

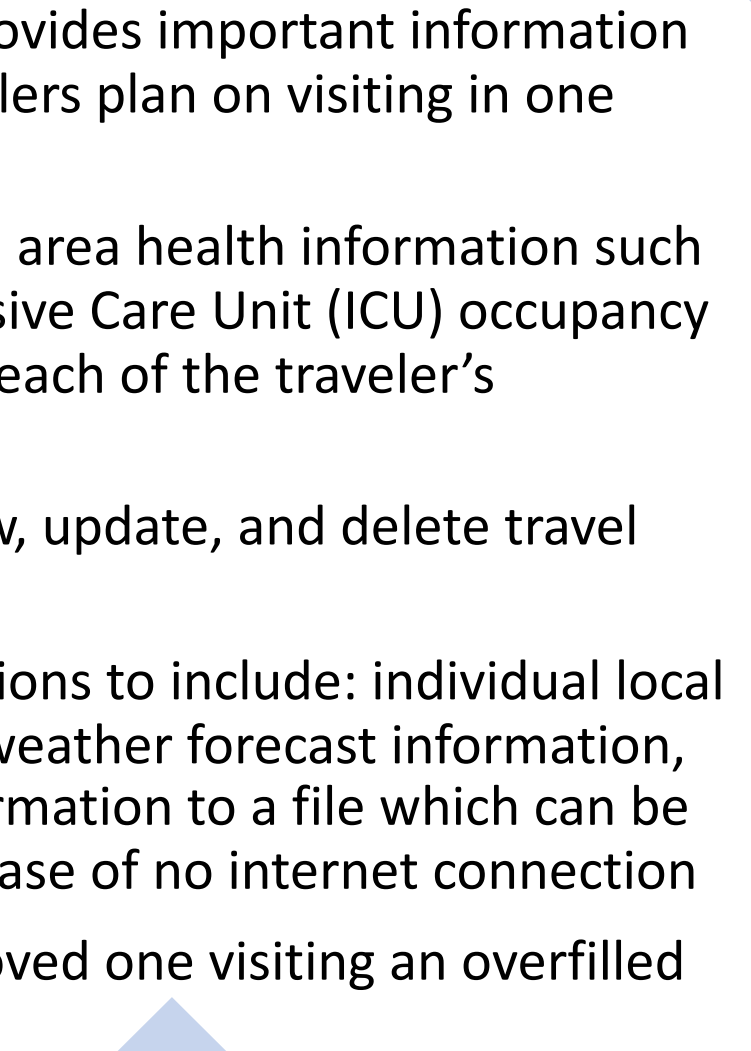
MyPlaces Tracker

an innovative, data-driven Java application

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Enterprise Java Fall 2021



Solution to Real World Problem

- A travel logistic site that provides important information about the places that travelers plan on visiting in one location
 - Retrieves and displays local area health information such as collective hospital Intensive Care Unit (ICU) occupancy and the covid risk level for each of the traveler's destinations in a trip
 - Enables users to write, view, update, and delete travel notes
 - Functionality in future versions to include: individual local hospital ICU occupancies, weather forecast information, and the ability to save information to a file which can be printed or viewed later in case of no internet connection
 - Motivation for this topic: loved one visiting an overfilled ICU within the last year
- 

Technologies

Technology	Implementation
Language	Java
Integrated Development Environment (IDE)	IntelliJ IDEA
Dependency Management	Maven
ORM Framework	Hibernate
Unit Testing	JUnit 5 with 80%+ code coverage
Database	MySQL 8.0.16
Security and Authentication	Amazon Web Services (AWS) Cognito
CSS	Materialize
Data Validation	Hibernate Validator
Hosting	AWS
Independent Research	AWS Code Pipeline
Web Services consumed using Java	SmartyStreets, Covid Act Now, Google Maps and NOAA (future version)

New User Registration and Login

MyPlaces Tracker

LOG IN

Sign in with your username and password

Username

Password

[Forgot your password?](#)

Sign in

Need an account? [Sign up](#)

MyPlaces Tracker

Welcome jilltest

VIEW TRIPS

RESTful APIs Consumed with Java

- smartystreets: <https://www.smartystreets.com/products/apis/us-zipcode-api>
- U.S. COVID Risk & Vaccine Tracker: <https://covidactnow.org/>

About - Location Risk Level and ICU Capacity Used

Our COVID risk level looks at three things: daily new cases (per 100K), infection rate, and positive test rate. Each is graded on a five-color scale and the highest risk color becomes the location's overall risk level. The one exception is that if a location's daily new cases is green, then its overall risk level is green.

We developed our risk framework in partnership with the Harvard Global Health Institute and Harvard Edmond J. Safra Center for Ethics. As there is not a standardized framework for risk in the U.S., it may not match your state or county's risk level.

[Learn more about COVID risk levels.](#)

ICU capacity used ×

ICU capacity used is the percentage of staffed intensive care unit (ICU) beds in a location's healthcare system that are currently in use by both COVID and non-COVID patients.

Experts indicate that during pre-pandemic years, average ICU occupancy in U.S. hospitals ranged from 57% to 82%.

Data source

Our data for ICU capacity used in Miami-Fort Lauderdale-Pompano Beach comes from [HHS Protect](#).

How it's calculated

ICU capacity used is the number of staffed ICU beds that are occupied (by both COVID and non-COVID patients), divided by the total number of staffed ICU beds.

Minimum Viable Product (MVP)

Full CRUD of data – Travel Note
Partial CRUD – Trip and Destination

My Trips

Trip Name

Fall Colour Tour

VIEW

Winter Break

VIEW

ADD TRIP

CRUD (continued)

Fall Colour Tour

Destinations

Show entries

Search:

City	State	Zip Code	County Fips Code	Nearby Hospital ICU Capacity Used*	County Covid Risk Level Low, Med, High, Very High, or Severe
Aspen	CO	81611	08097	32%	high
Lansing	MI	48901	26065	90%	very high
Madison	WI	53701	55025	95%	high
Munising	MI	49862	26003	N/A	N/A
Negaunee	MI	49866	26103	93%	very high

Showing 1 to 5 of 5 entries

Previous

1

Next

* Displays the Percent Occupied or N/A (data is not available)

REFRESH

CRUD (continued)

Travel Notes

Note Name	Note Description	
ABC Hotel	2021 Fall Colour Tour St.	EDIT
Travel Guide	Henry - 203-203-2938	EDIT

ADD DESTINATION

ADD TRAVEL NOTE

VIEW TRIPS

Edit Note

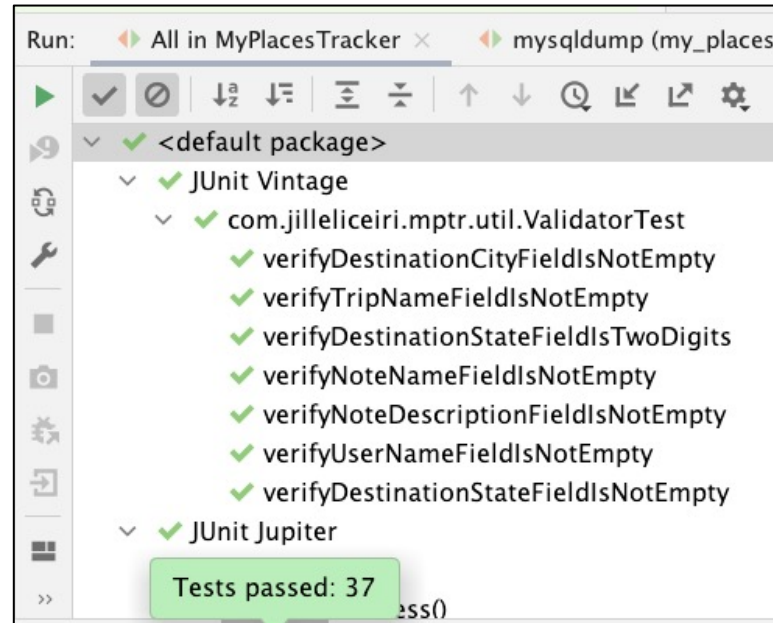
ABC Hotel

2021 Fall Colour Tour St.

UPDATE

DELETE

Code Coverage and Tests



Coverage: All in MyPlacesTracker

100% classes, 85% lines covered in package 'com.jilleliceiri.mp.tr.persistence'

Element	Class, %	Method, %	Line, %
CovidDao	100% (1/1)	100% (3/3)	72% (16/22)
GenericDao	100% (1/1)	100% (8/8)	95% (39/41)
SessionFactoryProvider	100% (1/1)	100% (2/2)	100% (8/8)
SmartyStreetsDao	100% (1/1)	100% (3/3)	75% (18/24)

Data Validation

- Backend Hibernate Validator
- Frontend Materialize class="validate" required

Add Note

Note Name

Description

ADD NOTE

description: must not be empty

name: must not be empty

ADD DESTINATION

state: must be two digits

Add Destination

City

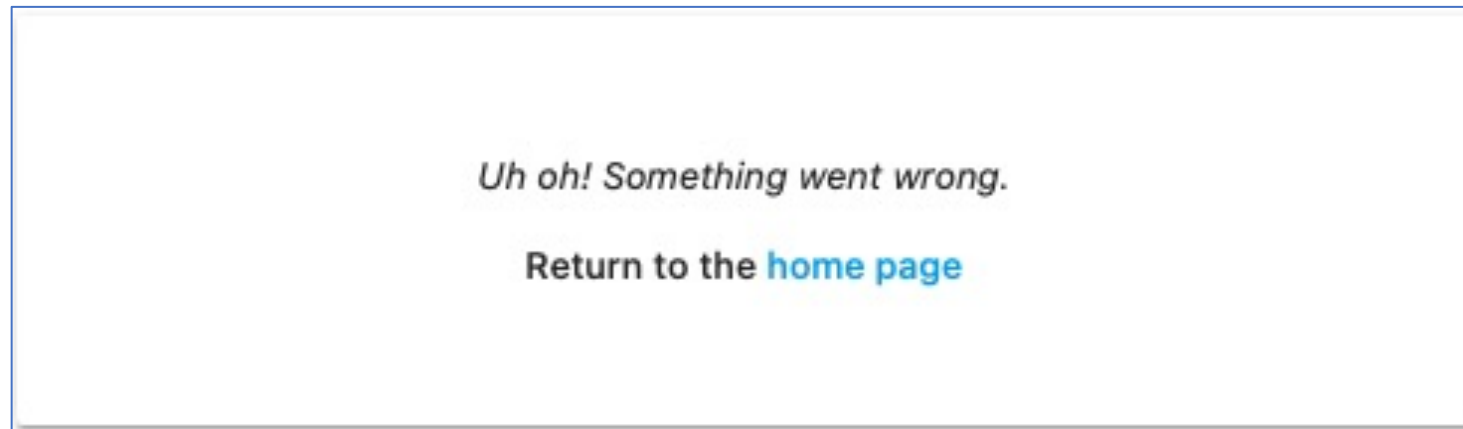
State (Two-Digit Code)

ADD DESTINATION

Fill out this field

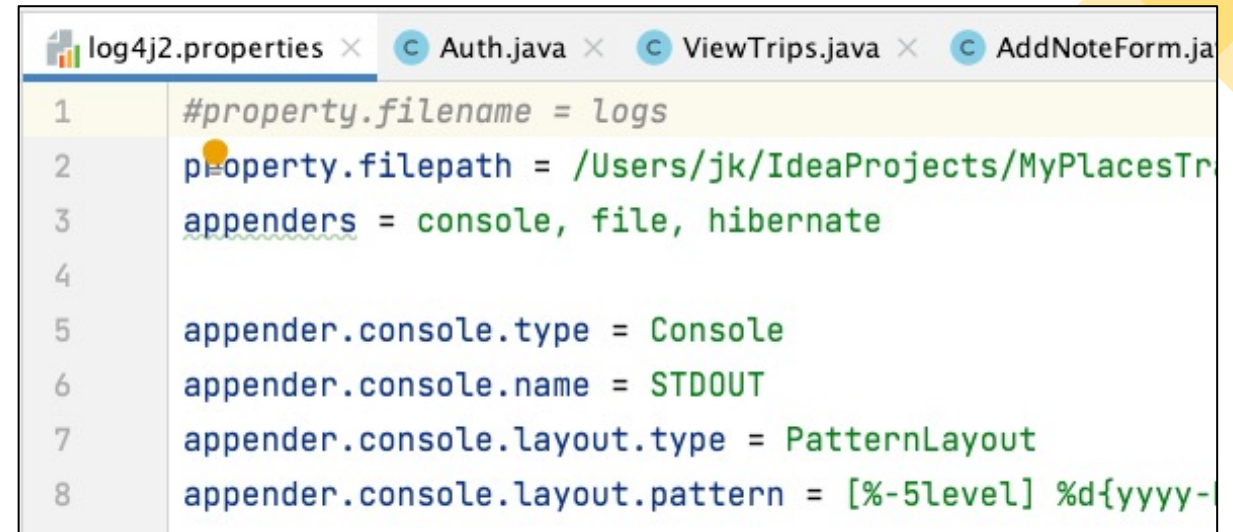
Error Handling

- Handle exceptions and display error messages in the same jsp or to an error.jsp



Logging

- Log4j2 Framework

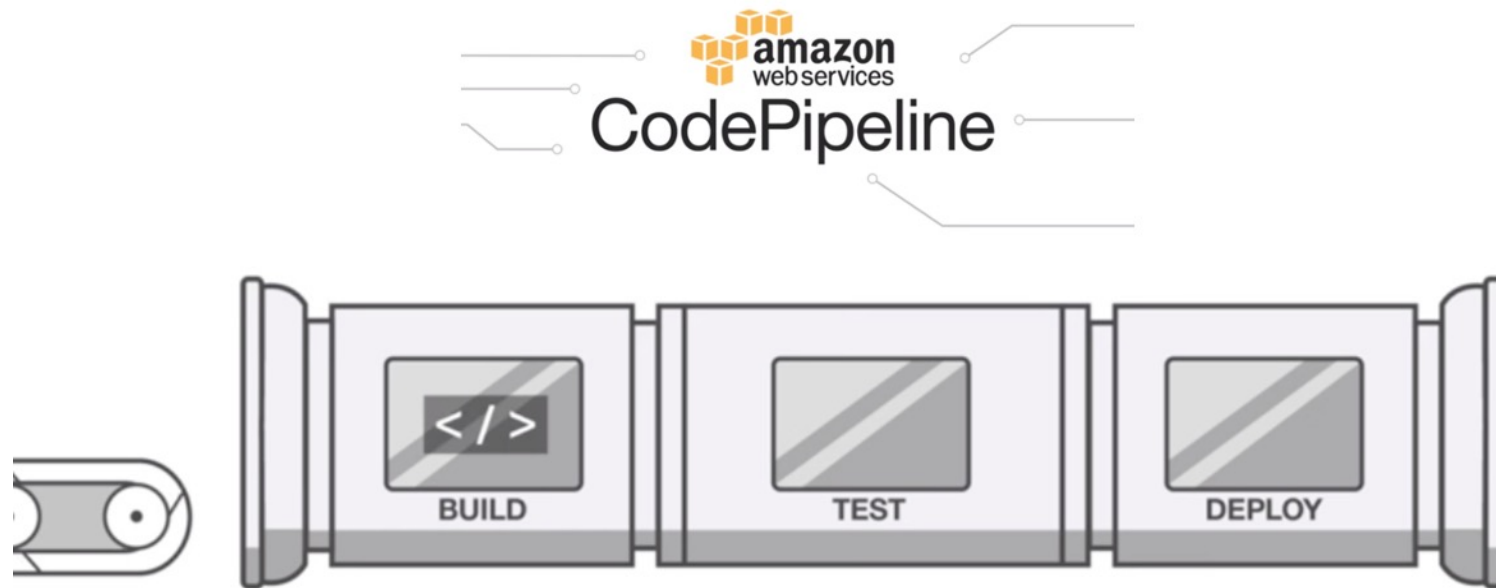


```
[DEBUG] 2021-12-03 16:51:16.758 [http-nio-8080-exec-8] GenericDao - saveOrUpdate(): Destination{id=53,
```

New technologies learned outside of class:

AWS CodePipeline and Codebuild

- A service that helps you practice continuous delivery to automate the steps to release software
- It builds, tests, and deploys your application



AWS CodePipeline and Codebuild

Source

Action name Choose a name for your action
Source
No more than 100 characters
Action provider
GitHub (Version 2)

-Connect to Github repo



AWS Connector for GitHub

CodeBuild

Action name Choose a name for your action
Build
No more than 100 characters
Action provider
AWS CodeBuild

-add buildspec.yml to project
-code is compiled and unit tested

Deploy

Action name Choose a name for your action
Deploy
No more than 100 characters
Action provider
AWS Elastic Beanstalk

-EB handles deploying the code to the EC2 instance

buildspec.yml

- AWS Elastic Beanstalk did not unpack the WAR file that was contained in a ZIP file
- Solution: the post-build command unzips it and moves it to the root folder in AWS tomcat/webapps/

```
version: 0.2

phases:
  install:
    runtime-versions:
      java: corretto11
  post_build:
    commands:
      - mvn package
      - unzip target/ROOT.war -d .
artifacts:
  files:
    - '**/*'
```


AWS CodePipeline (continued)

Developer Tools > CodePipeline > Pipelines > MPTRoot

MPTRoot

✔ **Source** Succeeded
Pipeline execution ID: 97241c50-7283-4419-a1f9-05098b993eb6

Source ⓘ

[GitHub \(Version 2\)](#)

✔ Succeeded - 12 hours ago
[e6f17ca4](#)

[e6f17ca4](#) ⓘ Source: adding README

↓

Disable transition

✔ **Build** Succeeded
Pipeline execution ID: 97241c50-7283-4419-a1f9-05098b993eb6

Build ⓘ

[AWS CodeBuild](#)

✔ Succeeded - 12 hours ago
[Details](#)

[e6f17ca4](#) ⓘ Source: adding README

↓

Disable transition

✔ **Deploy** Succeeded
Pipeline execution ID: 97241c50-7283-4419-a1f9-05098b993eb6

Deploy ⓘ

[AWS Elastic Beanstalk](#)

✔ Succeeded - 12 hours ago

[e6f17ca4](#) ⓘ Source: adding README

Future Improvements

- Location API
- Weather forecast
- Individual hospital capacity
- Save to file on device
- Share with a friend
- Travelers choose which Destination fields are important to them

References

- https://docs.jboss.org/hibernate/stable/validator/reference/en-US/html_single/#preface
- <https://materializecss.com/>
- <https://docs.aws.amazon.com/codebuild/latest/userguide/sample-elastic-beanstalk.html>
- <http://paulawaite.com/education/java113/index.html>