

Deployment

Lab-12a Deploy



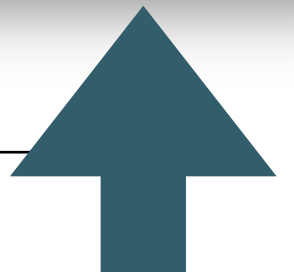
Deploy a Play Application to the
cloud

The screenshot shows an IDE interface. The top bar indicates the current file path is `todolist [~/repos/wit-hdip-comp-sci/v...`. Below this, the breadcrumb navigation shows `todolist > conf > dependencies.yml`. The left sidebar displays the Project view with a tree structure:

- Project
 - todolist
 - docviewer ~/dev/play-1.3.4/modules/docview
 - todolist ~/repos/wit-hdip-comp-sci/web-dev
 - app
 - controllers
 - About
 - Accounts
 - Admin
 - Dashboard
 - Start
 - models
 - views
 - Bootstrap
 - conf
 - application.conf
 - data.yml
 - dependencies.yml
 - messages
 - routes
 - public
 - test
 - tmp

The right sidebar contains search and navigation options: Search Everywhere, Go to File (with keyboard shortcuts), Recent Files, Navigation Bar, and Drop files here to open. The bottom panel is a Terminal window showing the command `play run` being executed. A large white box with the text "play run" is overlaid on the terminal output. The terminal output includes:

```
^C~ ...  
iMac:todolist edeleastar$ play run  
~  
~ _ _ _ _ _  
~ |' _ \| / _ \| |||||  
~ | _ \| / _ \| \ \ (  
~ | _ \| / _ \| \ \ (  
~ | _ \| / _ \| \ \ (  
~  
~ play! 1.5.0, https://www.playframework.com  
~  
~ Ctrl+C to stop  
~  
~ using java version "1.8.0_162"  
Listening for transport dt_socket at address: 8000  
17:17:50,790 INFO ~ Starting /Users/edeleastar/repos/wit-hdip-comp-sci/web-de  
17:17:50,889 WARN ~ You're running Play! in DEV mode  
17:17:50,953 INFO ~ Listening for HTTP on port 9000 (Waiting a first request  
~ Server is up and running  
█
```

The bottom status bar shows icons for TODO (6), Version Control (9), and Terminal.

Development Mode

The screenshot shows the IntelliJ IDE interface. The top-left pane displays the project structure for 'todolist', including folders like 'docviewer', 'todolist', 'app', 'controllers', 'models', 'views', 'conf', 'public', 'test', and 'tmp'. The 'test' folder is highlighted. The bottom pane shows a terminal window with the command 'play run' executed, resulting in the Play Framework starting the application. A large 'play run' text box is overlaid on the terminal output.

```
iMac:todolist edeleastar$ play run

play! 1.5.0, https://www.playframework.com

~ Ctrl+C to stop

~ using java version "1.8.0_162"
Listening for transport dt_socket at address: 8000
17:17:50,790 INFO ~ Starting /Users/edeleastar/repos/wit-hdip-comp-sci/web-dev-projects/
17:17:50,889 WARN ~ You're running Play! in DEV mode
17:17:50,953 INFO ~ Listening for HTTP on port 9000 (Waiting a first request to start) .
~ Server is up and running
```

The screenshot shows the H2 Console web interface. The top-left pane displays the database schema, including tables like 'member', 'member_todo', 'todo', 'information_schema', 'Sequences', 'Users', and 'H2 1.4.196 (2017-06-10)'. The top-right pane shows the 'Important Commands' section, which includes a table of commands and their descriptions. Below this is a 'Sample SQL Script' section with a table of SQL statements and their descriptions. The bottom section is titled 'Adding Database Drivers'.

Icon	Command	Description
?	Displays this Help Page	
	Shows the Command History	
Ctrl+Enter	Executes the current SQL statement	
Shift+Enter	Executes the SQL statement defined by the text selection	
Ctrl+Space	Auto complete	
	Disconnects from the database	

Command	Description
Delete the table if it exists	DROP TABLE IF EXISTS TEST;
Create a new table with ID and NAME columns	CREATE TABLE TEST(ID INT PRIMARY KEY, NAME VARCHAR(255));
Add a new row	INSERT INTO TEST VALUES(1, 'Hello');
Add another row	INSERT INTO TEST VALUES(2, 'World');
Query the table	SELECT * FROM TEST ORDER BY ID;
Change data in a row	UPDATE TEST SET NAME='Hi' WHERE ID=1;
Remove a row	DELETE FROM TEST WHERE ID=2;
Help	HELP ...

Adding Database Drivers

Additional database drivers can be registered by adding the Jar file location of the driver to the the environment variables H2DRIVERS or

Database browser on
<http://localhost:9000/@db>

https://en.wikipedia.org/wiki/Software_deployment

Software deployment is all of the activities that make a [software system](#) available for use.


The general deployment process consists of several interrelated activities with possible transitions between them.


Transition from *Development Mode* to *Production Mode*



Deploying a Play Application

Lab-12a
Deploy





Deploy a Play Application to the
cloud

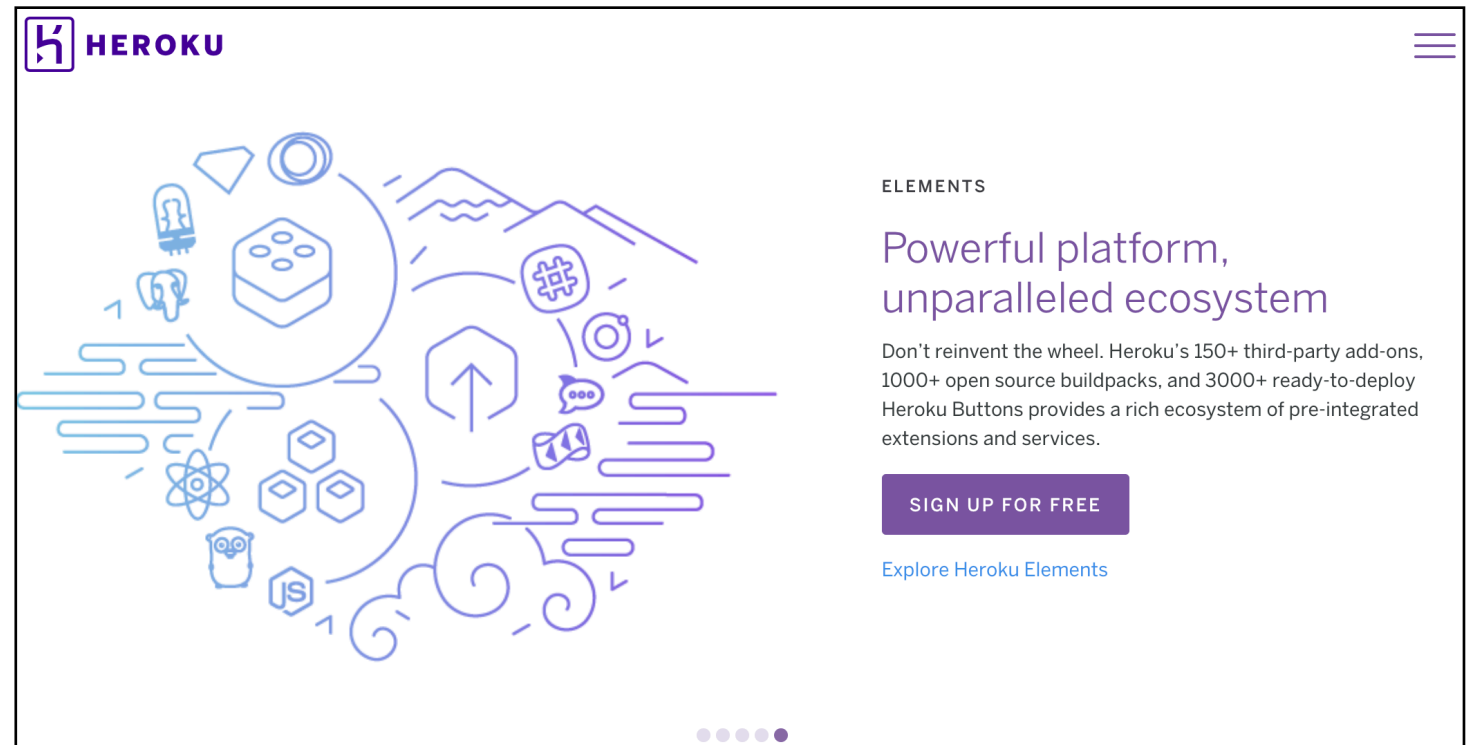
1.Configuration

2.Staging

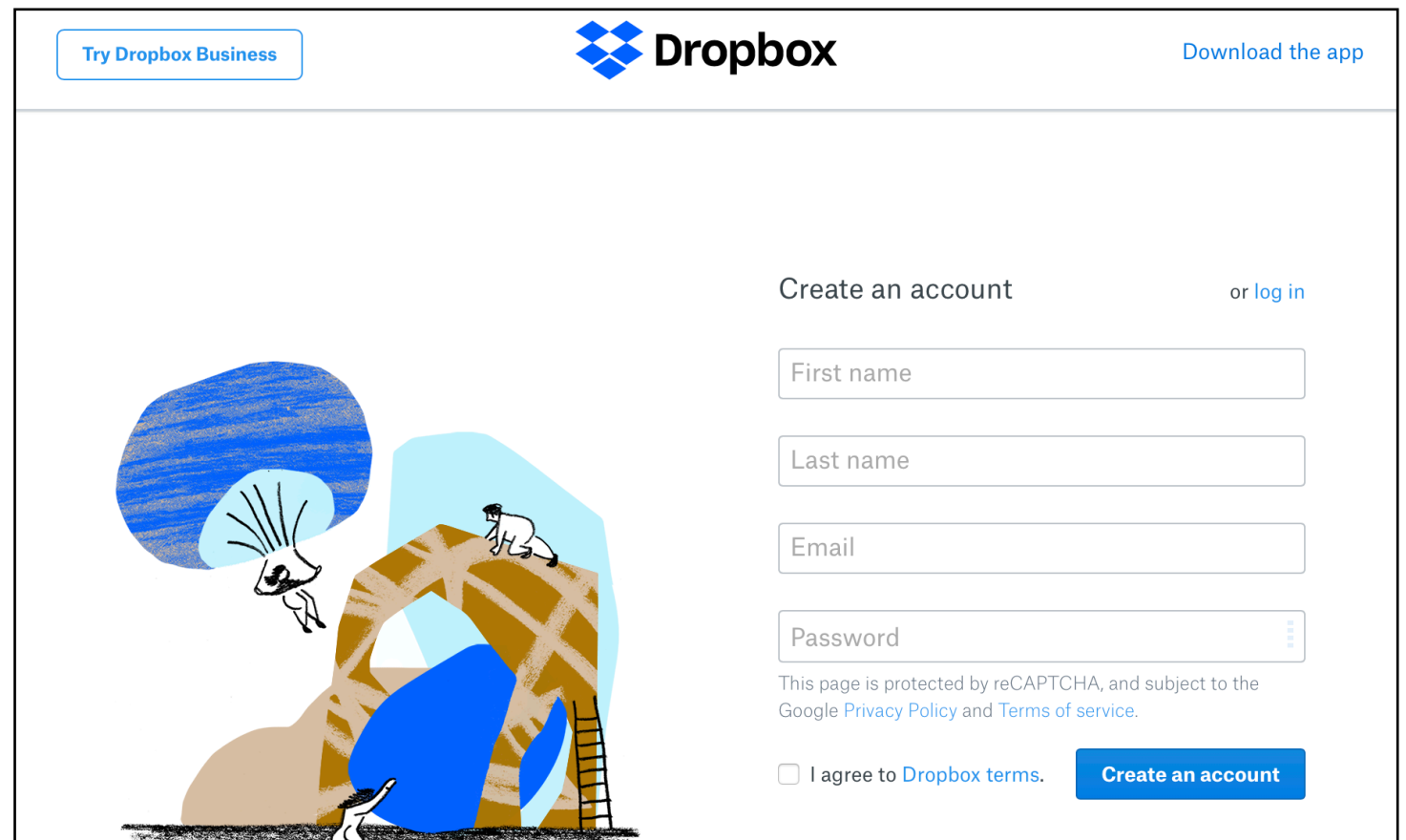
3.Deployment

Deployment: Platforms & Tools

Heroku: Application Service Provider

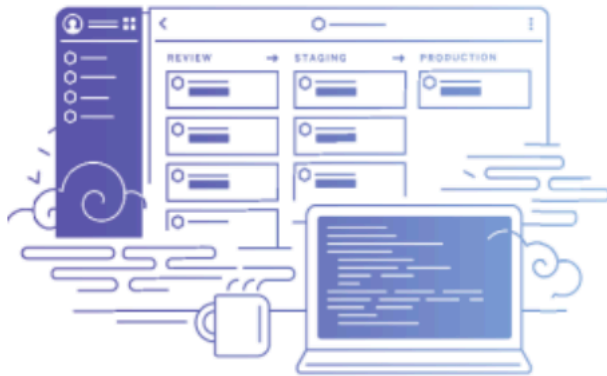


Dropbox: Cloud File Sharing service



Deploying a Play Application

Lab-12a
Deploy



Deploy a Play Application to the
cloud

1.Configuration

Three Key Configuration Parameters

1.1- JDK Version

1.2- Play Version

1.3- Database Connection String

1-1. JDK Version

1.Configuration

<https://devcenter.heroku.com/articles/java-support>

Heroku
supports
multiple
versions of the
JDK

Supported Java versions

Heroku currently uses OpenJDK 8 to run your application by default. OpenJDK versions 9 and 7 are also available. Depending on the major version you select the latest available update of that JDK will be used each time you deploy your app.

Current default versions are:

- Java 7 - 1.7.0_171
- Java 8 - 1.8.0_161
- Java 9 - 9.0.4
- Java 10 - 10

system.properties

Place this file in project root:

```
java.runtime.version=8
```


1-2. Play Version

1.Configuration

<https://www.playframework.com/download#alternatives>

Play Application Framework Versions

1.5 Setup Instructions

play-1.5.0.zip	Sep 29 2017	79M
--------------------------------	-------------	-----

1.4 Setup Instructions

play-1.4.5.zip	Sep 29 2017	74.6M
--------------------------------	-------------	-------

play-1.4.4.zip	Jan 24 2017	73.1M
--------------------------------	-------------	-------

play-1.4.3.zip	Aug 16 2016	72.3M
--------------------------------	-------------	-------

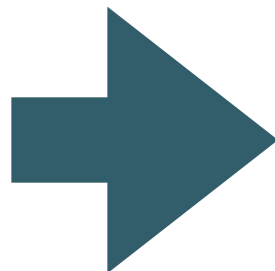
[Show all versions](#)

Edit existing file:

conf/dependencies.yml

```
# Application dependencies
```

```
require:  
  - play
```



```
# Application dependencies
```

```
require:
```

```
  - play 1.5.0  
  - org.postgresql -> postgresql 42.2.2:  
    force: true
```

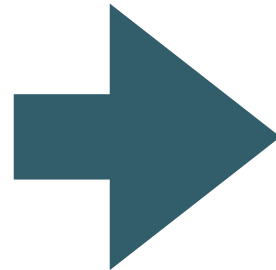
1-3. Database Connection String

1.Configuration

Edit existing file:

conf/application.conf

```
db.default=mem
```



```
# db.default=mem
```

```
db=${DATABASE_URL}
```

```
jpa.dialect=org.hibernate.dialect.PostgreSQLDialect
```

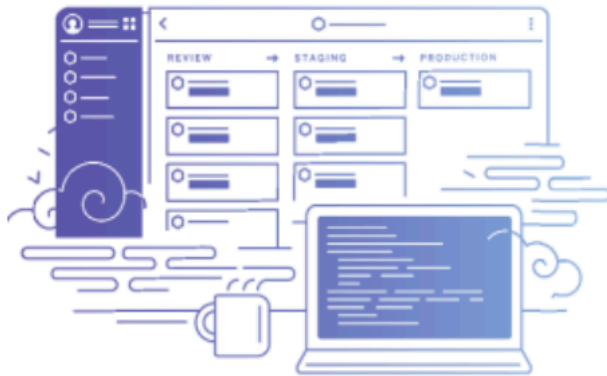
```
jpa.ddl=update
```

Dev mode
Application
connected to in
memory database

Production Mode
Application connected to
Postgres Database,
specified by platform

Deploying a Play Application

Lab-12a
Deploy



Deploy a Play Application to the
cloud

2.Staging

Three Processes:

2.1- Create the Application

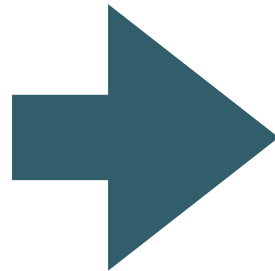
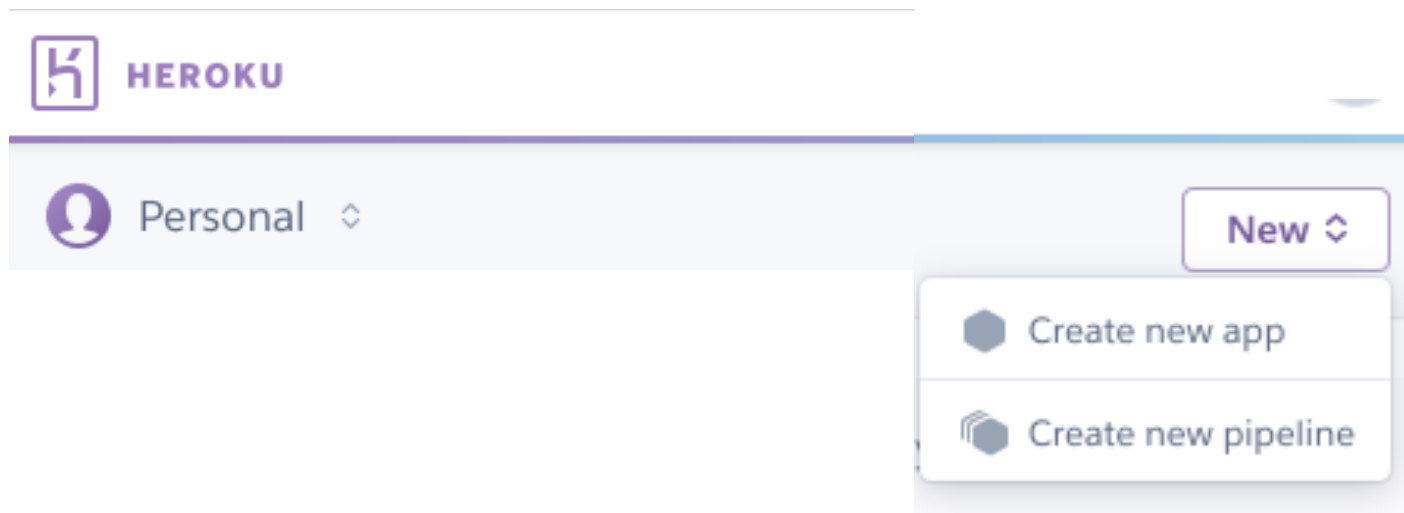
2.2- Connect to Dropbox

2.3- Copy project to dropbox

2.4- Configure Play Build pack


2.1- Create Application

2.Staging




Create New App


App name




todolist-edel is available

Choose a region

 Europe



 Add to pipeline...

Create app

2.2- Connect to Dropbox

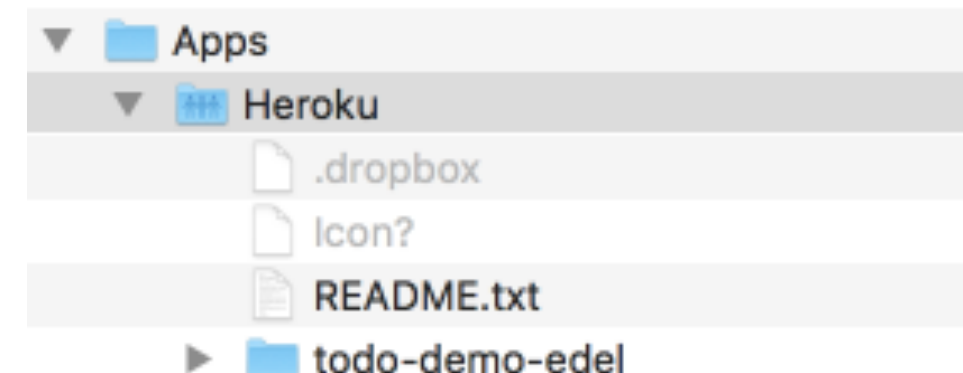
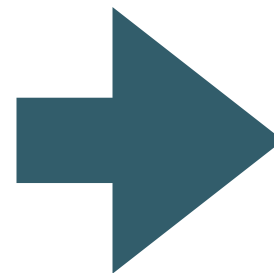
2.Staging

The screenshot shows the Heroku dashboard for the 'todolist-edel' app. The 'Deploy' tab is selected, showing options to add the app to a pipeline or choose a deployment method. The 'Add this app to a pipeline' section includes instructions on how to use pipelines to connect multiple apps and promote code. Below this, there's a 'Choose a pipeline' dropdown menu. The 'Deployment method' section lists four options: Heroku Git (Use Heroku CLI), GitHub (Connect to GitHub), Dropbox (Connect to Dropbox), and Container Registry (Use Heroku CLI).

Deploy using Heroku Git

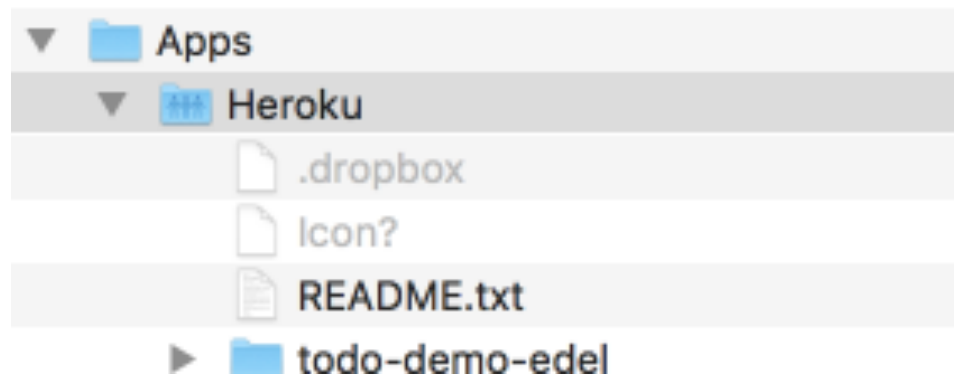
This screenshot shows the Heroku dashboard after connecting to Dropbox. It displays a message: 'Connected to Dropbox/Apps/Heroku/todolist-edel' with a 'Disconnect' button. Below this, it provides instructions: 'To prepare a new version of your app to deploy, edit your files in this Dropbox folder. Once you are ready to deploy a new version of the app you can deploy them below with a commit message. Changes in Dropbox will sync to Heroku Git and vice versa. Learn more.'

Create an empty folder on dropbox for the project



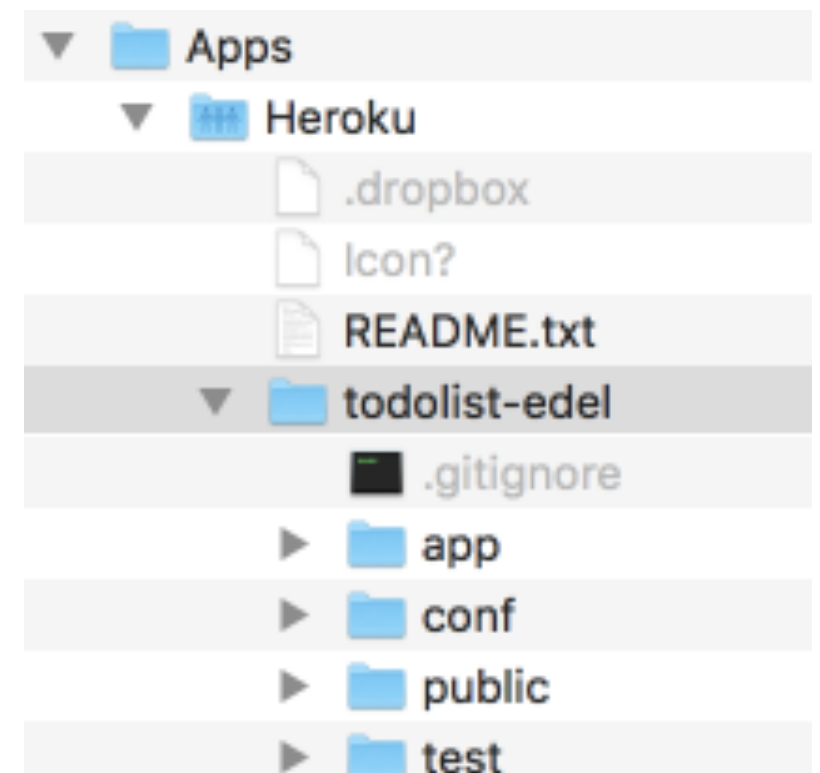
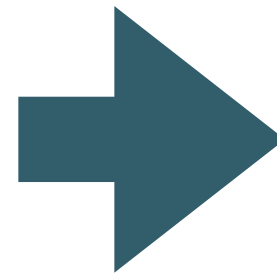
2.3- Copy project to dropbox

2.Staging



Simple copy/paste of project folders

- app
- conf
- public
- test



2.4- Configure Build Pack

2.Staging

The screenshot shows the Heroku dashboard for an application named 'todolist-edel'. The 'Settings' tab is selected, displaying fields for Name, Config Variables, Info, and Buildpacks. An 'Add Buildpack' modal is open, allowing the user to enter a Buildpack URL or select from officially supported buildpacks. The URL 'https://github.com/heroku/heroku-buildpack-play' is entered in the text field. The modal also displays icons for various supported languages: nodejs, python, php, ruby, java, go, gradle, scala, and clojure. A 'Save changes' button is at the bottom of the modal.

Add Buildpack

Enter Buildpack URL

`https://github.com/heroku/heroku-buildpack-play`

Or select from our officially supported buildpacks

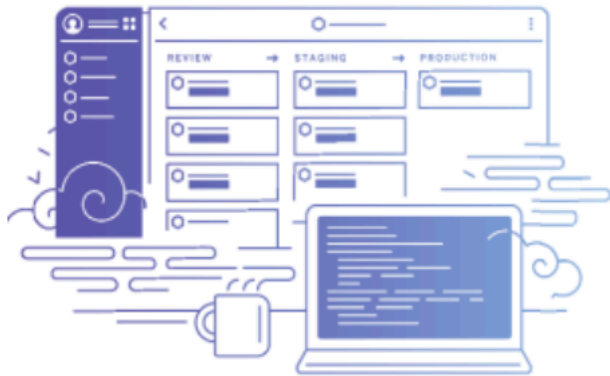
- nodejs
- python
- php
- ruby
- java
- go
- gradle
- scala
- clojure

Save changes

Instructs Heroku that the application is a Play Framework app.

Deploying a Play Application

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Deploy



Deploy a Play Application to the
cloud

3.Deployment

Two Processes:

3.1- Build & Deploy

3.2- Monitor

3.1- Build

3. Deployment

Deploy your latest changes

Add a commit message to tell others what you've changed.

Pushed from Dropbox

Deploy

Receive code from Dropbox

Build app [Hide build log](#)

```
-----> Discovering process types
Procfile declares types    -> (none)
Default types for buildpack -> web
-----> Compressing...
Done: 89.8M
-----> Launching...
Released v5
https://todolist-edel.herokuapp.com/ deployed to Heroku
```

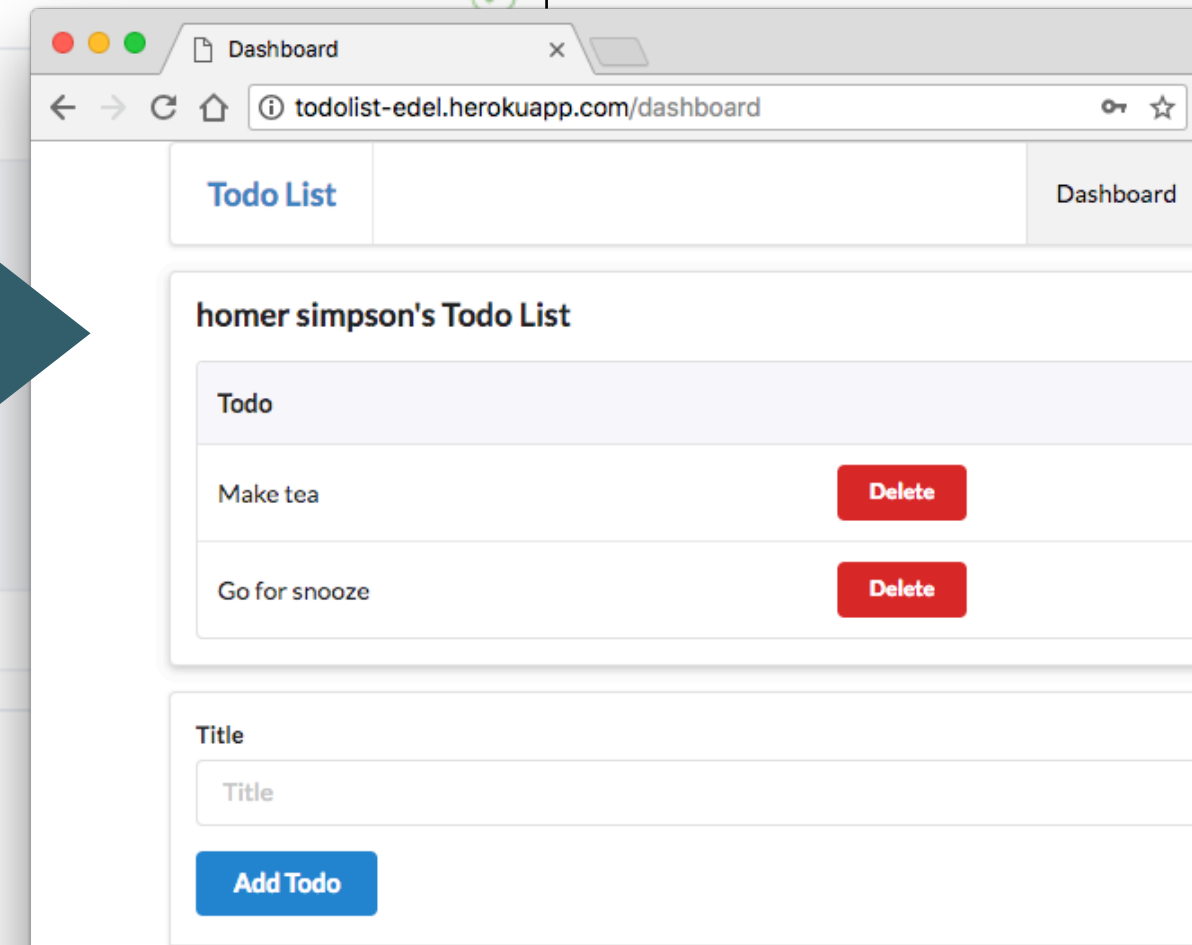
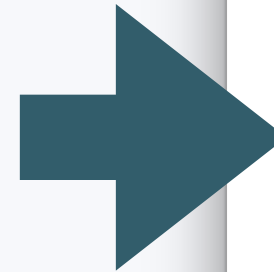
Build finished

Deploy to Heroku

Your app was successfully deployed.

Manage App

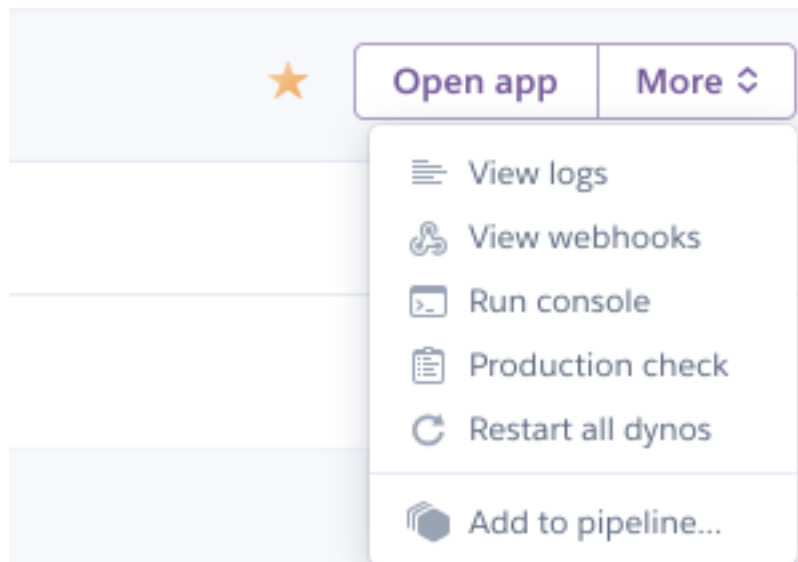
View



Deploy button copies the dropbox folder, builds & launches the app

3.2- Monitor - Application Console

3. Deployment



Replicates the
Console visible
when the app is
running on
localhost

Application Logs

ALL PROCESSES

```
2018-04-28T06:46:57.262005+00:00 heroku[web.1]: Starting process with command `play run --http.port=8575 --%prod -Dprecompiled=true`
2018-04-28T06:46:59.289767+00:00 app[web.1]: Create a Procfile to customize the command used to run this process: https://devcenter.heroku.com/articles/procfile
2018-04-28T06:46:59.580802+00:00 app[web.1]: Picked up JAVA_TOOL_OPTIONS: -Dfile.encoding=UTF-8
2018-04-28T06:47:00.525471+00:00 app[web.1]: 06:47:00,524 INFO ~ Starting /app
2018-04-28T06:47:00.960385+00:00 app[web.1]: :: loading settings :: url = jar:file:/app/.play/framework/lib/ivy-2.4.0.jar!/org/apache/ivy/core/settings/ivysettings.xml
2018-04-28T06:47:01.491954+00:00 app[web.1]: 06:47:01,491 INFO ~ Application is precompiled
2018-04-28T06:47:04.238824+00:00 app[web.1]: 06:47:04,237 INFO ~ HikariPool-1 - Starting...
2018-04-28T06:47:04.457666+00:00 app[web.1]: 06:47:04,457 INFO ~ HikariPool-1 - Start completed.
2018-04-28T06:47:04.477044+00:00 app[web.1]: 06:47:04,476 INFO ~ Connected to jdbc:postgresql://ec2-79-125-14-195.eu-west-1.compute.amazonaws.com:5432/dcbjsg53rodgeo for default
2018-04-28T06:47:07.963782+00:00 app[web.1]: 06:47:07,963 INFO ~ Application 'todolist' is now started !
2018-04-28T06:47:08.830163+00:00 app[web.1]: 06:47:08,825 WARN ~ Precompiled template /conf/data.yml not found, trying to load it dynamically...
2018-04-28T06:47:08.830174+00:00 app[web.1]: java.lang.RuntimeException: Cannot load precompiled template /conf/data.yml
2018-04-28T06:47:08.830176+00:00 app[web.1]: at play.templates.BaseTemplate.loadPrecompiled(BaseTemplate.java:44)
2018-04-28T06:47:08.830177+00:00 app[web.1]: at play.templates.TemplateLoader.load(TemplateLoader.java:75)
2018-04-28T06:47:08.830178+00:00 app[web.1]: at play.test.Fixtures.loadModels(Fixtures.java:223)
2018-04-28T06:47:08.830180+00:00 app[web.1]: at play.test.Fixtures.loadModels(Fixtures.java:191)
2018-04-28T06:47:08.830181+00:00 app[web.1]: at Bootstrap.doJob(Bootstrap.java:16)
2018-04-28T06:47:08.830183+00:00 app[web.1]: at play.jobs.Job.doJobWithResult(Job.java:64)
2018-04-28T06:47:08.830184+00:00 app[web.1]: at play.jobs.Job$.apply(Job.java:224)
2018-04-28T06:47:08.830185+00:00 app[web.1]: at play.db.jpa.JPA.withTransaction(JPA.java:285)
2018-04-28T06:47:08.830187+00:00 app[web.1]: at play.db.jpa.JPA.withinFilter(JPA.java:238)
2018-04-28T06:47:08.830188+00:00 app[web.1]: at play.db.jpa.JPAPLugin$TransactionalFilter.withinFilter(JPAPLugin.java:304)
2018-04-28T06:47:08.830189+00:00 app[web.1]: at play.jobs.Job.withinFilter(Job.java:201)
2018-04-28T06:47:08.830190+00:00 app[web.1]: at play.jobs.Job.call(Job.java:220)
2018-04-28T06:47:08.830192+00:00 app[web.1]: at Invocation.Job(Play!)
2018-04-28T06:47:08.830193+00:00 app[web.1]: Caused by: play.exceptions.UnexpectedException: Unexpected Error
2018-04-28T06:47:08.830194+00:00 app[web.1]: at play.libs.IO.readContent(IO.java:133)
2018-04-28T06:47:08.830196+00:00 app[web.1]: at play.templates.BaseTemplate.loadPrecompiled(BaseTemplate.java:41)
2018-04-28T06:47:08.830197+00:00 app[web.1]: ... 12 more
2018-04-28T06:47:08.830199+00:00 app[web.1]: Caused by: java.io.FileNotFoundException: File '/app/precompiled/templates/conf/data.yml' does not exist
2018-04-28T06:47:08.830200+00:00 app[web.1]: at org.apache.commons.io.FileUtils.openInputStream(FileUtils.java:292)
2018-04-28T06:47:08.830201+00:00 app[web.1]: at org.apache.commons.io.FileUtils.readFileToByteArray(FileUtils.java:1815)
2018-04-28T06:47:08.830202+00:00 app[web.1]: at play.libs.IO.readContent(IO.java:131)
2018-04-28T06:47:08.830203+00:00 app[web.1]: ... 13 more
2018-04-28T06:47:09.342593+00:00 app[web.1]: 06:47:09,342 INFO ~ Listening for HTTP on port 8575 ...
2018-04-28T06:47:09.666880+00:00 heroku[web.1]: State changed from starting to up
2018-04-28T06:47:15.508850+00:00 app[web.1]: 06:47:15,508 INFO ~ Rendering Start
2018-04-28T06:47:15.647864+00:00 heroku[router]: at=info method=GET path="/" host=todolist-edel.herokuapp.com request_id=8b963b67-6c63-43b0-b800-7571681a1328 fwd="86.44.43.185" dyno=web.1 connect=1ms service=225ms status=200 bytes=1454 protocol=https
2018-04-28T06:47:17.790158+00:00 heroku[router]: at=info method=GET path="/login" host=todolist-edel.herokuapp.com request_id=0c63d948-66b5-4d51-9c57-4fd95d8a85e1 fwd="86.44.43.185" dyno=web.1 connect=1ms service=27ms status=200 bytes=1878 protocol=https
2018-04-28T06:47:17.855407+00:00 heroku[router]: at=info method=GET path="/public/images/todo-2.jpg" host=todolist-edel.herokuapp.com request_id=31eb8230-2d5e-491a-b376-8f668de20be6 fwd="86.44.43.185" dyno=web.1 connect=1ms service=39ms status=200 bytes=173344 protocol=https
2018-04-28T06:47:25.509132+00:00 app[web.1]: 06:47:25,509 INFO ~ Attempting to authenticate with homer@simpson.com:secret
2018-04-28T06:47:25.523568+00:00 app[web.1]: 06:47:25,523 INFO ~ Authentication successful
2018-04-28T06:47:25.576685+00:00 app[web.1]: 06:47:25,576 INFO ~ Rendering Dashboard
2018-04-28T06:47:25.834299+00:00 heroku[router]: at=info method=GET path="/dashboard" host=todolist-edel.herokuapp.com request_id=daa255f3-3b12-4426-a72a-fba887e5b192 fwd="86.44.43.185" dyno=web.1 connect=2ms service=271ms status=200 bytes=2217 protocol=http
2018-04-28T06:47:25.531339+00:00 heroku[router]: at=info method=POST path="/authenticate" host=todolist-edel.herokuapp.com request_id=5befb30f-1445-4cb3-967e-4d17745e0885 fwd="86.44.43.185" dyno=web.1 connect=0ms service=46ms status=302 bytes=499 protocol=https
```

Autoscroll with output

Save

3.2- Monitor - Build

3. Deployment

Deploy your latest changes

Add a commit message to tell others what you've changed.

Pushed from Dropbox

Deploy

Receive code from Dropbox



Build app [Hide build log](#)



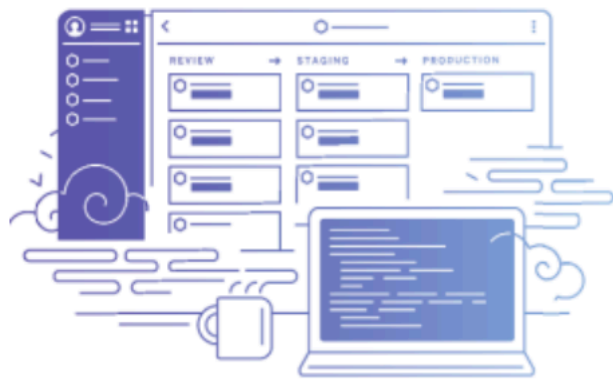
```
~  
~  
~ lib/postgresql-42.2.2.jar  
~ lib/org.osgi.enterprise-4.2.0.jar  
~ lib/org.osgi.core-4.3.1.jar  
~  
~ Done!  
~  
Precompiling: .play/play precompile ./ --silent 2>&1
```

☒ Autoscroll with output

If app malfunctioning, check Build Logs to see if application was compiled correctly.

Deploying a Play Application

Lab-12a Deploy



Deploy a Play Application to the
cloud

1.Configuration

2.Staging

3.Deployment

1.1- JDK Version

1.2- Play Version

1.3- Database Connection Str

2.1- Create the Application

2.2- Connect to Dropbox

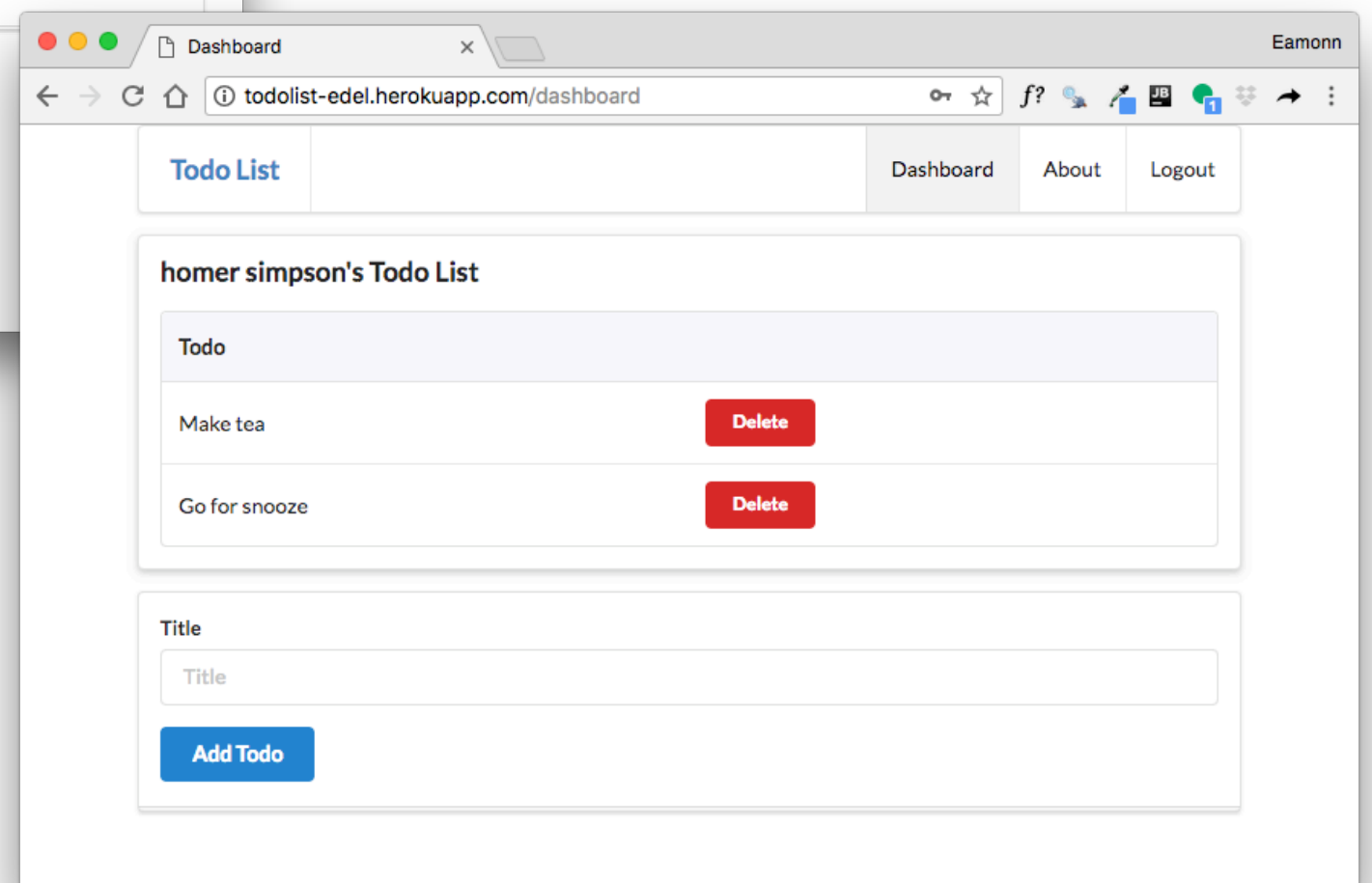
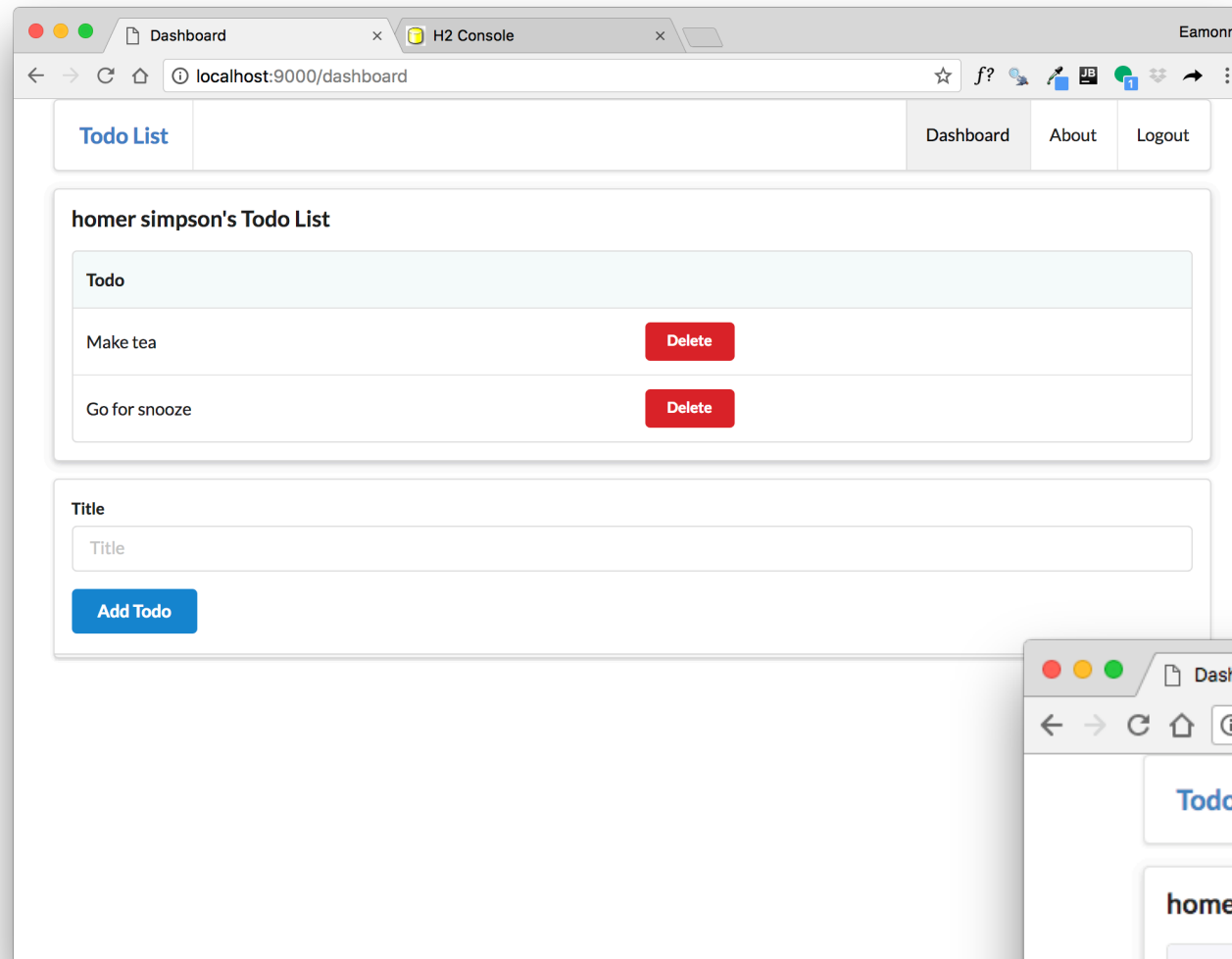
2.3- Copy project to dropbox

2.4- Configure Play Build pack

3.1- Build & Deploy

3.2- Monitor

http://localhost:9000



http://todolist-edel.herokuapp.com/dashboard

<http://localhost:9000/@db>

Dashboard

H2 Console

Eamonn

localhost:8082/login.do?jsessionid=1e65cdc7cd5aada5be80b9df24942f4a

Auto commit Max rows: 1000 Auto complete Off Auto select On

jdbc:h2:mem:play

member

member_todo

todo

information_schema

Sequences

Users

H2 1.4.196 (2017-06-10)

Run Run Selected Auto complete Clear SQL statement:

Important Command

?

Displays the

Shows the

Ctrl+Enter

Executes the

Shift+Enter

Executes the

Ctrl+Space

Auto complete

Disconnect

Sample SQL Script

Delete the table if it exists

Create a new table

with ID and NAME columns

Add a new row

Add another row

Query the table

Change data in a row

Remove a row

Help

Adding Database Drivers

Additional database drivers can be added

todolist-edel

Jump to table (s to focus)

Signed in as edeleastar@gmail.com

Dashboard

Listing on todo 4 records

	Id	Title
	6	demo
	3	Make more tea
	2	Go for snooze
	1	Make tea

Listing on member 2 records

	Id	Email	Firstname	Lastname	Password
	5	marge@simpson.com	marge	simpson	secret
	4	homer@simpson.com	homer	simpson	secret

	Table	Full table size	Table size	Record count
	member	32 KB	8 KB	2
	member_todo	24 KB	8 KB	3
	todo	24 KB	8 KB	3
Totals	6 tables	80 KB	24 KB	0

Add a new table

Database size 7.86 MB

System tables: [pg_stat_activity](#) - [pg_stat_statements](#) - [pg_stat_all_indexes](#) - [pg_stat_user_tables](#) - [Database settings](#)

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