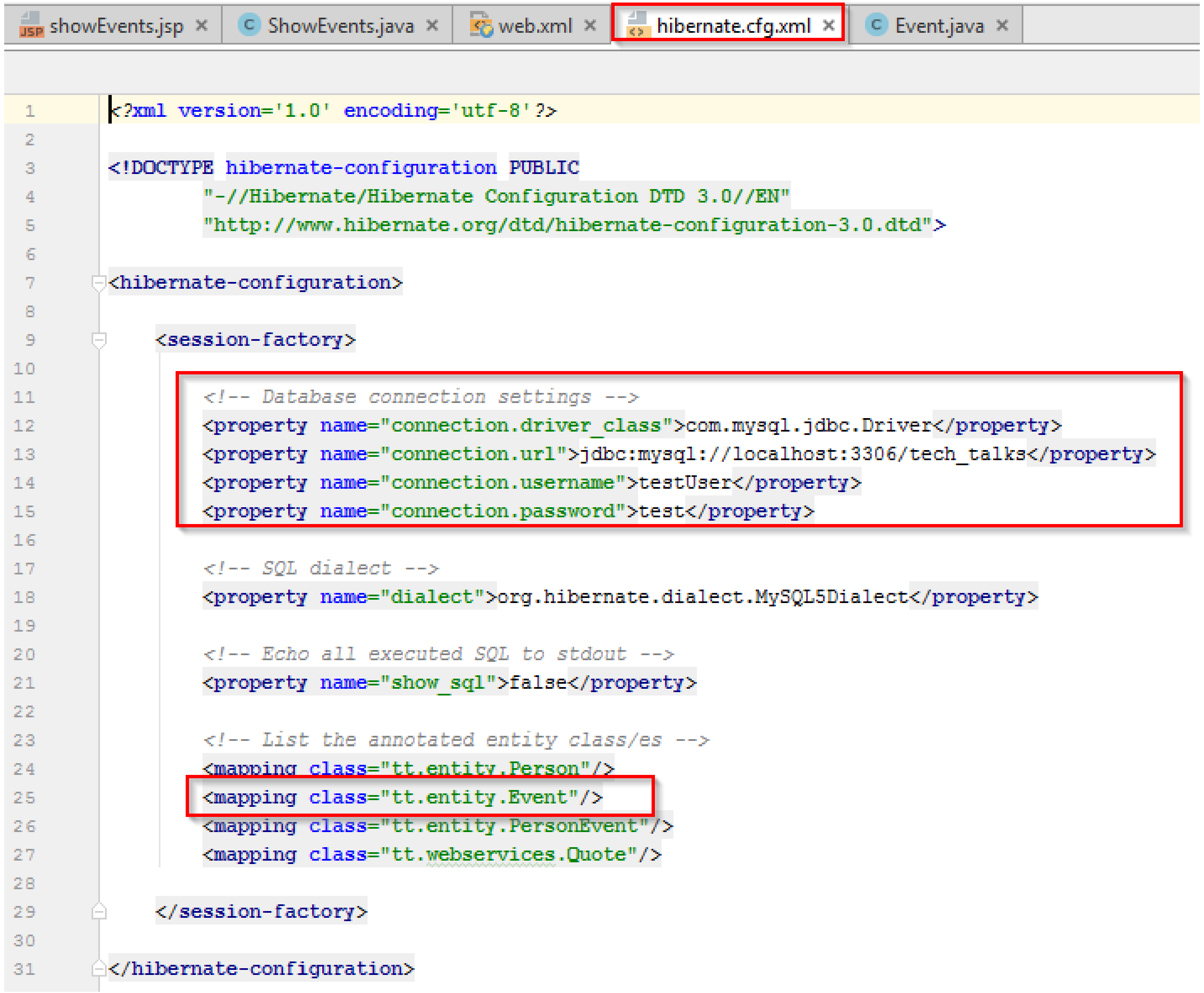
```java
package tt.entity;

import ...

/**
 * Entity object for tech talk event
 * <p>
 * Created by karen.rahmeier on 9/25/2016.
 */
@Entity
@Table
public class Event {

    @Id
    @GeneratedValue(generator = "increment")
    @GenericGenerator(name = "increment", strategy = "increment")
    @Column(name = "eventId")
    private int eventId;

    @Column(name = "title")
    @NotNull
    private String title;

    //using java.sql.Date
    @Column(name = "date")
    @Convert(converter = LocalDateAttributeConverter.class)
    @NotNull
    private LocalDate date;

    @Column(name = "presenterId")
    @NotNull
    private int presenterId;
```



tech_talks@localhost (tech_talks)

- event
  - eventId INT(11) (auto increment)
  - title VARCHAR(50)
  - date DATE
  - presenterId INT(11)
  - locationId INT(11)
  - PRIMARY (eventId)
  - event_eventID_uindex (eventId) UNIQUE
  - event_eventID_uindex (eventId)
- person
- personevent
- quote
- user_roles
- users

More Schemas...

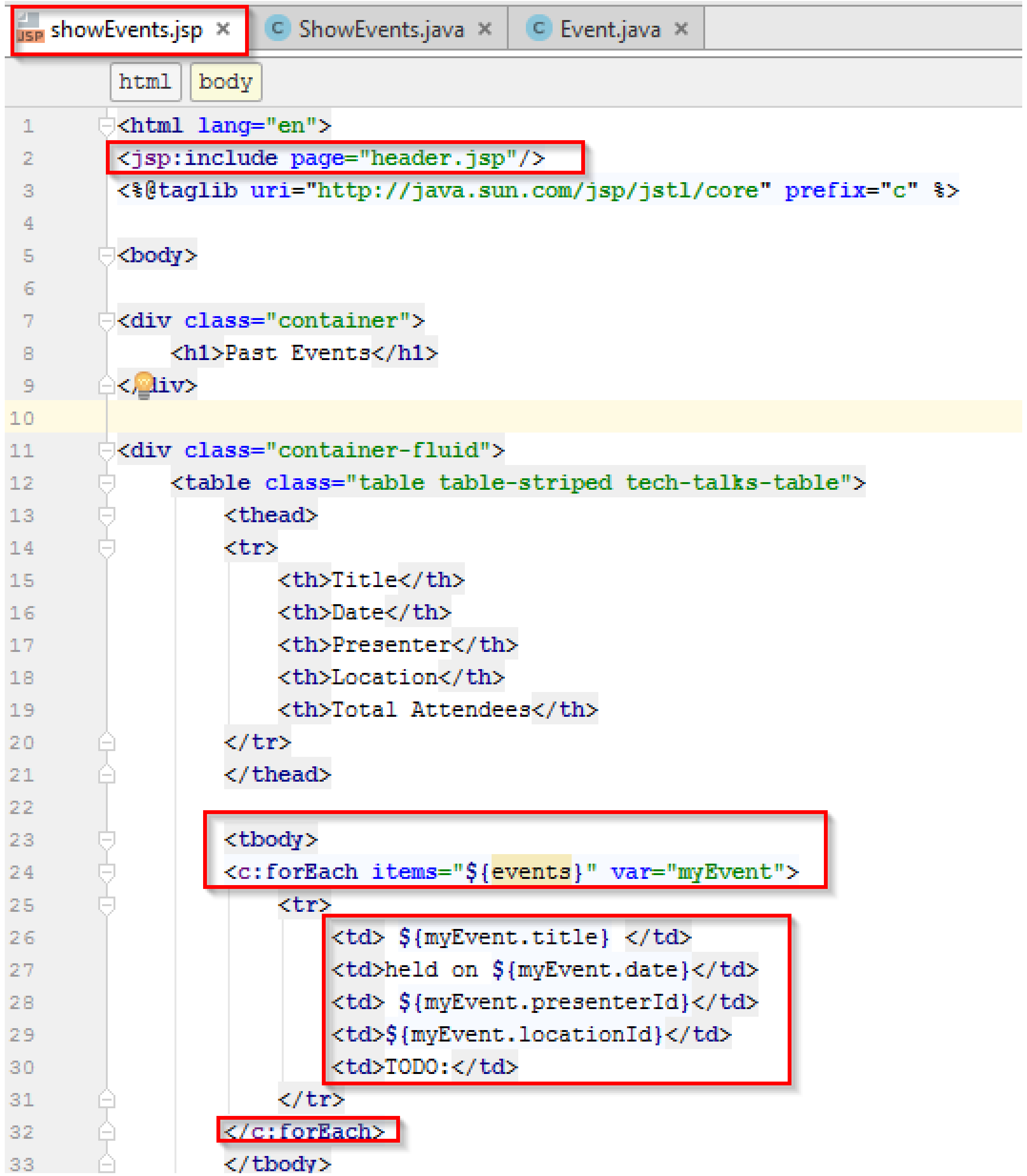


```xml
<?xml version='1.0' encoding='utf-8'?>

<!DOCTYPE hibernate-configuration PUBLIC
        "-//Hibernate/Hibernate Configuration DTD 3.0//EN"
        "http://www.hibernate.org/dtd/hibernate-configuration-3.0.dtd">

<hibernate-configuration>

    <session-factory>

        <!-- Database connection settings -->
        <property name="connection.driver_class">com.mysql.jdbc.Driver</property>
        <property name="connection.url">jdbc:mysql://localhost:3306/tech_talks</property>
        <property name="connection.username">testUser</property>
        <property name="connection.password">test</property>

        <!-- SQL dialect -->
        <property name="dialect">org.hibernate.dialect.MySQL5Dialect</property>

        <!-- Echo all executed SQL to stdout -->
        <property name="show_sql">false</property>

        <!-- List the annotated entity class/es -->
        <mapping class="tt.entity.Person"/>
        <mapping class="tt.entity.Event"/>
        <mapping class="tt.entity.PersonEvent"/>
        <mapping class="tt.webservices.Quote"/>

    </session-factory>

</hibernate-configuration>
```

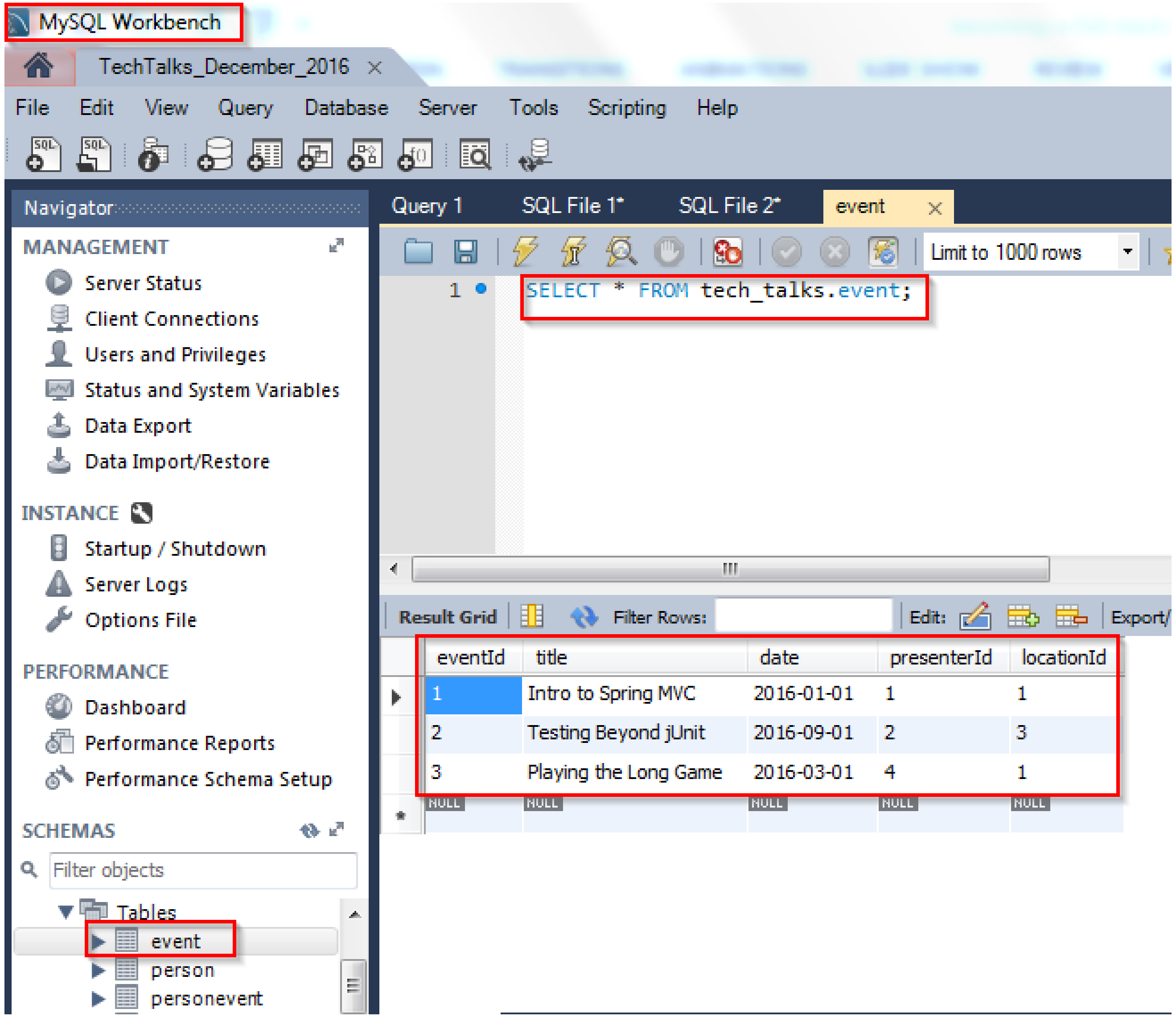
Functionality: Show past events

- Create Event.java (includes hibernate mapping annotations)
- Create showEvents.jsp (the display page)
- Create showEvents.java (controller)
- Create EventDao.java

- Create and run unit tests
- Test via application as deployed locally to browser

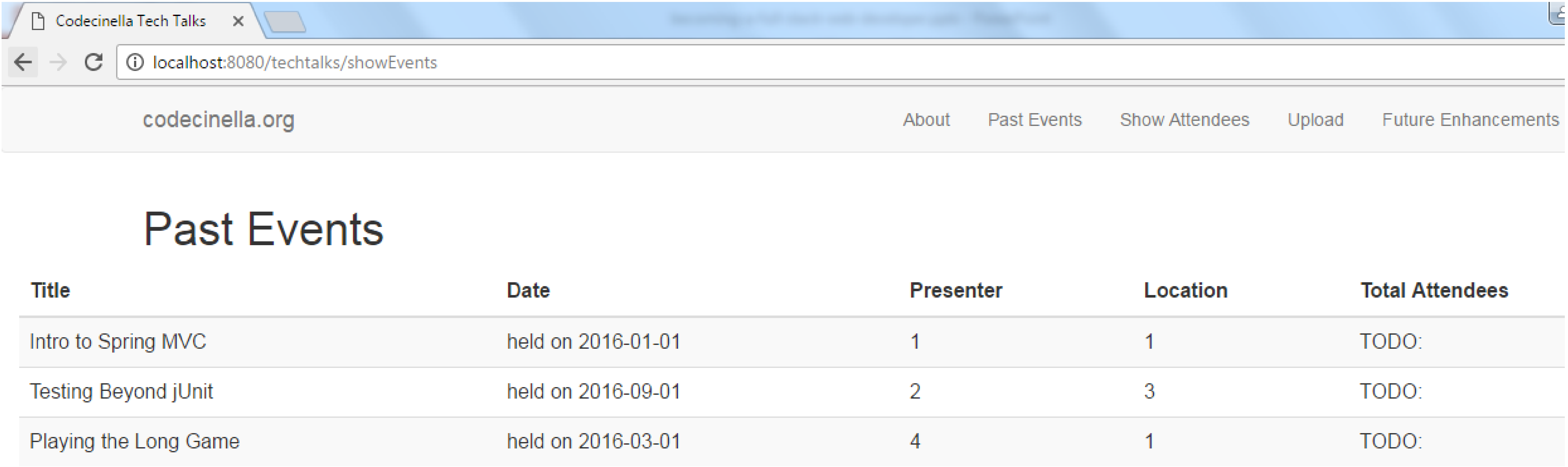


```
<html lang="en">
<jsp:include page="header.jsp"/>
<%@taglib uri="http://java.sun.com/jsp/jstl/core" prefix="c" %>

<body>

<div class="container">
    <h1>Past Events</h1>
</div>

<div class="container-fluid">
    <table class="table table-striped tech-talks-table">
        <thead>
        <tr>
            <th>Title</th>
            <th>Date</th>
            <th>Presenter</th>
            <th>Location</th>
            <th>Total Attendees</th>
        </tr>
        </thead>

        <tbody>
        <c:forEach items="${events}" var="myEvent">
            <tr>
                <td> ${myEvent.title} </td>
                <td>held on ${myEvent.date}</td>
                <td> ${myEvent.presenterId}</td>
                <td>${myEvent.locationId}</td>
                <td>TODO:</td>
            </tr>
        </c:forEach>
        </tbody>
```



```
SELECT * FROM tech_talks.event;
```

eventId	title	date	presenterId	locationId
1	Intro to Spring MVC	2016-01-01	1	1
2	Testing Beyond jUnit	2016-09-01	2	3
3	Playing the Long Game	2016-03-01	4	1
NULL	NULL	NULL	NULL	NULL



Past Events

Title	Date	Presenter	Location	Total Attendees
Intro to Spring MVC	held on 2016-01-01	1	1	TODO:
Testing Beyond jUnit	held on 2016-09-01	2	3	TODO:
Playing the Long Game	held on 2016-03-01	4	1	TODO:

Functionality: Show past events

- Create Event.java (includes hibernate mapping annotations)
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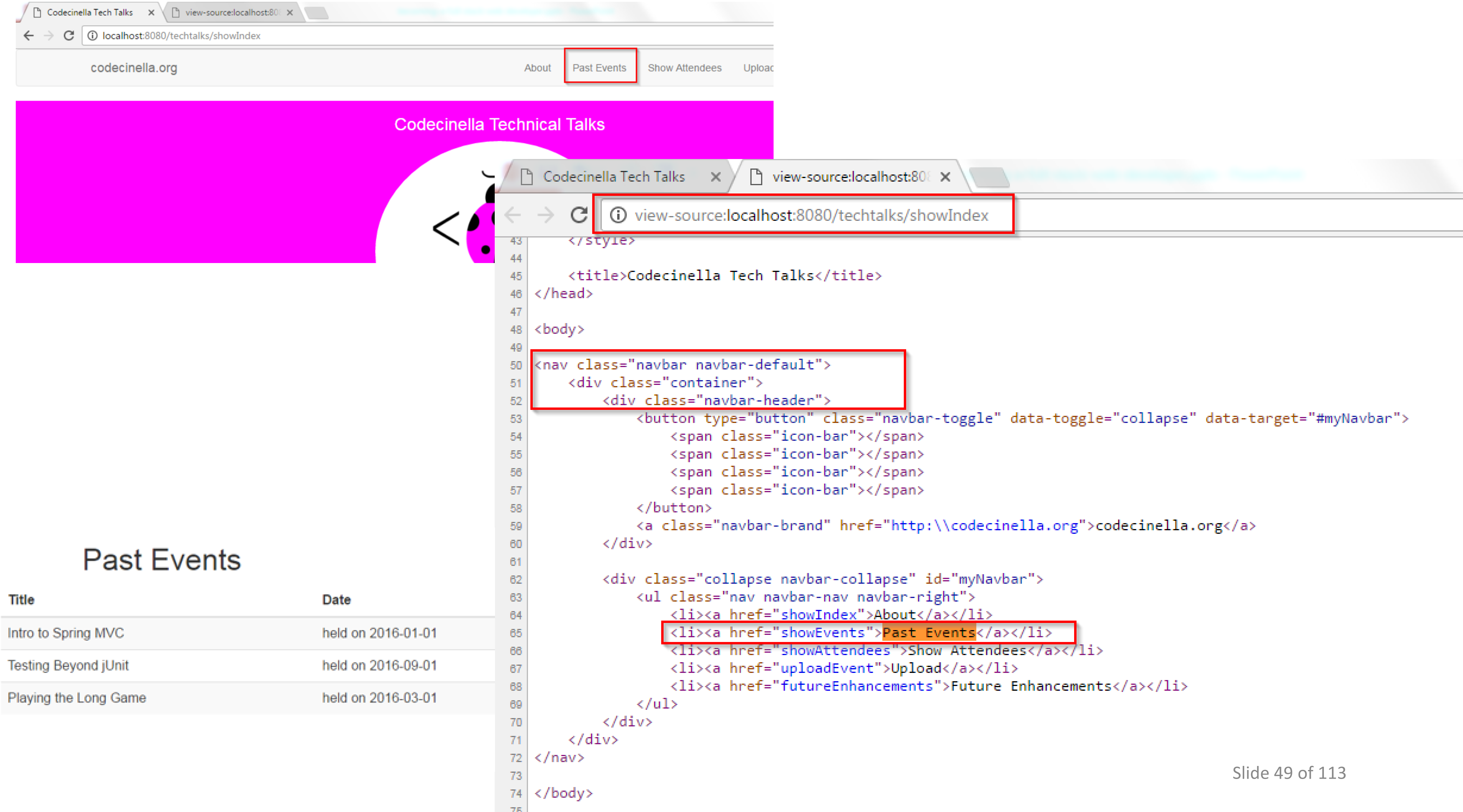
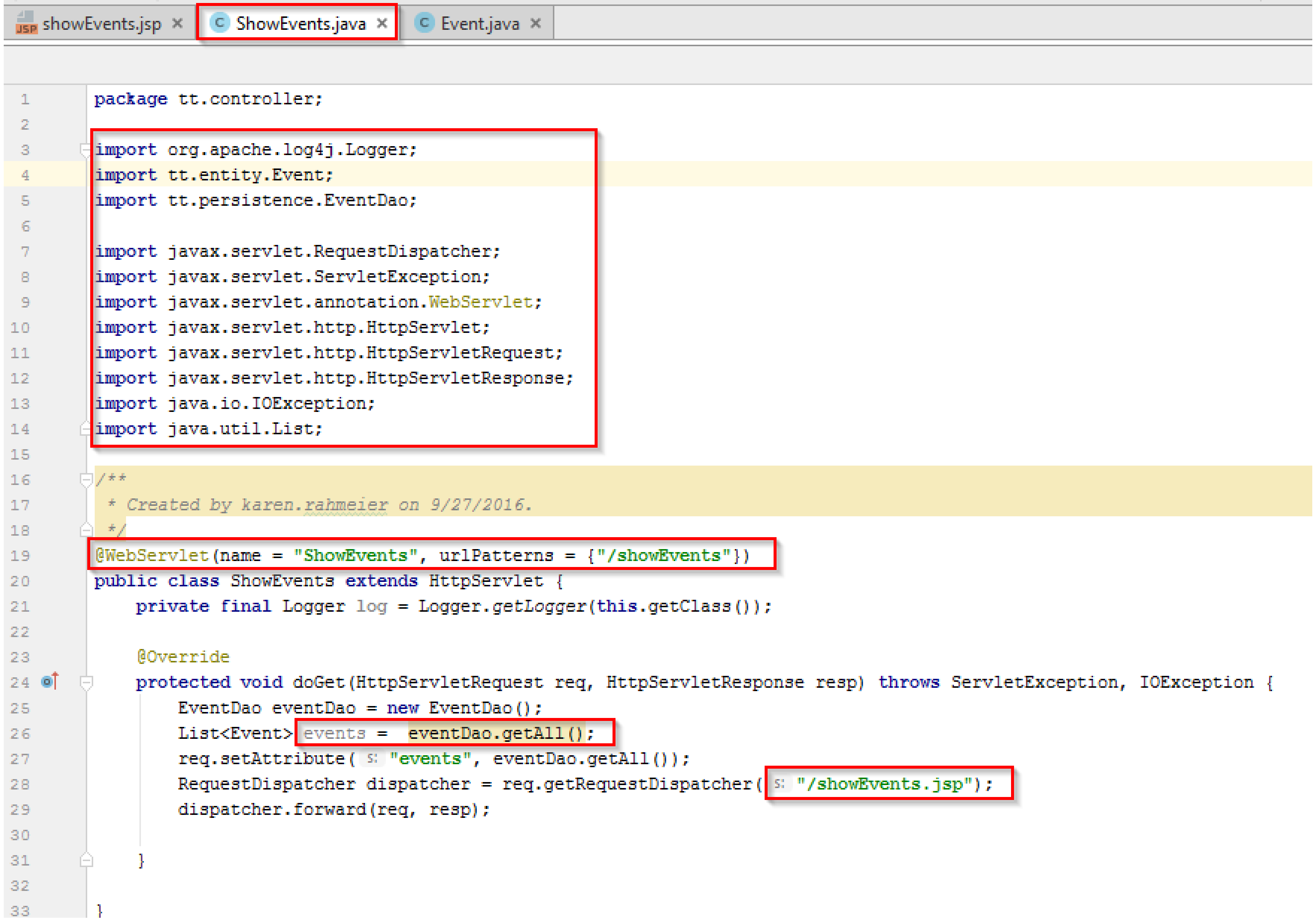


Codecinella Tech Talks
view-source:localhost:80
localhost:8080/techtalks/showIndex
codecinella.org
About
Past Events
Show Attendees
Upload
Codecinella Technical Talks
view-source:localhost:8080/techtalks/showIndex

Past Events

Title	Date
Intro to Spring MVC	held on 2016-01-01
Testing Beyond jUnit	held on 2016-09-01
Playing the Long Game	held on 2016-03-01

```
    </style>

    <title>Codecinella Tech Talks</title>
</head>

<body>

<nav class="navbar navbar-default">
    <div class="container">
        <div class="navbar-header">
            <button type="button" class="navbar-toggle" data-toggle="collapse" data-target="#myNavbar">
                <span class="icon-bar"></span>
                <span class="icon-bar"></span>
                <span class="icon-bar"></span>
                <span class="icon-bar"></span>
            </button>
            <a class="navbar-brand" href="http:\\codecinella.org">codecinella.org</a>
        </div>

        <div class="collapse navbar-collapse" id="myNavbar">
            <ul class="nav navbar-nav navbar-right">
                <li><a href="showIndex">About</a></li>
                <li><a href="showEvents">Past Events</a></li>
                <li><a href="showAttendees">Show Attendees</a></li>
                <li><a href="uploadEvent">Upload</a></li>
                <li><a href="futureEnhancements">Future Enhancements</a></li>
            </ul>
        </div>
    </div>
</nav>

</body>
```



```java
package tt.controller;

import org.apache.log4j.Logger;
import tt.entity.Event;
import tt.persistence.EventDao;

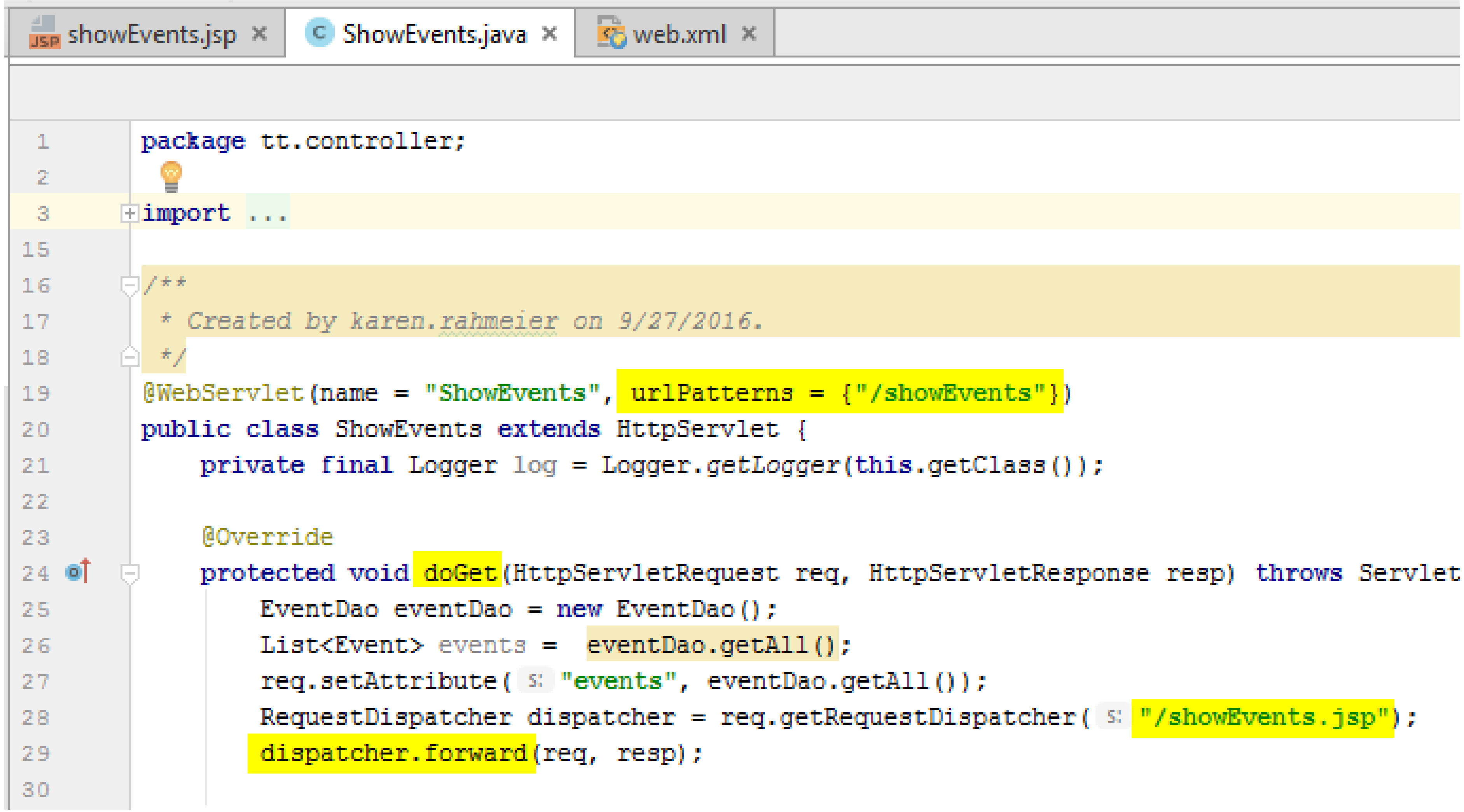
import javax.servlet.RequestDispatcher;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import java.io.IOException;
import java.util.List;

/**
 * Created by karen.rahmeier on 9/27/2016.
 */
@WebServlet(name = "ShowEvents", urlPatterns = {"/showEvents"})
public class ShowEvents extends HttpServlet {
    private final Logger log = Logger.getLogger(this.getClass());

    @Override
    protected void doGet(HttpServletRequest req, HttpServletResponse resp) throws ServletException, IOException {
        EventDao eventDao = new EventDao();
        List<Event> events =  eventDao.getAll();
        req.setAttribute( s: "events", eventDao.getAll());
        RequestDispatcher dispatcher = req.getRequestDispatcher( s: "/showEvents.jsp");
        dispatcher.forward(req, resp);

    }

}
```



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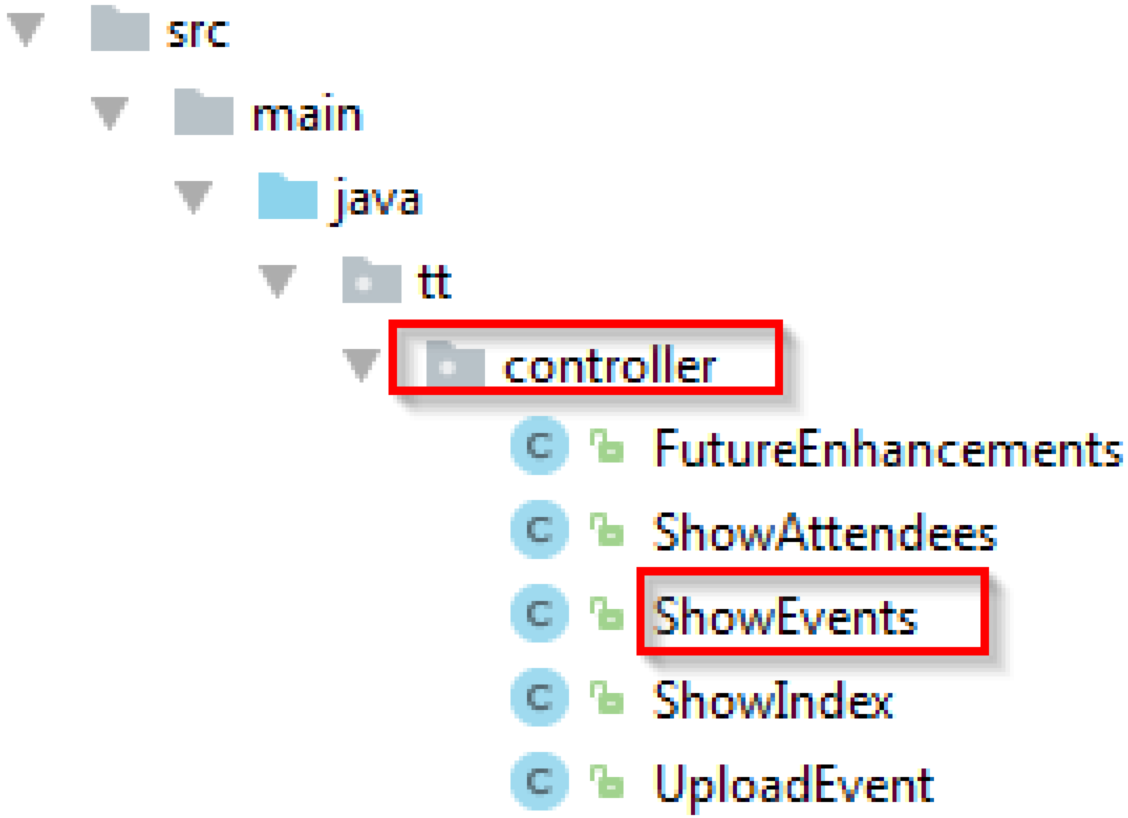
 * Created by karen.rahmeier on 9/27/2016.
 */
@WebServlet(name = "ShowEvents", urlPatterns = {"/showEvents"})
public class ShowEvents extends HttpServlet {
    private final Logger log = Logger.getLogger(this.getClass());

    @Override
    protected void doGet(HttpServletRequest req, HttpServletResponse resp) throws Servlet
        EventDao eventDao = new EventDao();
        List<Event> events =  eventDao.getAll();
        req.setAttribute( s: "events", eventDao.getAll());
        RequestDispatcher dispatcher = req.getRequestDispatcher( s: "/showEvents.jsp");
        dispatcher.forward(req, resp);

```

- Controller classes:



```
src
  main
    java
      tt
        controller
          FutureEnhancements
          ShowAttendees
          ShowEvents
          ShowIndex
          UploadEvent
```

HttpServletRequest

- Menu link clicked by user
- Magic happens:
  - the browser talks to the application server
  - and your application works!

- Java API gives class method names
  - doGet, doPost
- (Tomcat) application server implements it
- Fundamental aspect of java web application

Dog Request Response Protocol

Dog Request Response Protocol

dogOutRequest

- isRainingOut?
- isGoodSmellsOut?
- needToPee
- isSquirrelOut?

dogInResponse

- gotMuddyPaws
- butBarkingIsFun
- seeMyNewStick
- iDidPee

Dog Request Response Protocol

dogOutAPI

- requestPurpose(text)
- dogInitiatedRequest(boolean)
- doorOutId(int, kitchenDoor=1)
- dogRequestWaitTime(timestmp)
- dogRequestUrgency(int)

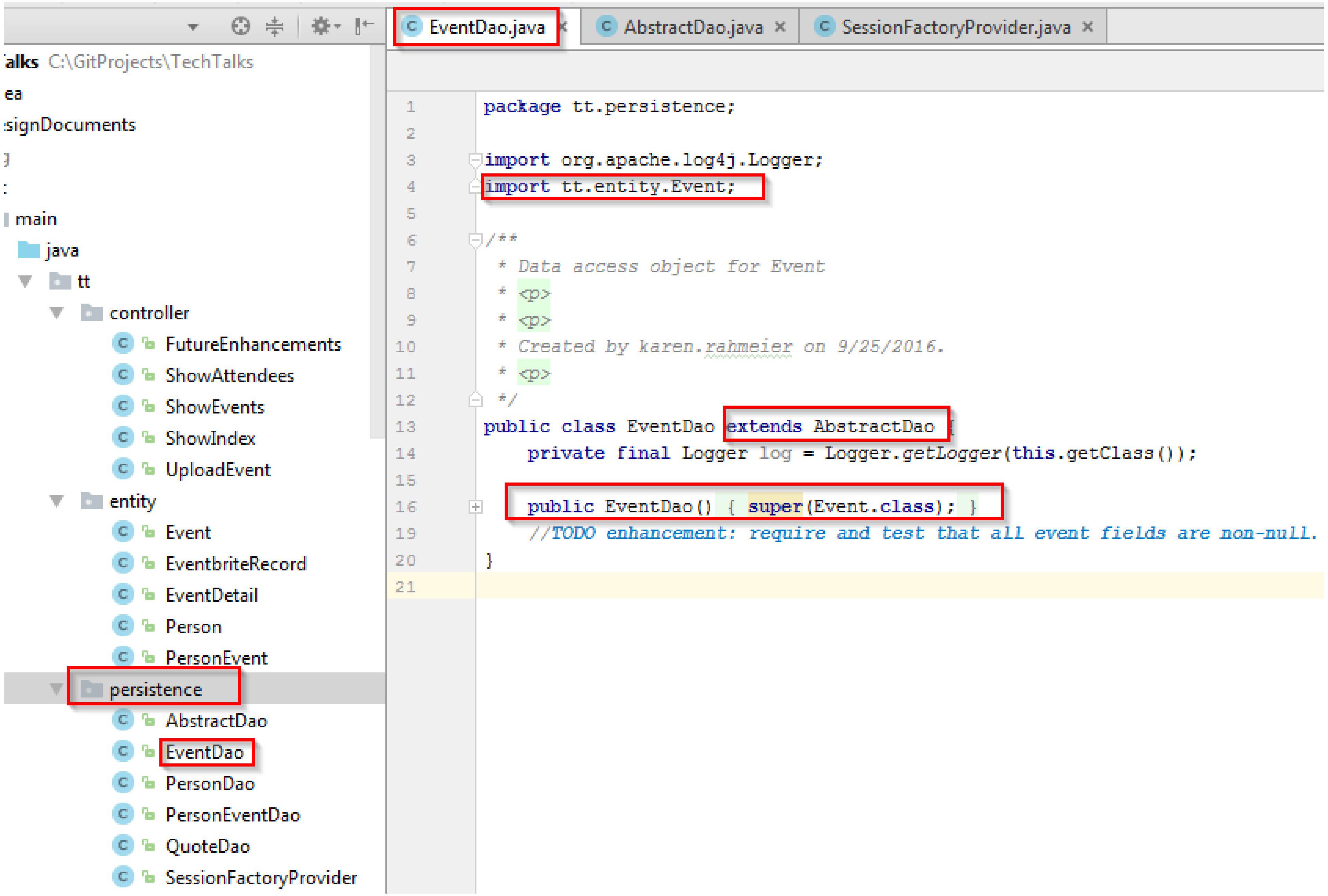
dogInAPI

- coatMoistureLevel(int)
- pawCleanlinessLevel(int)
- askedForInHerself(boolean)
- responseTimeToInCommand(ts)
- doorInId(int, kitchenDoor=1)
- supplementalItemCarriedIn(text)

Functionality: Show past events

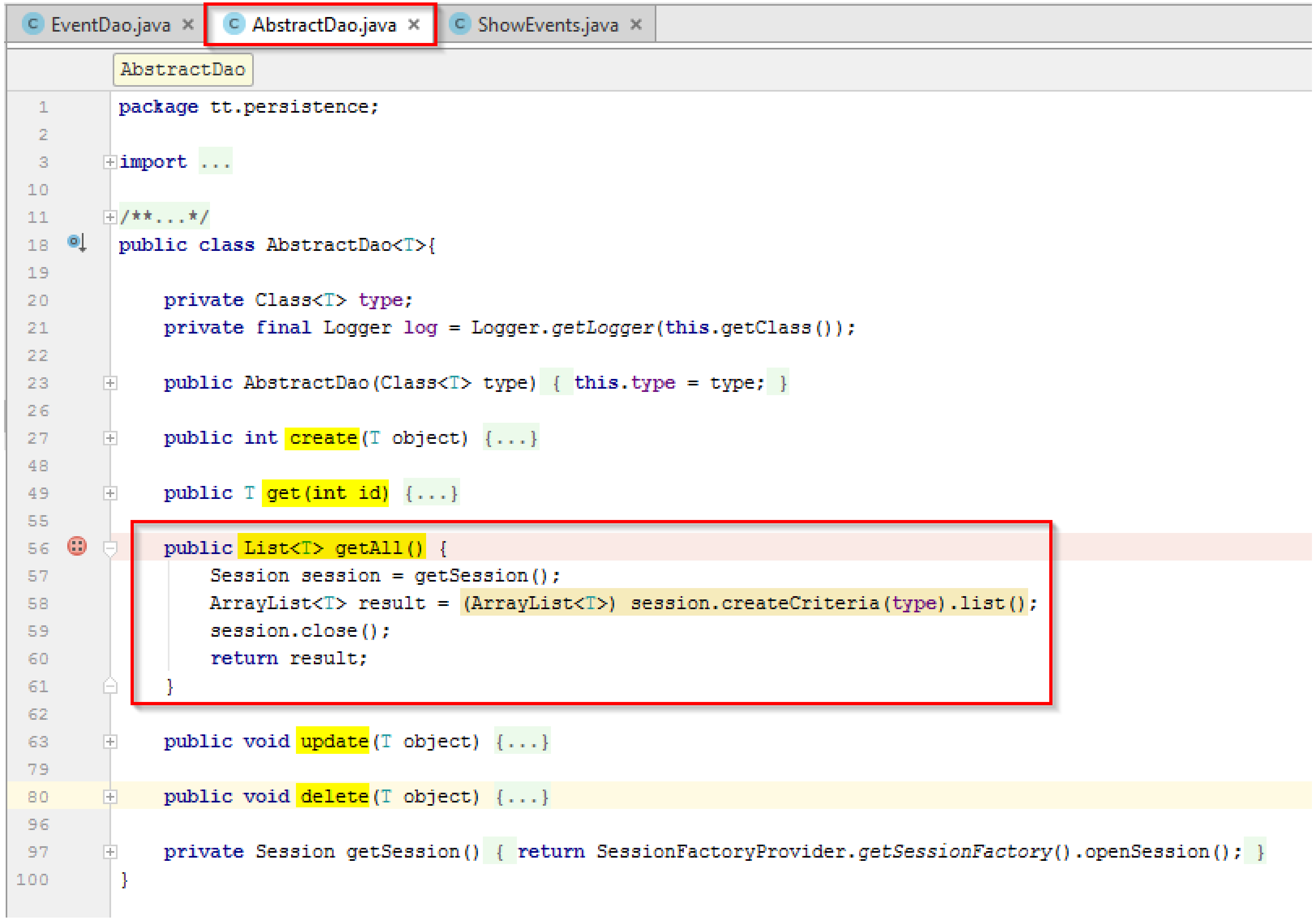
- Create Event.java (includes hibernate mapping annotations)
- Create showEvents.jsp (the display page)
- Create showEvents.java (controller)
- Create EventDao.java

- Create and run unit tests
- Test via application as deployed locally to browser

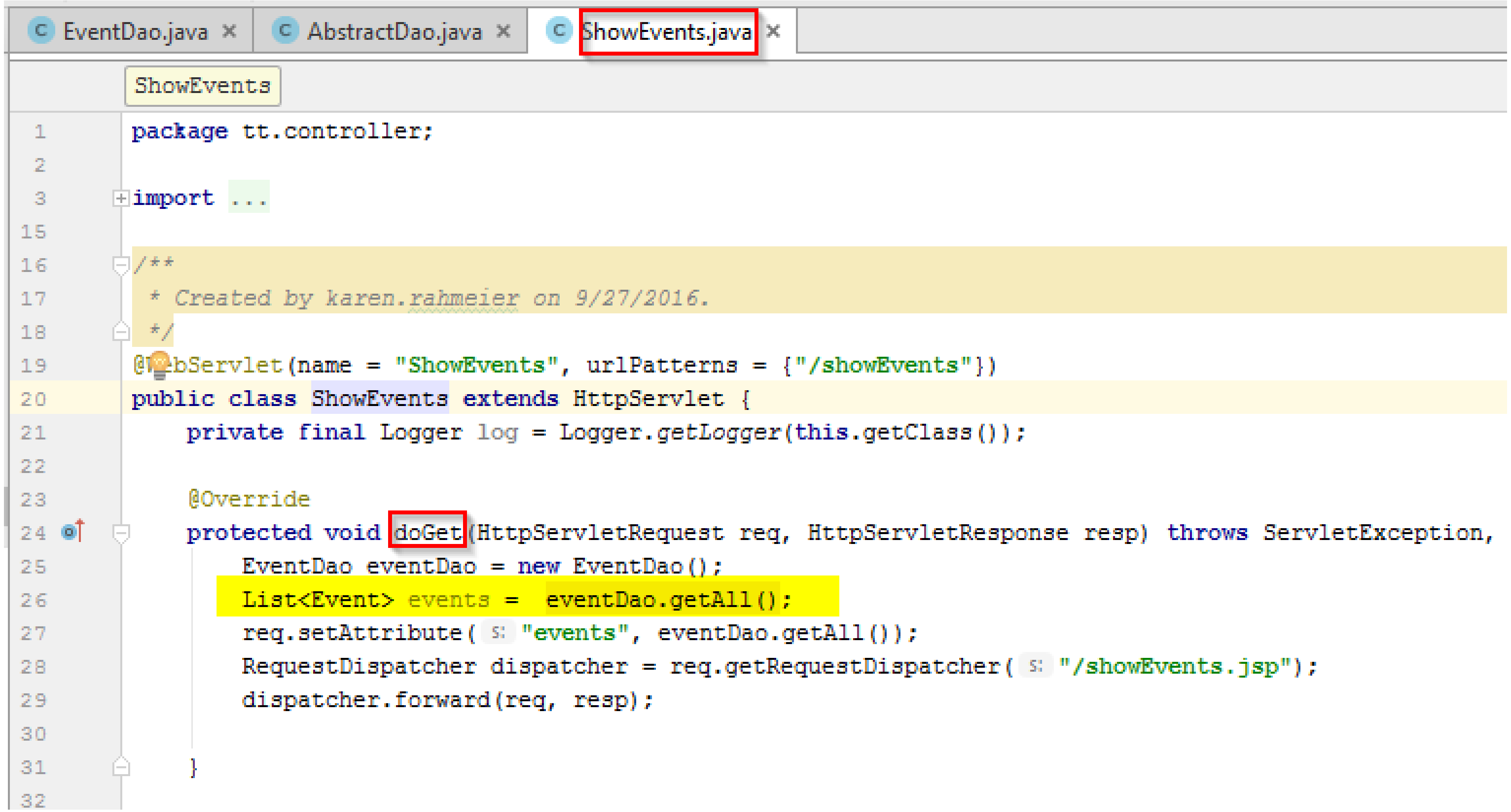


```
alks  C:\GitProjects\TechTalks
ea
signDocuments
j
:
main
  java
    tt
      controller
        FutureEnhancements
        ShowAttendees
        ShowEvents
        ShowIndex
        UploadEvent
      entity
        Event
        EventbriteRecord
        EventDetail
        Person
        PersonEvent
      persistence
        AbstractDao
        EventDao
        PersonDao
        PersonEventDao
        QuoteDao
        SessionFactoryProvider
```

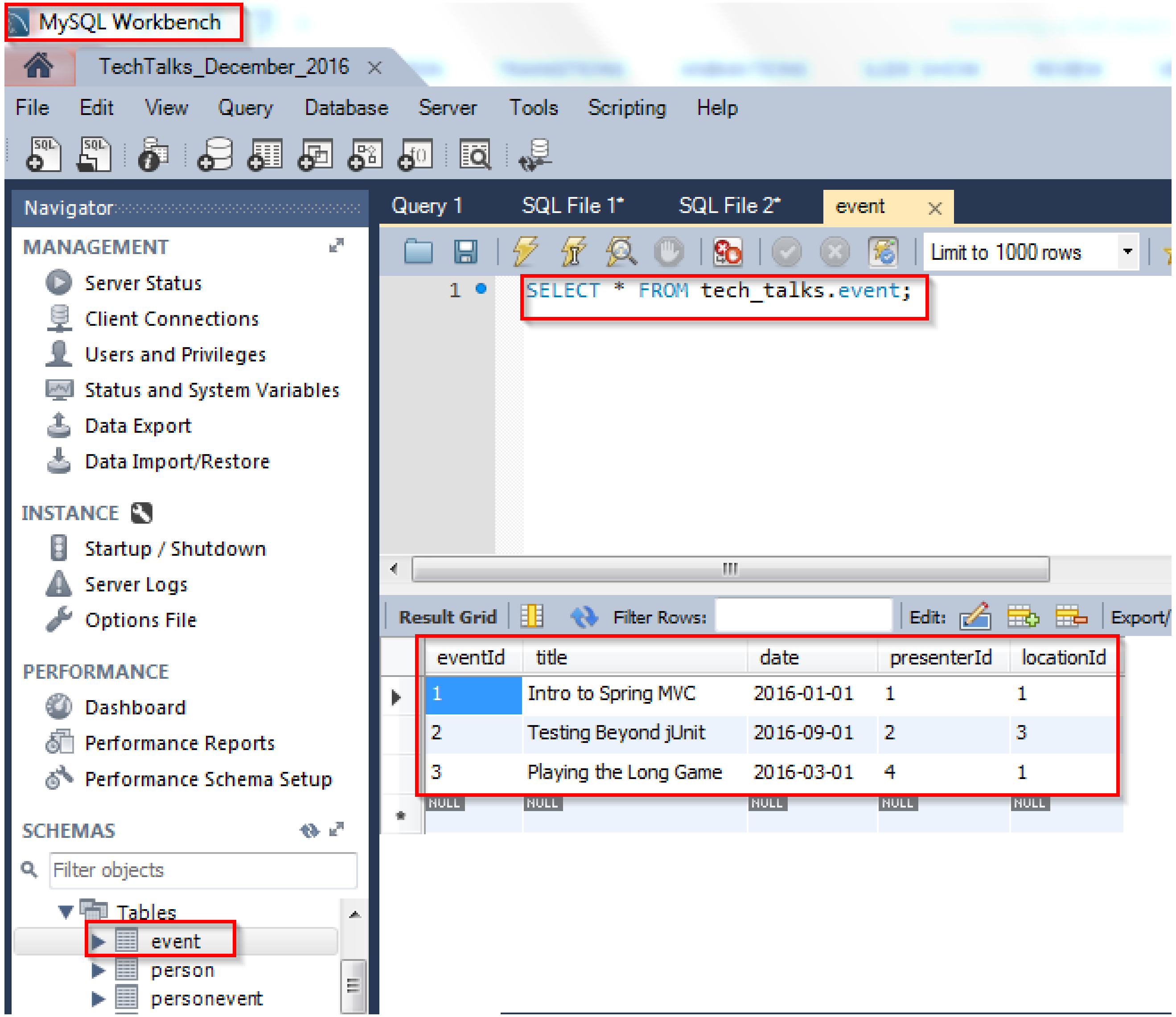
```java
package tt.persistence;

import org.apache.log4j.Logger;
import tt.entity.Event;

/**
 * Data access object for Event
 * <p>
 * <p>
 * Created by karen.rahmeier on 9/25/2016.
 * <p>
 */
public class EventDao extends AbstractDao {
    private final Logger log = Logger.getLogger(this.getClass());

    public EventDao() { super(Event.class); }
    //TODO enhancement: require and test that all event fields are non-null.
}

```



```java
package tt.persistence;

import ...

/**...*/
public class AbstractDao<T>{

    private Class<T> type;
    private final Logger log = Logger.getLogger(this.getClass());

    public AbstractDao(Class<T> type) { this.type = type; }

    public int create(T object) {...}

    public T get(int id) {...}

    public List<T> getAll() {
        Session session = getSession();
        ArrayList<T> result = (ArrayList<T>) session.createCriteria(type).list();
        session.close();
        return result;
    }

    public void update(T object) {...}

    public void delete(T object) {...}

    private Session getSession() { return SessionFactoryProvider.getSessionFactory().openSession(); }
}
```

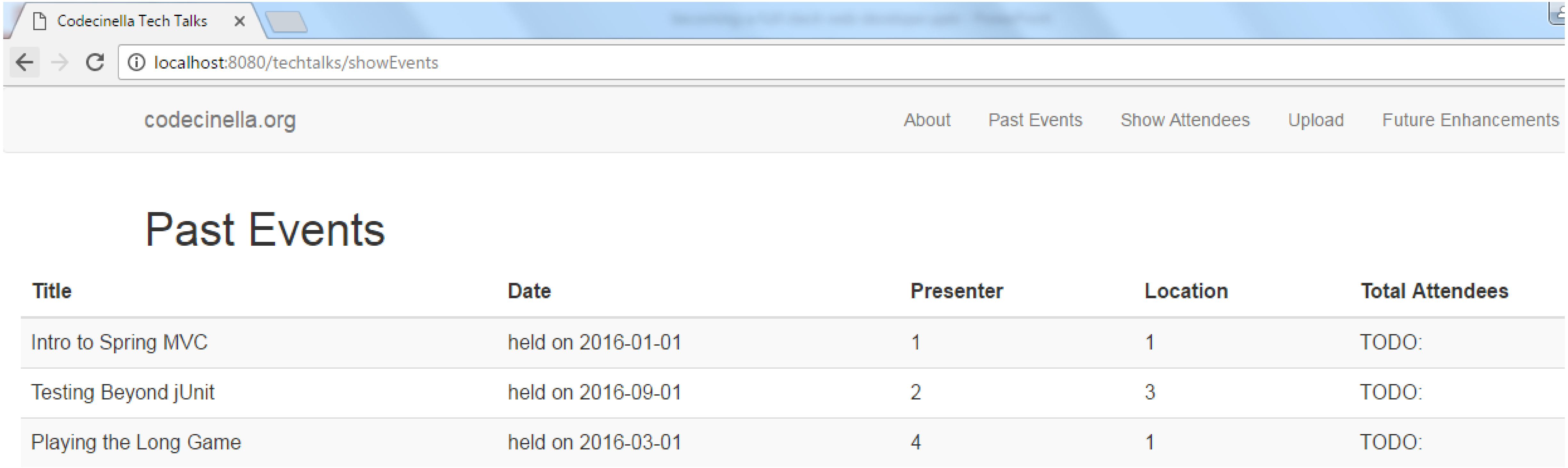


```java
package tt.controller;

import ...

/**
 * Created by karen.rahmeier on 9/27/2016.
 */
@WebServlet(name = "ShowEvents", urlPatterns = {"/showEvents"})
public class ShowEvents extends HttpServlet {
    private final Logger log = Logger.getLogger(this.getClass());

    @Override
    protected void doGet(HttpServletRequest req, HttpServletResponse resp) throws ServletException,
        EventDao eventDao = new EventDao();
        List<Event> events =  eventDao.getAll();
        req.setAttribute( s: "events", eventDao.getAll());
        RequestDispatcher dispatcher = req.getRequestDispatcher( s: "/showEvents.jsp");
        dispatcher.forward(req, resp);

    }

```



```
SELECT * FROM tech_talks.event;
```

eventId	title	date	presenterId	locationId
1	Intro to Spring MVC	2016-01-01	1	1
2	Testing Beyond jUnit	2016-09-01	2	3
3	Playing the Long Game	2016-03-01	4	1
NULL	NULL	NULL	NULL	NULL



Past Events

Title	Date	Presenter	Location	Total Attendees
Intro to Spring MVC	held on 2016-01-01	1	1	TODO:
Testing Beyond jUnit	held on 2016-09-01	2	3	TODO:
Playing the Long Game	held on 2016-03-01	4	1	TODO:

Functionality: Show past events

- Create Event.java (includes hibernate mapping annotations)
- Create showEvents.jsp (the display page)
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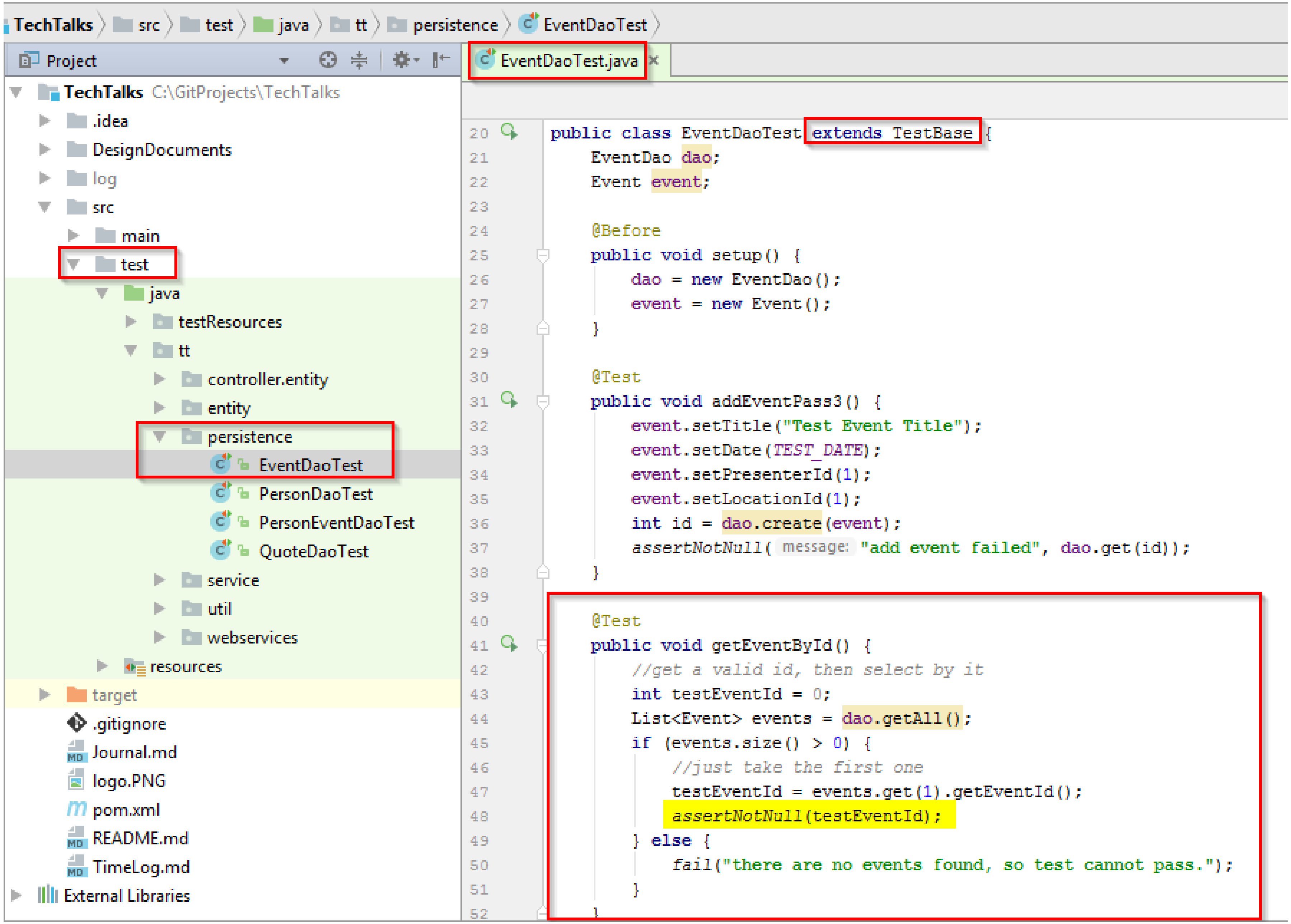
- Create EventDao.java

- Create and run unit tests
- Test via application as deployed locally to browser

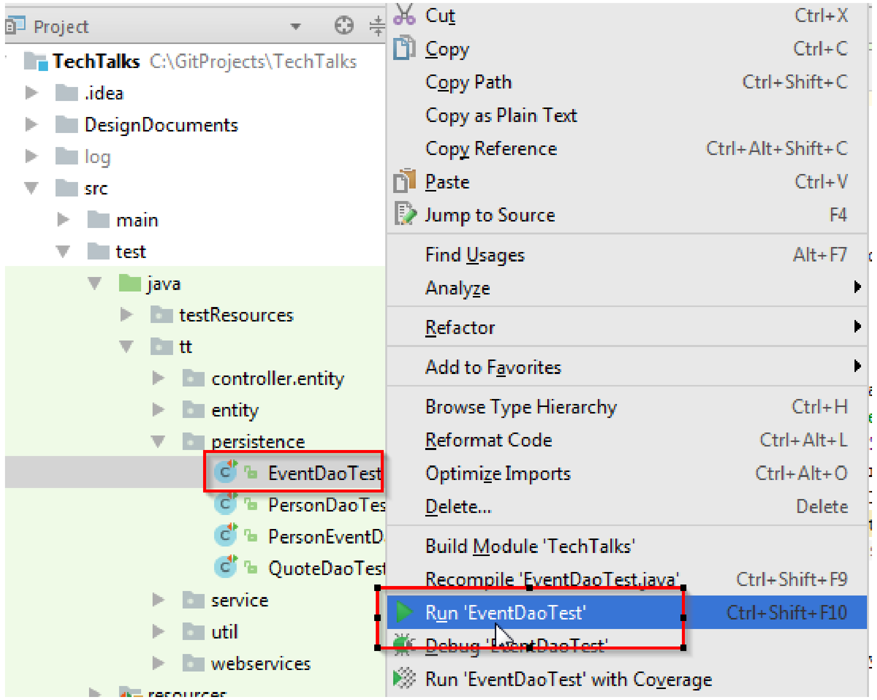


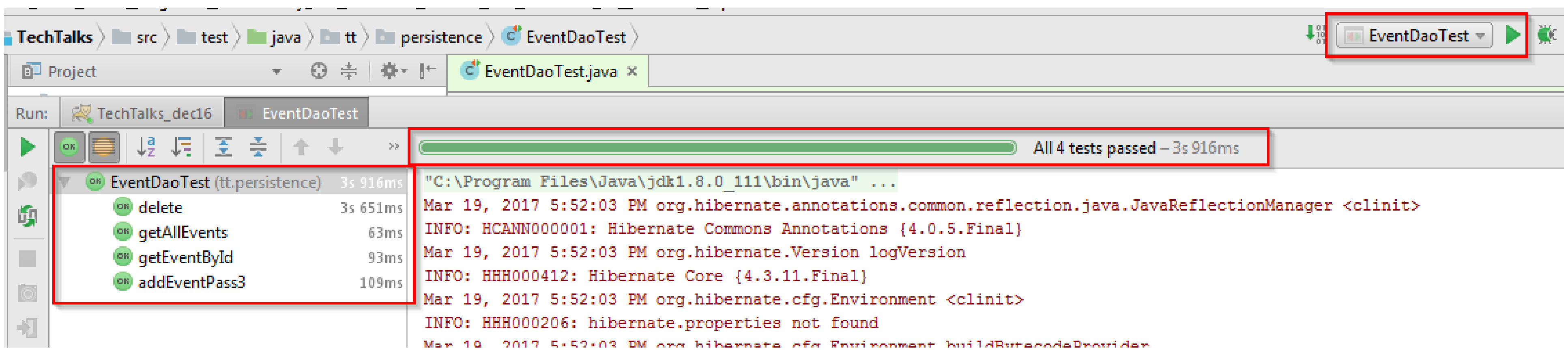
```java
public class EventDaoTest extends TestBase {
    EventDao dao;
    Event event;

    @Before
    public void setup() {
        dao = new EventDao();
        event = new Event();
    }

    @Test
    public void addEventPass3() {
        event.setTitle("Test Event Title");
        event.setDate(TEST_DATE);
        event.setPresenterId(1);
        event.setLocationId(1);
        int id = dao.create(event);
        assertNotNull( message: "add event failed", dao.get(id));
    }

    @Test
    public void getEventById() {
        //get a valid id, then select by it
        int testEventId = 0;
        List<Event> events = dao.getAll();
        if (events.size() > 0) {
            //just take the first one
            testEventId = events.get(1).getEventId();
            assertNotNull(testEventId);
        } else {
            fail("there are no events found, so test cannot pass.");
        }
    }
```





All 4 tests passed – 3s 916ms

```
EventDaoTest (tt.persistence)   3s 916ms
    delete                      3s 651ms
    getAllEvents                    63ms
    getEventById                    93ms
    addEventPass3                  109ms
```

```
"C:\Program Files\Java\jdk1.8.0_111\bin\java" ...
Mar 19, 2017 5:52:03 PM org.hibernate.annotations.common.reflection.java.JavaReflectionManager <clinit>
INFO: HCANN000001: Hibernate Commons Annotations {4.0.5.Final}
Mar 19, 2017 5:52:03 PM org.hibernate.Version logVersion
INFO: HHH000412: Hibernate Core {4.3.11.Final}
Mar 19, 2017 5:52:03 PM org.hibernate.cfg.Environment <clinit>
INFO: HHH000206: hibernate.properties not found
Mar 19, 2017 5:52:03 PM org.hibernate.cfg.Environment buildBytecodeProvider
```

Functionality: Show past events

- Create Event.java (includes hibernate mapping annotations)
- Create showEvents.jsp (the display page)
- Create showEvents.java (controller)
- Create EventDao.java

- Create and run unit tests
- Test via application as deployed locally to browser

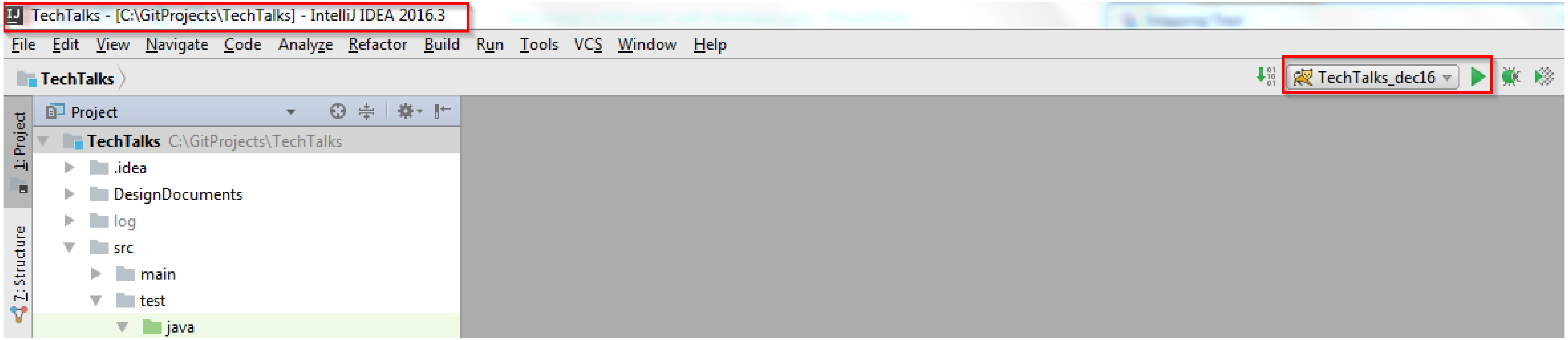
Build and deploy application

Maven build

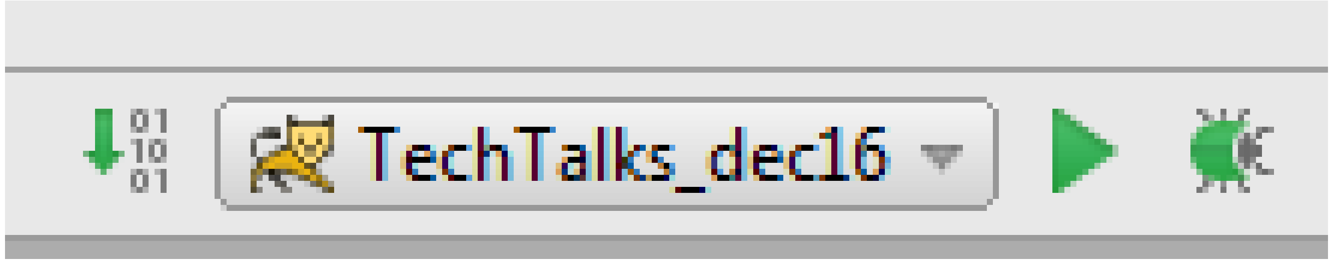
jUnit tests pass

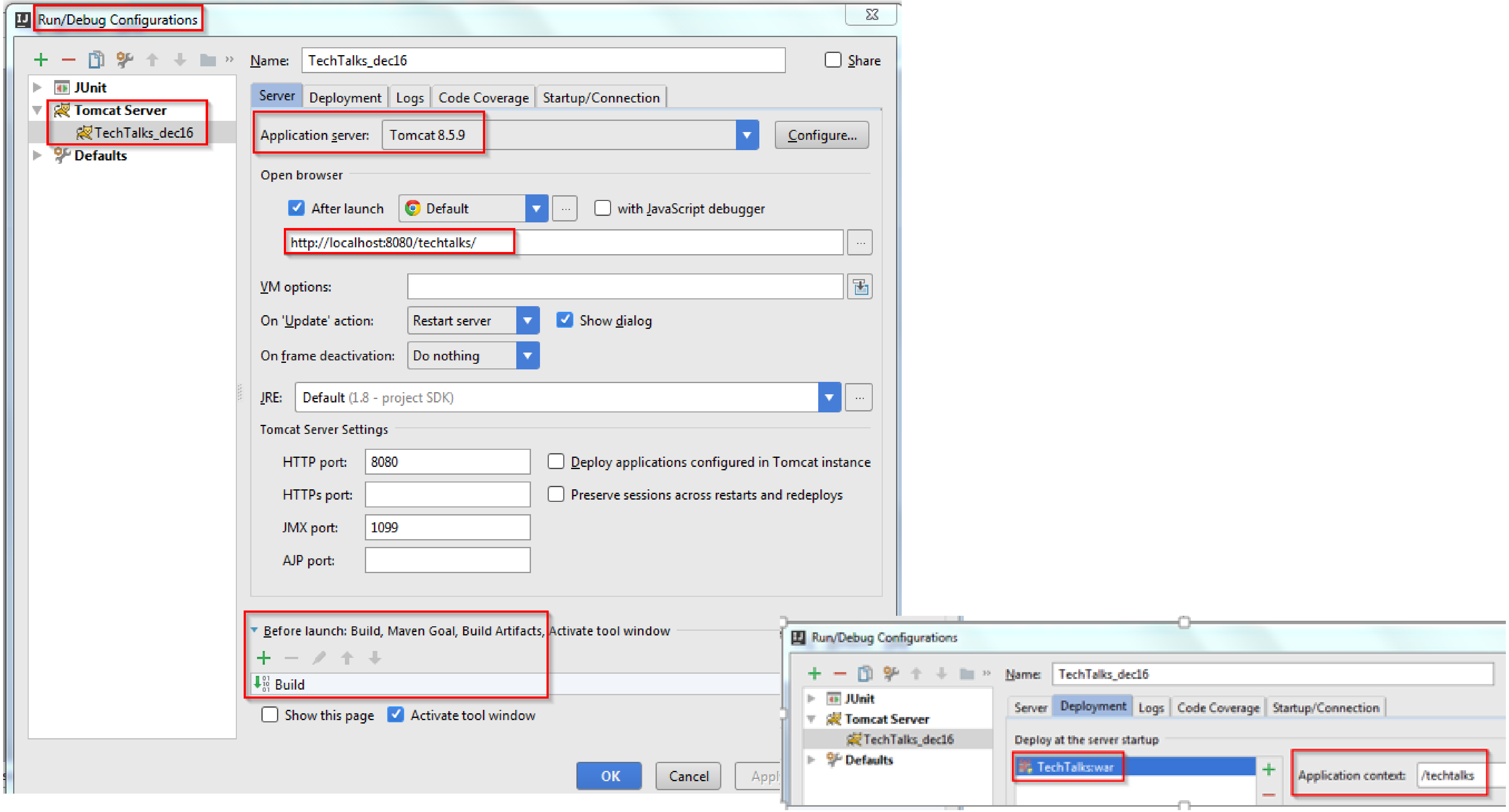
Tomcat web server deployment

Build and deploy the application



TechTalks - [C:\GitProjects\TechTalks] - IntelliJ IDEA 2016.3
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
TechTalks
TechTalks_dec16
1: Project
7: Structure
Project
TechTalks C:\GitProjects\TechTalks
.idea
DesignDocuments
log
src
main
test
java





Run/Debug Configurations

- JUnit
- Tomcat Server
  - TechTalks_dec16
- Defaults

Name: TechTalks_dec16 □ Share

Server | Deployment | Logs | Code Coverage | Startup/Connection

Application server: Tomcat 8.5.9 Configure...

Open browser

☑ After launch Default ... □ with JavaScript debugger

http://localhost:8080/techtalks/

VM options:

On 'Update' action: Restart server ☑ Show dialog

On frame deactivation: Do nothing

JRE: Default (1.8 - project SDK)

Tomcat Server Settings

HTTP port: 8080 □ Deploy applications configured in Tomcat instance

HTTPs port: □ Preserve sessions across restarts and redeploys

JMX port: 1099

AJP port:

Before launch: Build, Maven Goal, Build Artifacts, Activate tool window

Build

□ Show this page ☑ Activate tool window

OK Cancel Appl

Run/Debug Configurations

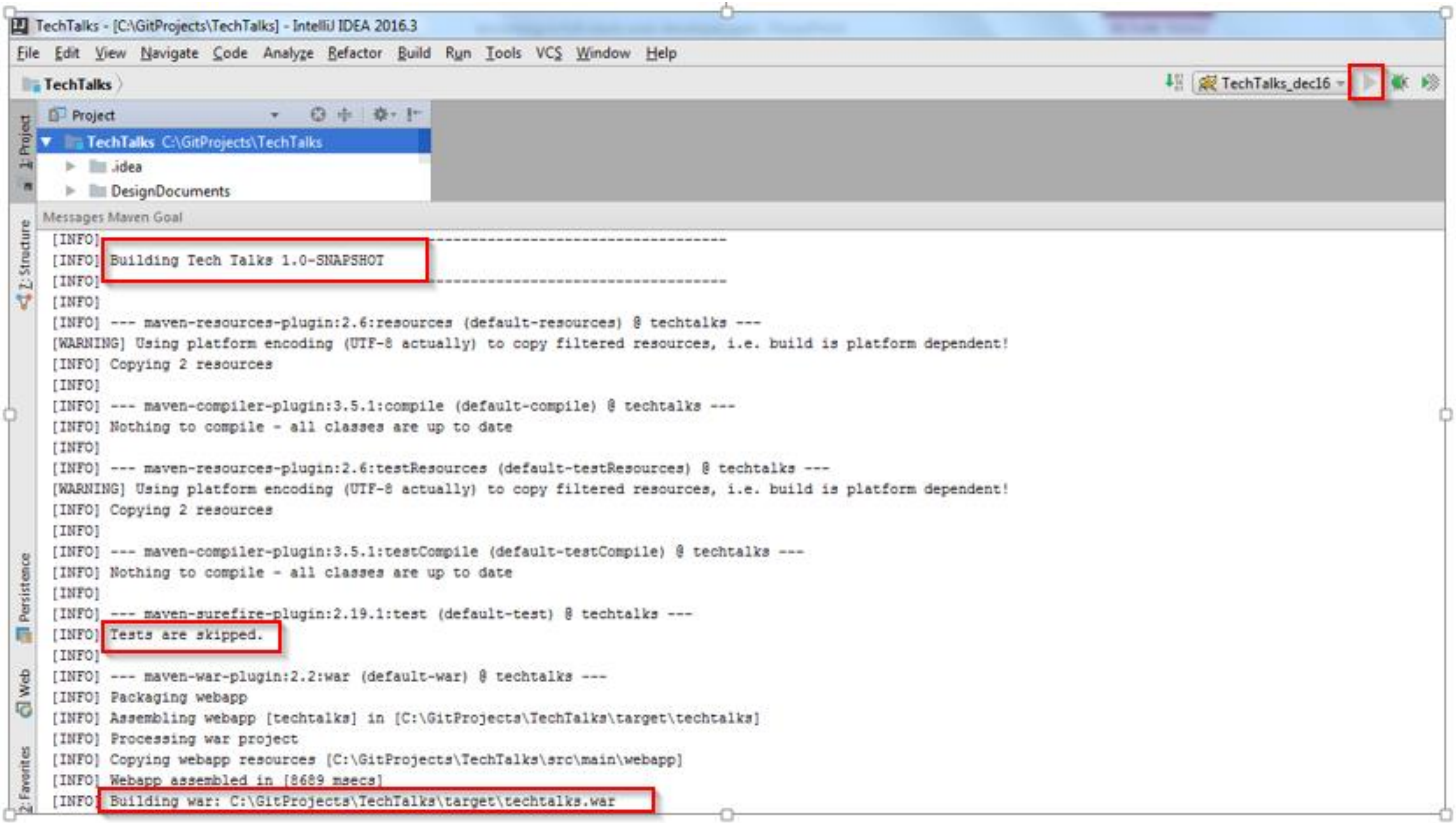
Name: TechTalks_dec16

Server | Deployment | Logs | Code Coverage | Startup/Connection

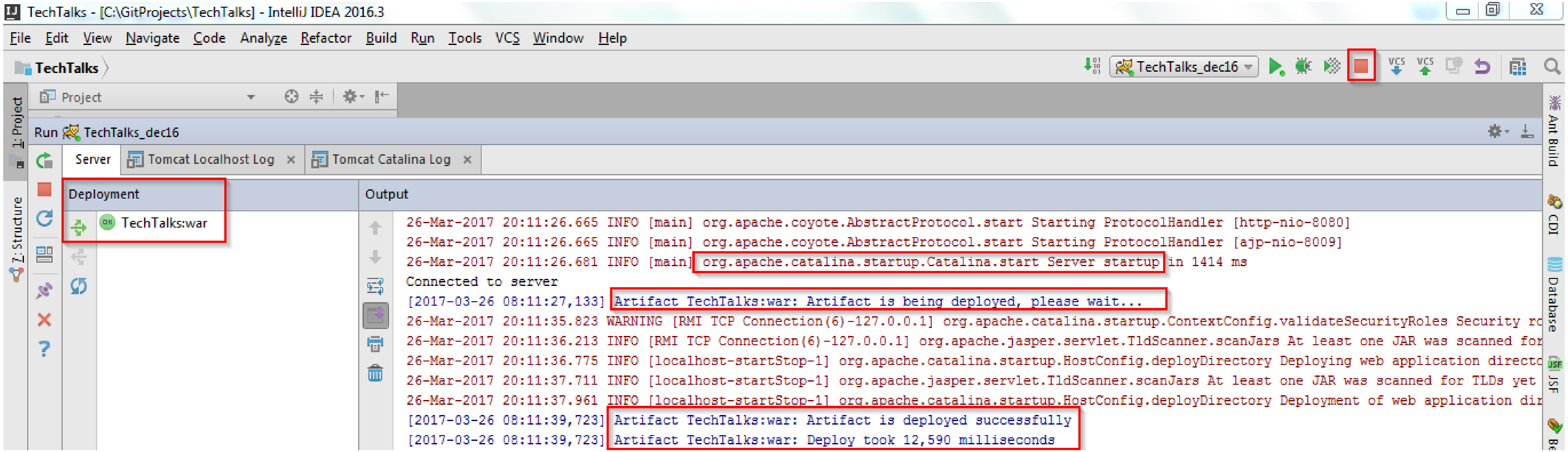
Deploy at the server startup

TechTalks:war

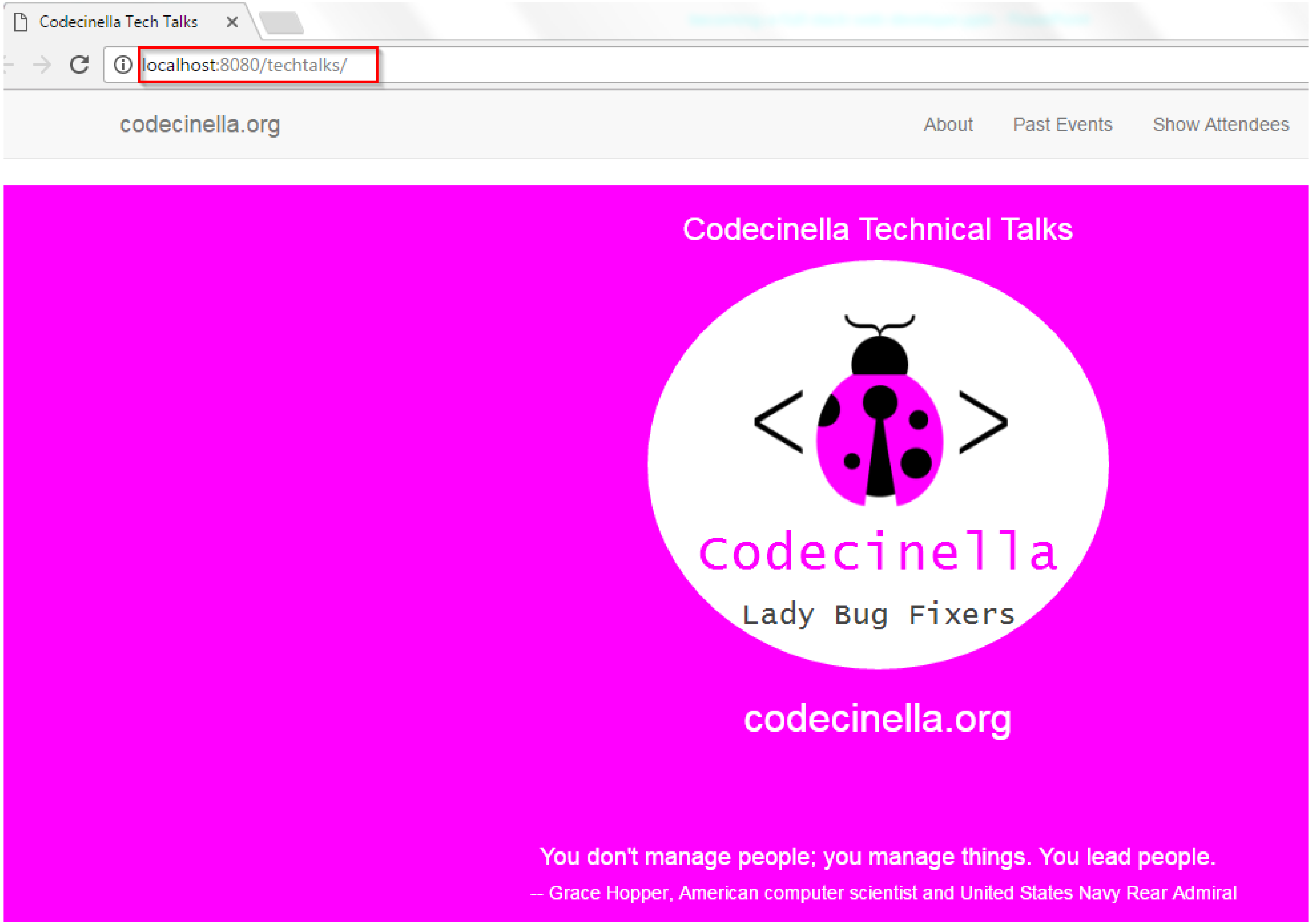
Application context: /techtalks


TechTalks - [C:\GitProjects\TechTalks] - IntelliJ IDEA 2016.3
File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
TechTalks
TechTalks_dec16
Project
TechTalks C:\GitProjects\TechTalks
.idea
DesignDocuments
1: Project
Z: Structure
Persistence
Web
2: Favorites
Messages Maven Goal

```
[INFO] ------------------------------------------------------------------------
[INFO] Building Tech Talks 1.0-SNAPSHOT
[INFO] ------------------------------------------------------------------------
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ techtalks ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] Copying 2 resources
[INFO]
[INFO] --- maven-compiler-plugin:3.5.1:compile (default-compile) @ techtalks ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ techtalks ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] Copying 2 resources
[INFO]
[INFO] --- maven-compiler-plugin:3.5.1:testCompile (default-testCompile) @ techtalks ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-surefire-plugin:2.19.1:test (default-test) @ techtalks ---
[INFO] Tests are skipped.
[INFO]
[INFO] --- maven-war-plugin:2.2:war (default-war) @ techtalks ---
[INFO] Packaging webapp
[INFO] Assembling webapp [techtalks] in [C:\GitProjects\TechTalks\target\techtalks]
[INFO] Processing war project
[INFO] Copying webapp resources [C:\GitProjects\TechTalks\src\main\webapp]
[INFO] Webapp assembled in [8689 msecs]
[INFO] Building war: C:\GitProjects\TechTalks\target\techtalks.war
```



```
26-Mar-2017 20:11:26.665 INFO [main] org.apache.coyote.AbstractProtocol.start Starting ProtocolHandler [http-nio-8080]
26-Mar-2017 20:11:26.665 INFO [main] org.apache.coyote.AbstractProtocol.start Starting ProtocolHandler [ajp-nio-8009]
26-Mar-2017 20:11:26.681 INFO [main] org.apache.catalina.startup.Catalina.start Server startup in 1414 ms
Connected to server
[2017-03-26 08:11:27,133] Artifact TechTalks:war: Artifact is being deployed, please wait...
26-Mar-2017 20:11:35.823 WARNING [RMI TCP Connection(6)-127.0.0.1] org.apache.catalina.startup.ContextConfig.validateSecurityRoles Security ro
26-Mar-2017 20:11:36.213 INFO [RMI TCP Connection(6)-127.0.0.1] org.apache.jasper.servlet.TldScanner.scanJars At least one JAR was scanned for
26-Mar-2017 20:11:36.775 INFO [localhost-startStop-1] org.apache.catalina.startup.HostConfig.deployDirectory Deploying web application directo
26-Mar-2017 20:11:37.711 INFO [localhost-startStop-1] org.apache.jasper.servlet.TldScanner.scanJars At least one JAR was scanned for TLDs yet
26-Mar-2017 20:11:37.961 INFO [localhost-startStop-1] org.apache.catalina.startup.HostConfig.deployDirectory Deployment of web application dir
[2017-03-26 08:11:39,723] Artifact TechTalks:war: Artifact is deployed successfully
[2017-03-26 08:11:39,723] Artifact TechTalks:war: Deploy took 12,590 milliseconds
```



localhost:8080/techtalks/

Codecinella Technical Talks

codecinella.org

You don't manage people; you manage things. You lead people.

— Grace Hopper, American computer scientist and United States Navy Rear Admiral

Build more functionality!

Navigation via menu links

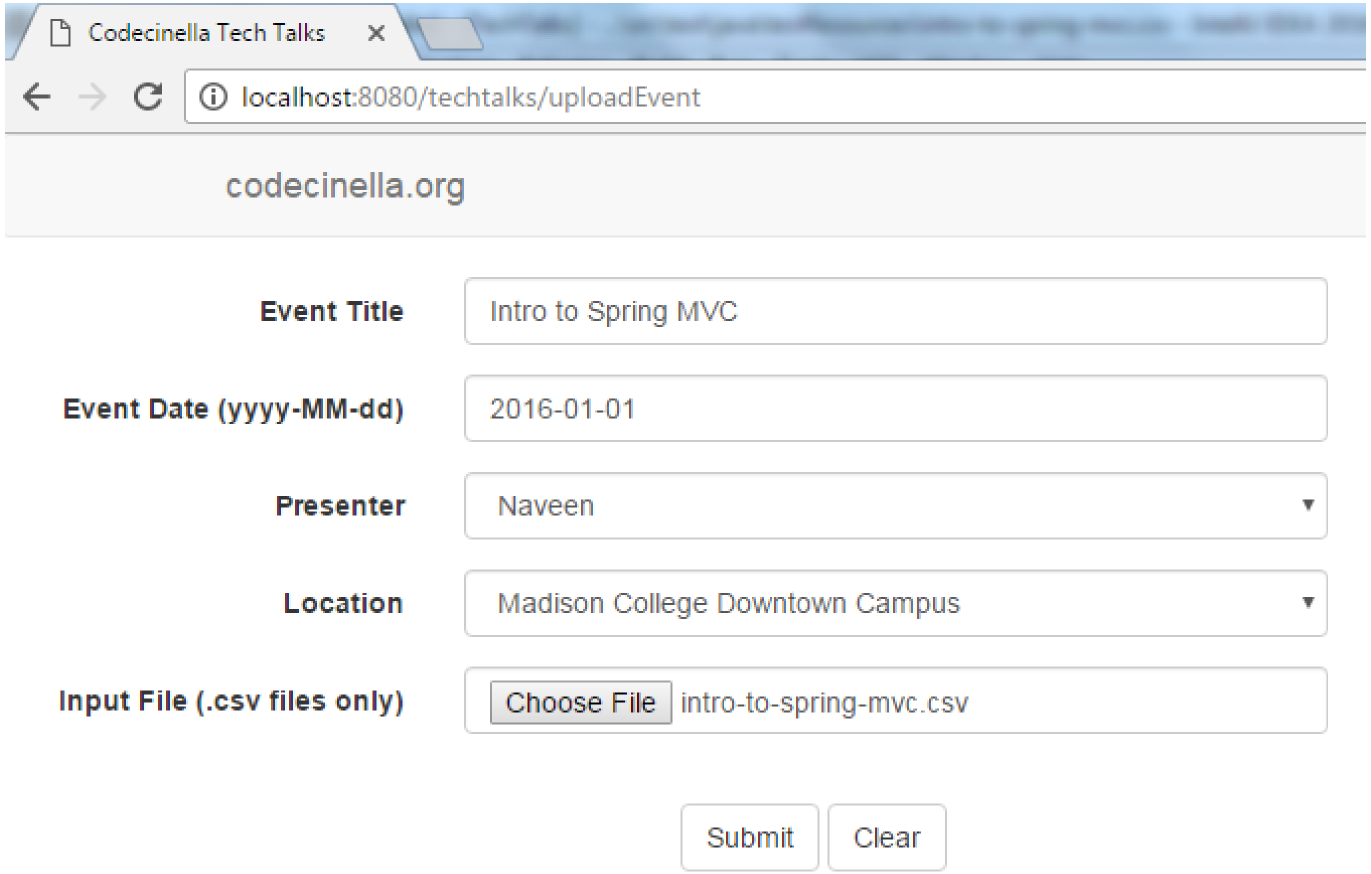
Logon security

Add event with attendees

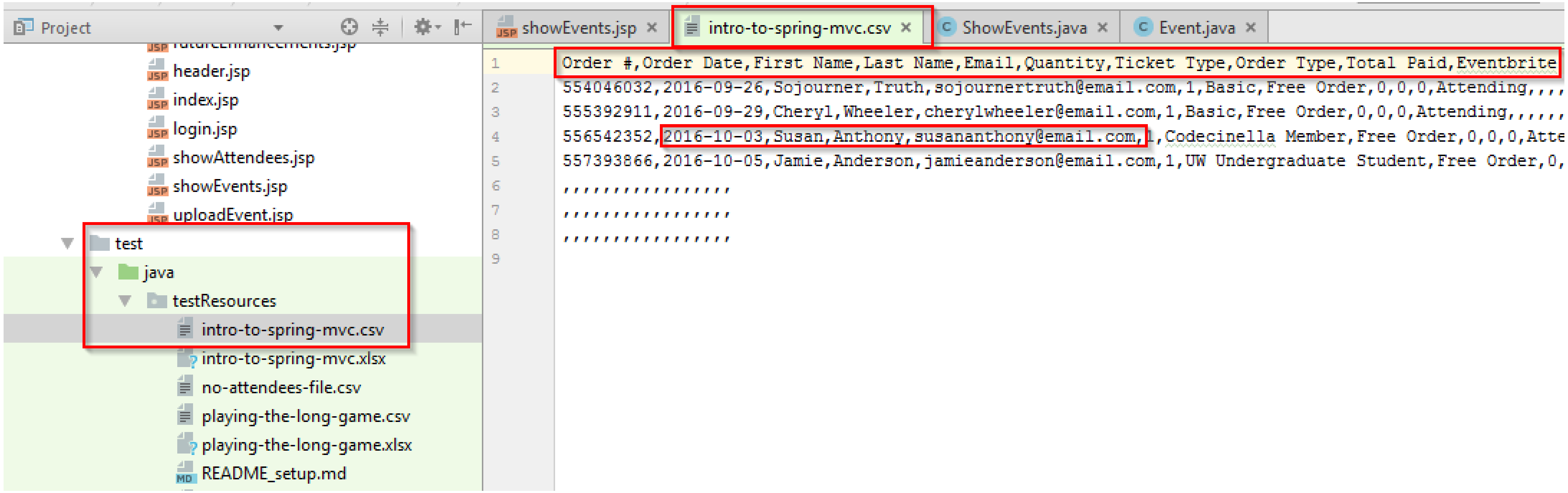
Build event upload functionality

Sneak preview…

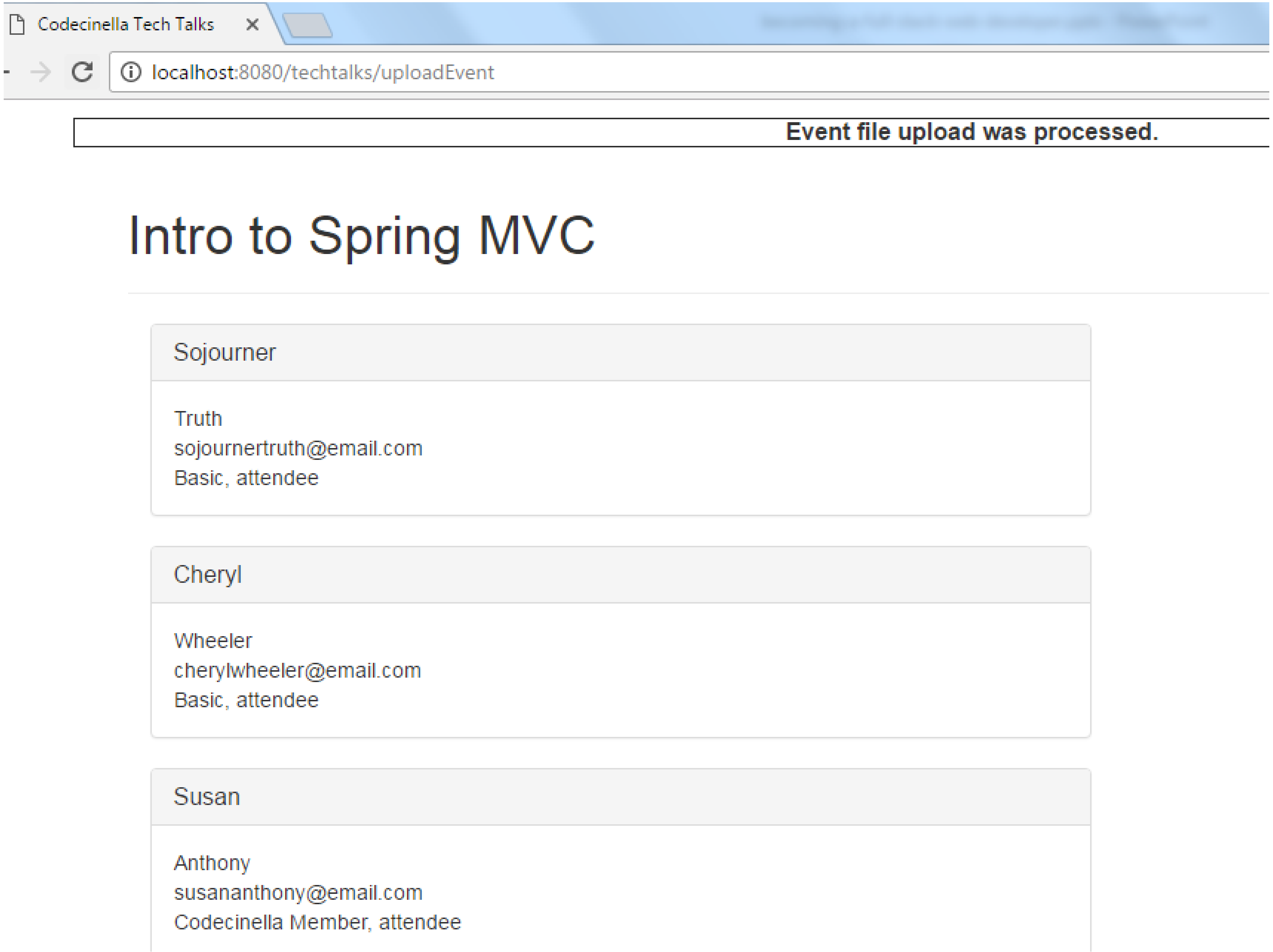
Upload an event file



Event Title	Intro to Spring MVC
Event Date (yyyy-MM-dd)	2016-01-01
Presenter	Naveen
Location	Madison College Downtown Campus
Input File (.csv files only)	Choose File intro-to-spring-mvc.csv



```
Order #,Order Date,First Name,Last Name,Email,Quantity,Ticket Type,Order Type,Total Paid,Eventbrite
554046032,2016-09-26,Sojourner,Truth,sojournertruth@email.com,1,Basic,Free Order,0,0,0,Attending,,,
555392911,2016-09-29,Cheryl,Wheeler,cherylwheeler@email.com,1,Basic,Free Order,0,0,0,Attending,,,,,
556542352,2016-10-03,Susan,Anthony,susananthony@email.com,1,Codecinella Member,Free Order,0,0,0,Atte
557393866,2016-10-05,Jamie,Anderson,jamieanderson@email.com,1,UW Undergraduate Student,Free Order,0,
,,,,,,,,,,,,,,,,,
,,,,,,,,,,,,,,,,,
,,,,,,,,,,,,,,,,,
```



localhost:8080/techtalks/uploadEvent

Event file upload was processed.

Intro to Spring MVC

Sojourner

Truth
sojournertruth@email.com
Basic, attendee

Cheryl

Wheeler
cherylwheeler@email.com
Basic, attendee

Susan

Anthony
susananthony@email.com
Codecinella Member, attendee

We made it! Success!

Basic application functionality is working!

Production-ready?

Fully tested?

Build out more enhancements

Future enhancements placeholder page

Change look and feel with Bootstrap

Add web service for inspirational quotes by women in tech

That was easy…

Outline

1%	Qualifications of presenter
20%	Introduction to software development field
20%	What does it take to build a java web application? (fairly tech)
40%	Demonstrate the process (most technical portion)
10%	What other skills were assumed?
10%	What proficiency required to begin work/identify as developer?
1%	Resources for continued learning

Wait a minute…

… wasn’t there more?

… weren’t there lots of other skills assumed and used during that process?

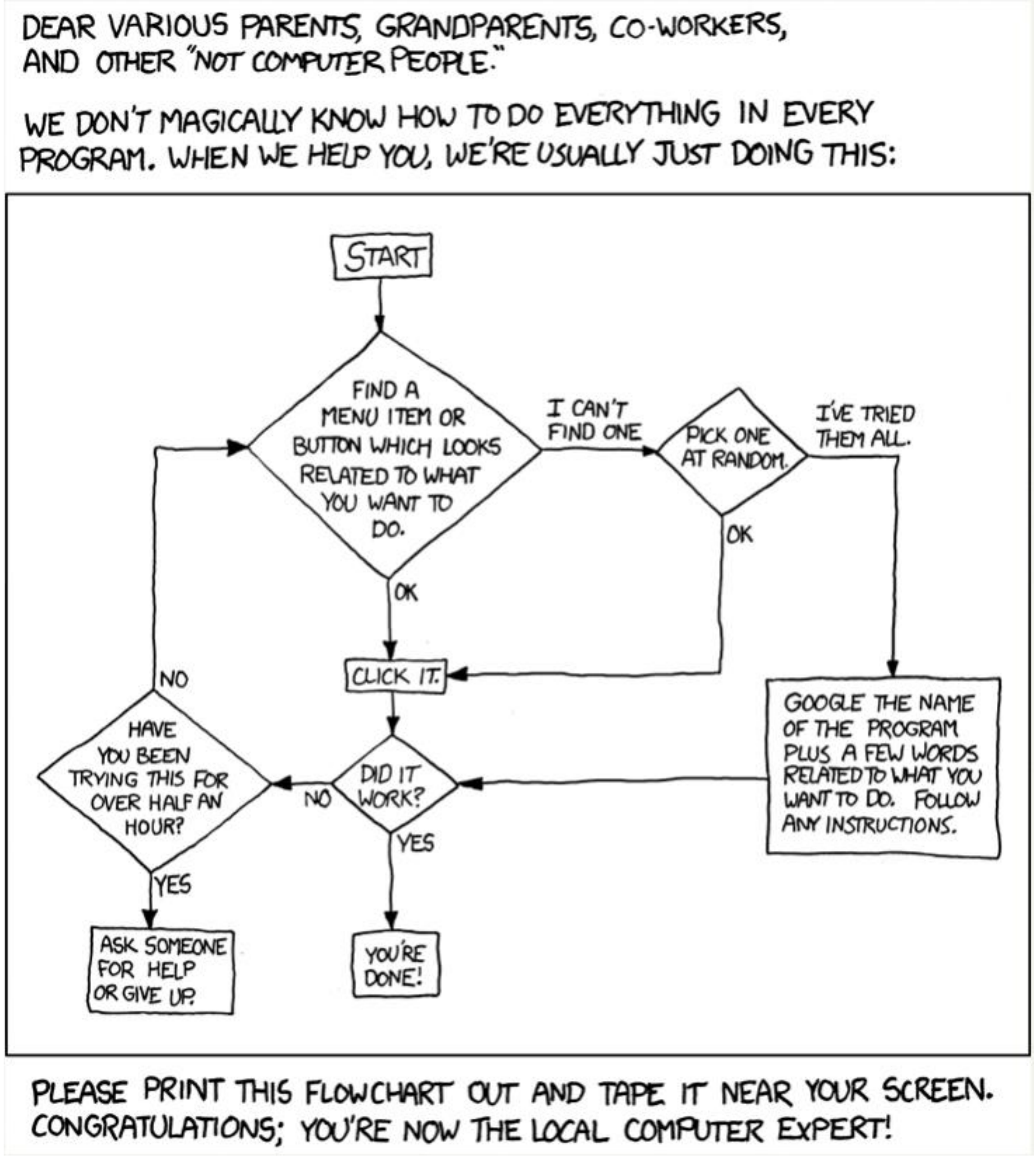
… languages, libraries, tools all jumbled together? How’d you do all that?

Wait a minute…

Didn't a bunch of other skills get used to build that?

- "Technical Sophistication[1]"

[1] https://www.learnenough.com/command-line-tutorial#aside-technical_sophistication


DEAR VARIOUS PARENTS, GRANDPARENTS, CO-WORKERS, AND OTHER "NOT COMPUTER PEOPLE."
WE DON'T MAGICALLY KNOW HOW TO DO EVERYTHING IN EVERY PROGRAM. WHEN WE HELP YOU, WE'RE USUALLY JUST DOING THIS:
START
FIND A MENU ITEM OR BUTTON WHICH LOOKS RELATED TO WHAT YOU WANT TO DO.
I CAN'T FIND ONE
PICK ONE AT RANDOM.
I'VE TRIED THEM ALL.
OK
OK
CLICK IT.
GOOGLE THE NAME OF THE PROGRAM PLUS A FEW WORDS RELATED TO WHAT YOU WANT TO DO. FOLLOW ANY INSTRUCTIONS.
NO
HAVE YOU BEEN TRYING THIS FOR OVER HALF AN HOUR?
NO
DID IT WORK?
YES
YES
ASK SOMEONE FOR HELP OR GIVE UP.
YOU'RE DONE!
PLEASE PRINT THIS FLOWCHART OUT AND TAPE IT NEAR YOUR SCREEN. CONGRATULATIONS; YOU'RE NOW THE LOCAL COMPUTER EXPERT!

https://www.learnenough.com/command-line-tutorial#aside-technical_sophistication

Wait a minute…

Didn’t a bunch of other skills get used to build that?

- Technical Sophistication[1]
- SQL - structured query language

[1] https://www.learnenough.com/command-line-tutorial#aside-technical_sophistication

Wait a minute…

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- JSP – java server pages

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- JSP – java server pages
- HTML – hyper text markup language

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- SQL – structured query language
- JSP – java server pages
- HTML – hyper text markup language
- Javascript, jQuery

[1] https://www.learnenough.com/command-line-tutorial#aside-technical_sophistication

Wait a minute…

Didn’t a bunch of other skills get used to build that?

- Technical Sophistication[1]
- SQL – structured query language
- JSP – java server pages
- HTML – hyper text markup language
- Javascript, jQuery
- CSS – cascading style sheets
- Bootstrap

[1] https://www.learnenough.com/command-line-tutorial#aside-technical_sophistication

Wait a minute…

Didn’t a bunch of other skills get used to build that?

- Technical Sophistication[1]
- SQL – structured query language
- JSP – java server pages
- HTML – hyper text markup language
- Javascript, jQuery
- CSS – cascading style sheets
- Bootstrap
- Hibernate – a library of code for easy access between java objects and database

[1] https://www.learnenough.com/command-line-tutorial#aside-technical_sophistication

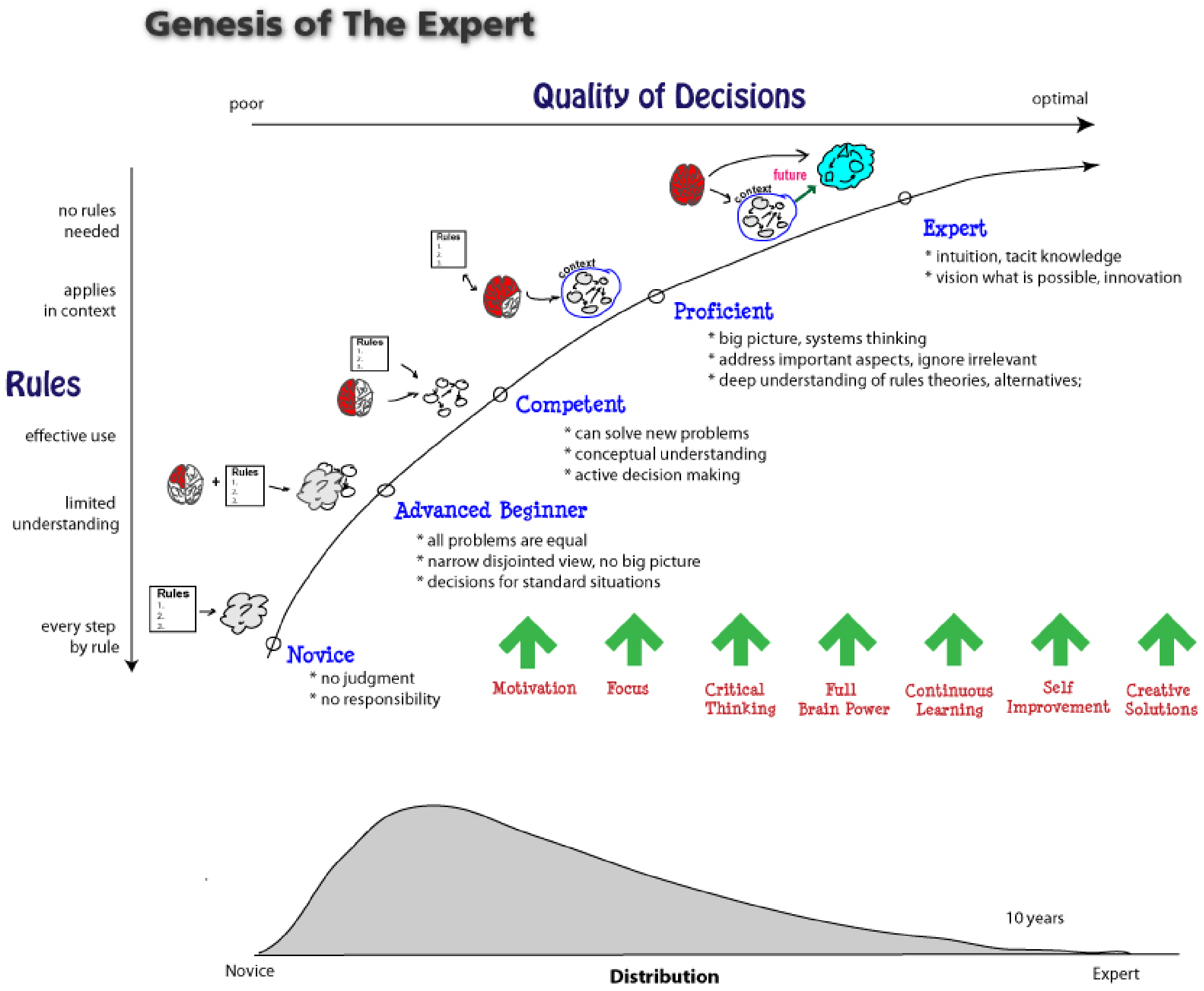
Outline

1%	Qualifications of presenter
20%	Introduction to software development field
20%	What does it take to build a java web application? (fairly tech)
40%	Demonstrate the process (most technical portion)
10%	What other skills were assumed?
10%	What proficiency required to begin work/identify as developer?
1%	Resources for continued learning

How proficient…

… with the theory do I need to be before starting?

Dreyfus Competency Model



http://softwarecreation.org/images/2009/novice-expert.jpg

Learning new technical skills

- Technical jargon can be overwhelming.

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- Learning a foreign language or culture is hard to do all at once.

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- Immersion is a good way to learn.

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- “I had to become comfortable with not knowing, not understanding.”

- Technical jargon can be overwhelming.
- Learning a foreign language or culture is hard to do all at once.
- Immersion is a good way to learn.
- “I had to become comfortable with not knowing, not understanding.”
- “Flow state” and “beginner’s mind” are desirable[1].
  - So is curiosity.
  - So is knowing how you learn

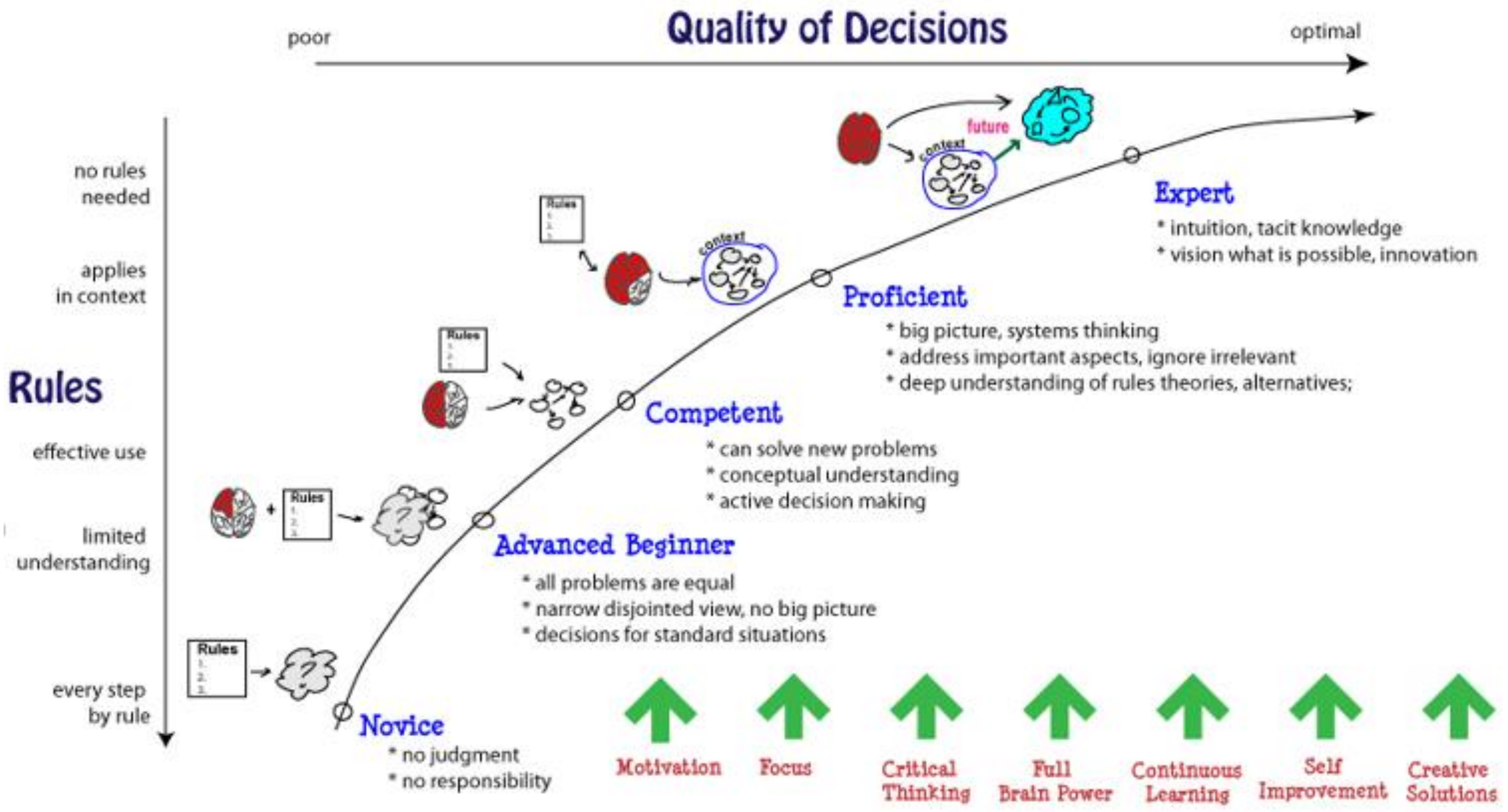
[1] http://csis.pace.edu/~grossman/dcs/XR4-PromiscuousPairing.pdf

Dunning-Kruger Effect[1]

- The more you know, the LESS competent you think you are.
- The less you know, the MORE competent you think you are.
- People are terrible judges of their own expertise.

[1] https://en.wikipedia.org/wiki/Dunning-Kruger_effect

Genesis of The Expert



Quality of Decisions

poor

optimal

Rules

no rules needed

applies in context

effective use

limited understanding

every step by rule

Novice
- no judgment
- no responsibility

Advanced Beginner
- all problems are equal
- narrow disjointed view, no big picture
- decisions for standard situations

Competent
- can solve new problems
- conceptual understanding
- active decision making

Proficient
- big picture, systems thinking
- address important aspects, ignore irrelevant
- deep understanding of rules theories, alternatives;

Expert
- intuition, tacit knowledge
- vision what is possible, innovation

Motivation

Focus

Critical Thinking

Full Brain Power

Continuous Learning

Self Improvement

Creative Solutions

http://softwarecreation.org/images/2009/novice-expert.jpg

Software as a rapidly evolving field

- Email becomes common communication method
- Internet becomes available
- Google search engine widely adopted
- Online purchases become possible
- Smart phones become ubiquitous
- Companies struggle over how best to use technology
- Hacking and security become major issues
- Languages and tools proliferate

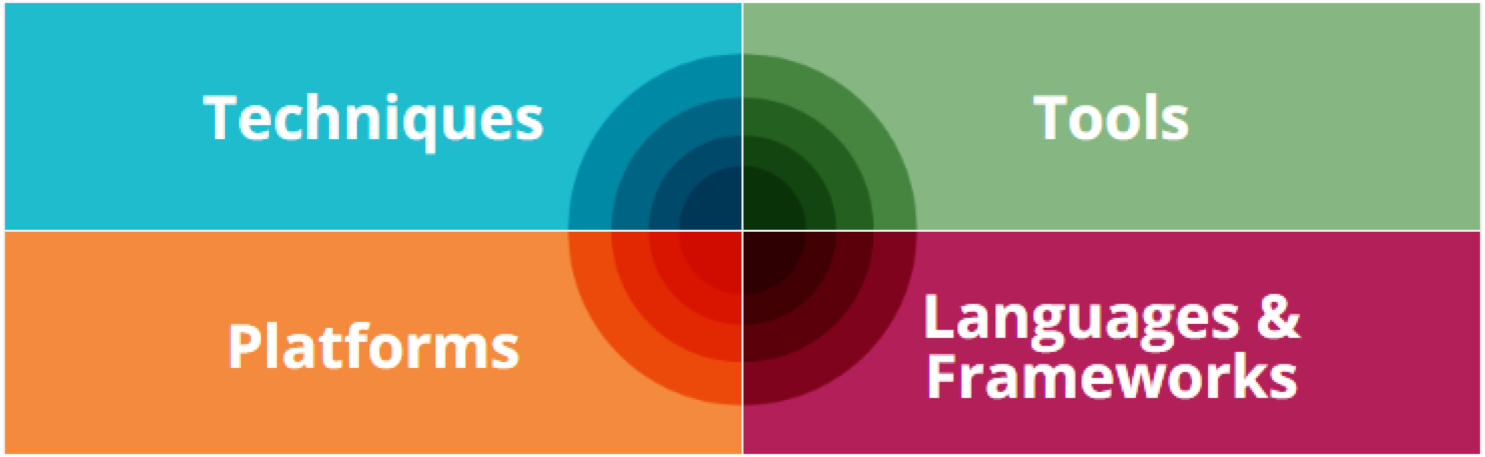
How best to navigate through the options?

- Remain/become aware of technology trends
- Know if you like to be ‘cutting edge’ or ‘trailing edge’
- Find a employer match for your values and speed of change
- Always be learning.
- Always be on the lookout for your next growth areas.
- Listen to the experts when deciding what technologies are likely to endure (ThoughtWorks)

Thoughtworks Technology Radar

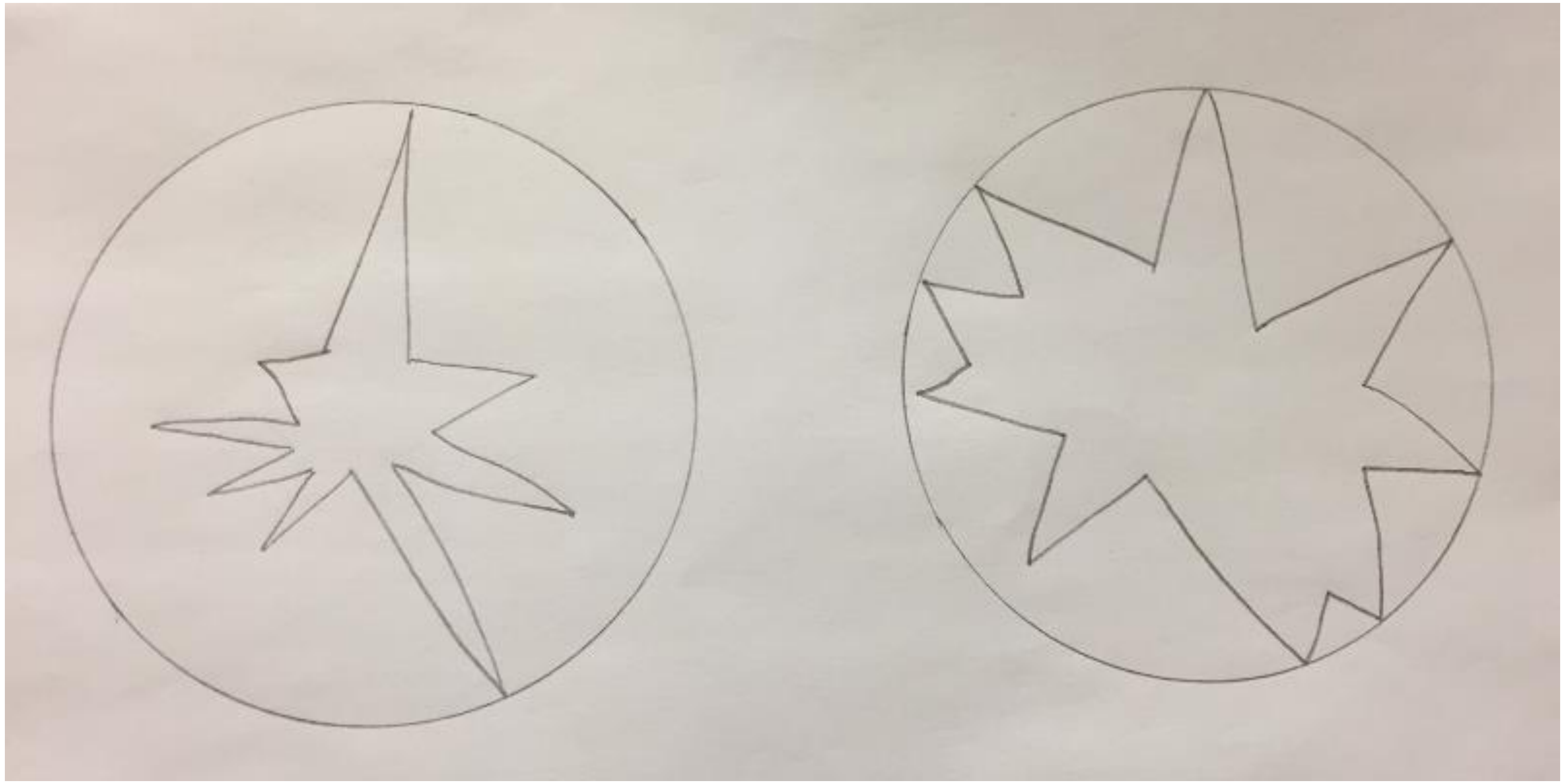
- Updated every six months, searchable by topic
- Rings:
  - Adopt
  - Trial
  - Assess
  - Hold
- Quadrants
  - Programming Languages and Frameworks
  - Tools
  - Platforms
  - Techniques

Thoughtworks Technology Radar

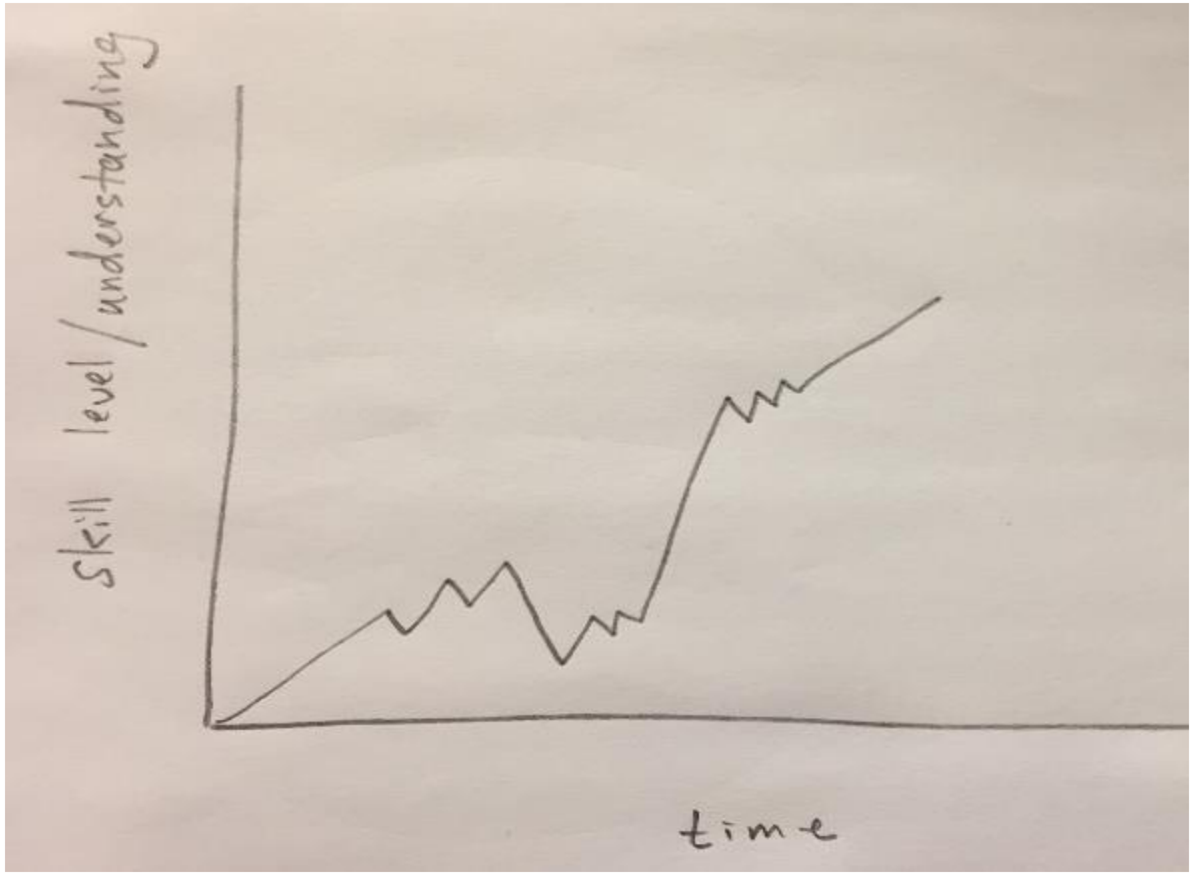


https://www.thoughtworks.com/radar

Create your own radar



Have patience with the learning process



Writing software is great because…

There's always something to learn.

Writing software is great because…

“If you can create technology, you can change the world.”

Susan Wojcicki, SVP, Google

Outline

1%	Qualifications of presenter
20%	Introduction to software development field
20%	What does it take to build a java web application?
40%	Demonstrate the process (most technical portion)
10%	What other skills were assumed?
10%	What proficiency required to begin work/identify as developer?
1%	Resources for continued learning

Resources for continued learning (non-technical)

- Go: Put Your Strengths to Work by Marcus Buckingham
- Unlocking the Clubhouse by Allan Fisher and Jane Margolis
- Clean Code by Robert C. Martin
- The Clean Coder by Robert C. Martin
- The Passionate Programmer by Chad Fowler
- Books on becoming a better software developer:
  https://dbader.org/blog/my-favourite-books-about-programming

Resources for continued learning (technical)

- http://www.w3schools.com/
- https://www.learnenough.com/
- http://exercism.io/
- http://www.mkyong.com/

Links to download tools

- MySql: https://dev.mysql.com/downloads/installer/
  - mysql-installer-**web**-community
- IntelliJ (not free): https://www.jetbrains.com/idea/download/
- Eclipse: https://www.eclipse.org/downloads/?
- Java: https://java.com/en/download/
- Apache Tomcat: https://tomcat.apache.org/download-80.cgi
- Git: https://git-scm.com/downloads
- Bootstrap (just use CDN links): http://getbootstrap.com/getting-started/
- Hibernate (include in POM file): http://hibernate.org/orm/downloads/

Thank you

…for your time and attention