Step 1: Run the app, and view its code

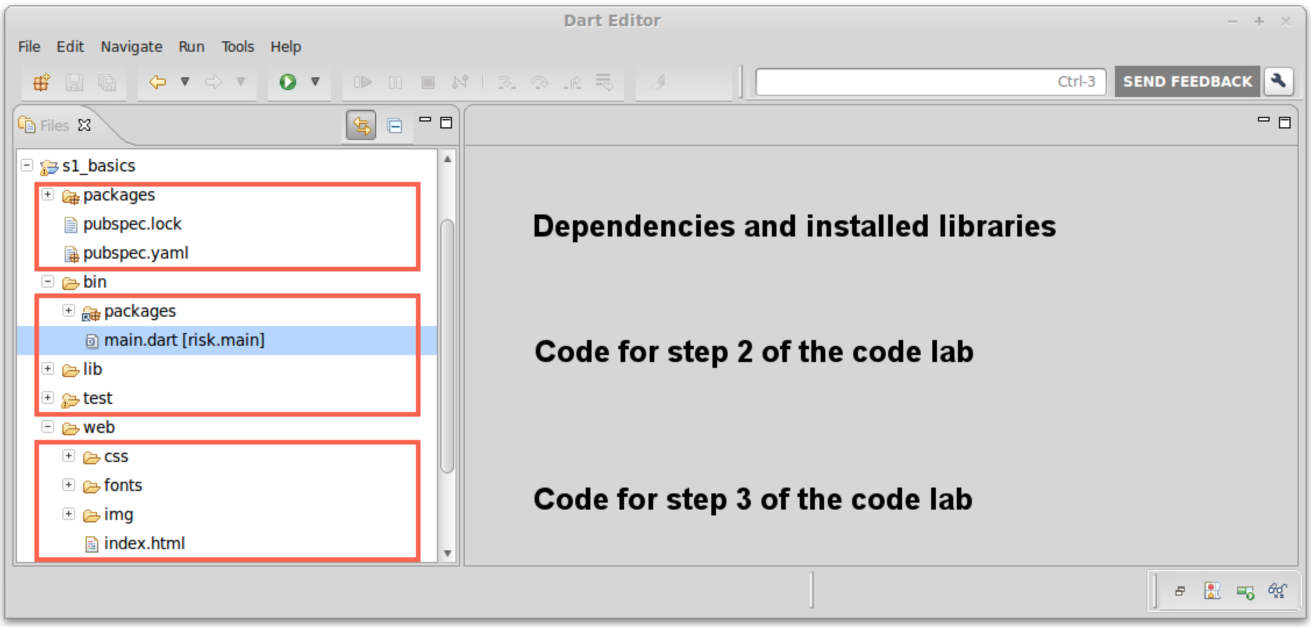
In this step, you open the source files for the first version of the app under `risk-polymer-codelab-master`. After familiarizing yourself with the app's code, you run the app.

***Keywords**: main, pub, Dartium, Polymer*

Use Dart Editor to open the app's directories

→ In Dart Editor, use **File > Open Existing Folder...** to open the directory **`risk-polymer-codelab-master/samples/s1_basics`**.

→ Open the `bin` and `web` directories by clicking the little arrow ► to the left of their name.



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Note: If you see red X's at the left of the filenames or if the `packages` directory doesn't appear, the packages are not properly installed. Right-click `pubspec.yaml` and select **Pub Get**. (Do **not** use pub upgrade. This code lab is tied to a specific version of Polymer.dart.)

Open the app's source files

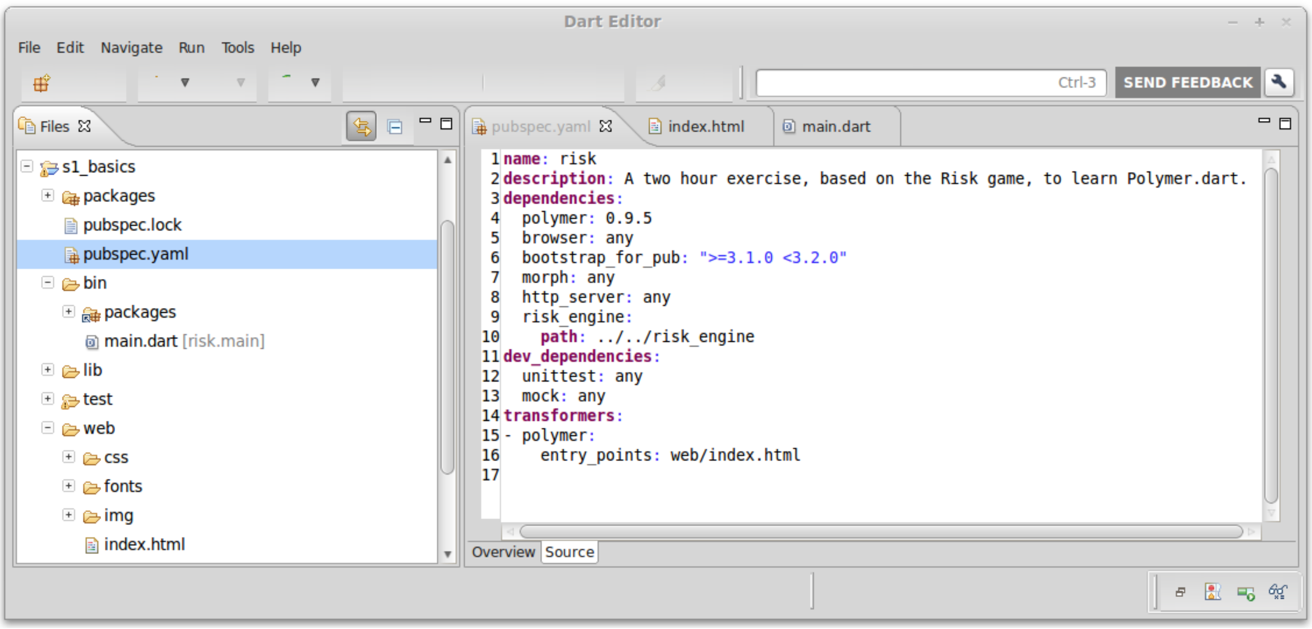
The initial app uses the following source files:

- `pubspec.yaml` : The app's description and dependencies, used by the Dart package manager
- `packages` : This folder contains the dependencies defined in `pubspec.yaml` and grabbed by `pub get`. `pub` also grabs the transitive dependencies (dependencies needed by dependencies).
- `bin/main.dart` : The server app
- `lib/` : Public libraries shared between server and client app (we'll skip this for now)

- `test/` : The unit tests (we'll skip this for now)
- `web/index.html` : The web app's template
- `web/css` , `web/fonts` , `web/img` and `web/res` : The app's appearance (we'll skip this for now)

→ In Dart Editor, open `pubspec.yaml` (in the top directory) by double-clicking its filename. To see its raw source code, click the **Source** tab at the bottom of the edit view.

→ Still in Dart Editor, under the `web` directory double-click `index.html` and under the `bin` directory double-click `main.dart` .



```
name: risk
description: A two hour exercise, based on the Risk game, to learn Polymer.dart.
dependencies:
  polymer: 0.9.5
  browser: any
  bootstrap_for_pub: ">=3.1.0 <3.2.0"
  morph: any
  http_server: any
  risk_engine:
    path: ../../risk_engine
dev_dependencies:
  unittest: any
  mock: any
transformers:
- polymer:
    entry_points: web/index.html
```

Review the code

Get familiar with `pubspec.yaml` , and with the HTML and Dart code for the skeleton version of the app.

pubspec.yaml

The `pubspec.yaml` file in the project root gives information about this app and the packages it depends on. In particular, the dependency on **polymer** gives the Dart tools the information they need to download the polymer package.

```
name: risk
description: A two hour exercise, based on the Risk game, to learn Polymer.dart.
dependencies:
  polymer: ">=0.15.5 <0.16.0"
  browser: any
  bootstrap_for_pub: ">=3.1.0 <3.2.0"
  morph: any
  http_server: any
  risk_engine:
    path: ../../risk_engine
dev_dependencies:
  unittest: any
  mock: any
transformers:
- polymer:
    entry_points: web/index.html
    inline_stylesheets:
      web/css/risk.css: false
      packages/bootstrap_for_pub/3.1.0/css/bootstrap.min.css: false
      packages/bootstrap_for_pub/3.1.0/css/bootstrap-theme.min.css: false
```

Key information:

- All Polymer.dart apps depend on `polymer` .
- Like most Dart web apps, this app also depends on `browser` .
- Polymer depends on other packages (including `browser` , as it happens). The pub package manager automatically finds the right versions of these packages.

- We provide some part of the game implementation in `risk_engine` to make this code lab easier for you ;)
- Building a server in Dart is very easy with `http_server`
- The `transformers` section helps to build a deployable version of your app.
- You can find many Dart packages, including polymer, on pub.dartlang.org.
- For more information about the pub package manager, see the pub documentation.

web/index.html

The first version of this HTML file contains no Dart and no Polymer components. However, it does set you up to add Polymer components among the next steps.

```
<!DOCTYPE html>

<html>
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Risk</title>
    <link rel="stylesheet" href="css/risk.css">
    <link rel="stylesheet" href="packages/bootstrap_for_pub/3.1.0/css/bootstrap.min.css">
    <link rel="stylesheet" href="packages/bootstrap_for_pub/3.1.0/css/bootstrap-theme.min.css">
  </head>
  <body>
    <header class="navbar navbar-default navbar-inverse">
      <div class="container-fluid">
        <div class="navbar-header">
          <a class="navbar-brand" href="#">Risk</a>
          <ul class="nav navbar-nav">
            <li><a href="/new">New Game</a></li>
          </ul>
        </div>
      </div>
    </header>

    <div>
      TO DO: Put the UI widgets here.
    </div>
  </body>
</html>
```

bin/main.dart

This version of the server app does nothing, except printing `Hello World!` in the console.

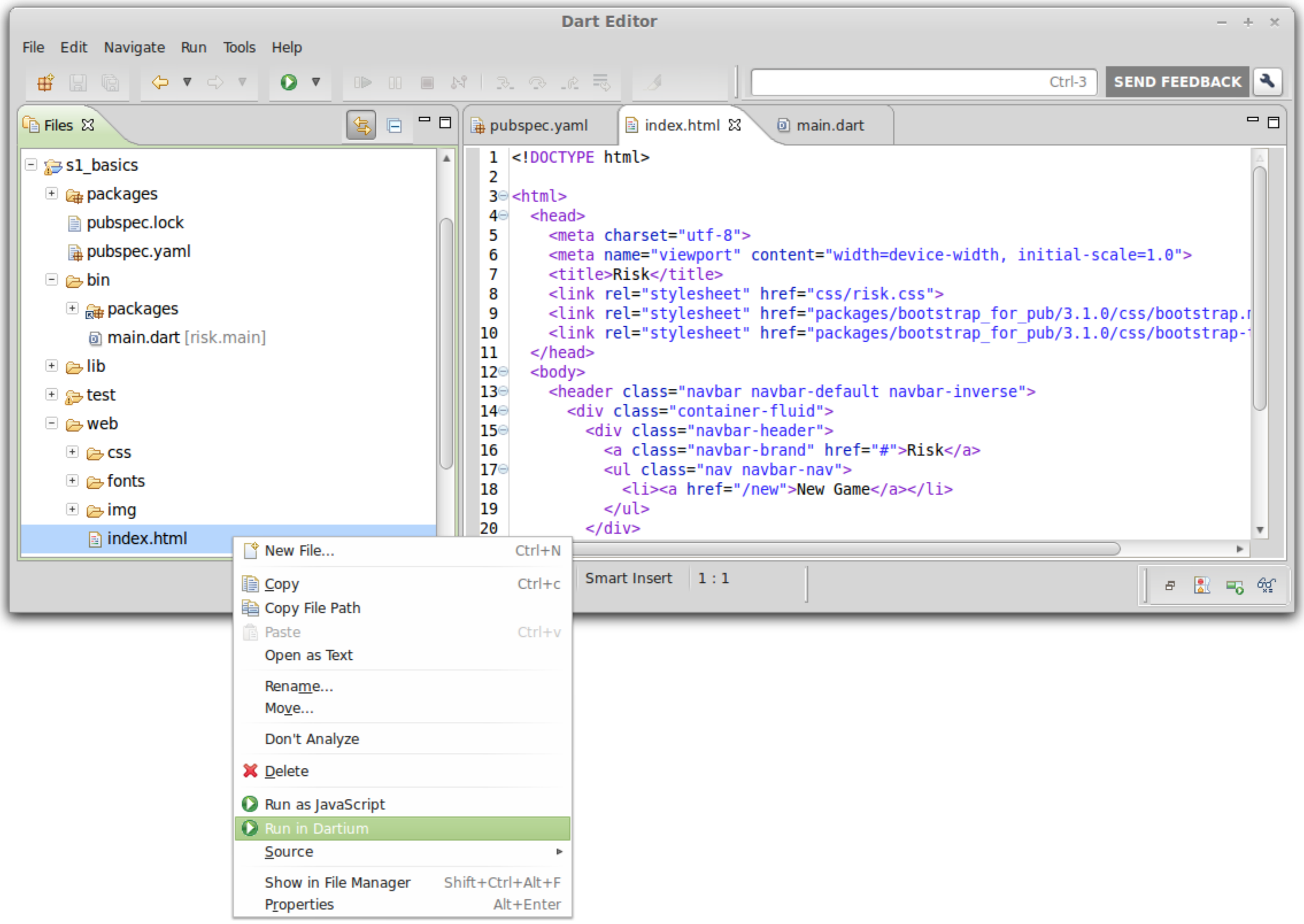
```
library risk.main;

main() {
  print("Hello World!");
}
```

Key information:

- This file contains the entry point for the server app—the `main()` function.
- The `main()` function is a top-level function.
- A top-level variable or function is one that is declared outside a class definition.
- The `library` line isn't necessary now, but it will come in handy later when we add more Dart files to this app.
- By convention, library names begin with the package name (`risk`), followed by a dot (`.`), followed by a library-specific name (`main`).

Run the web app in Dartium

→ Right-click `web/index.html` and select **Run in Dartium**.



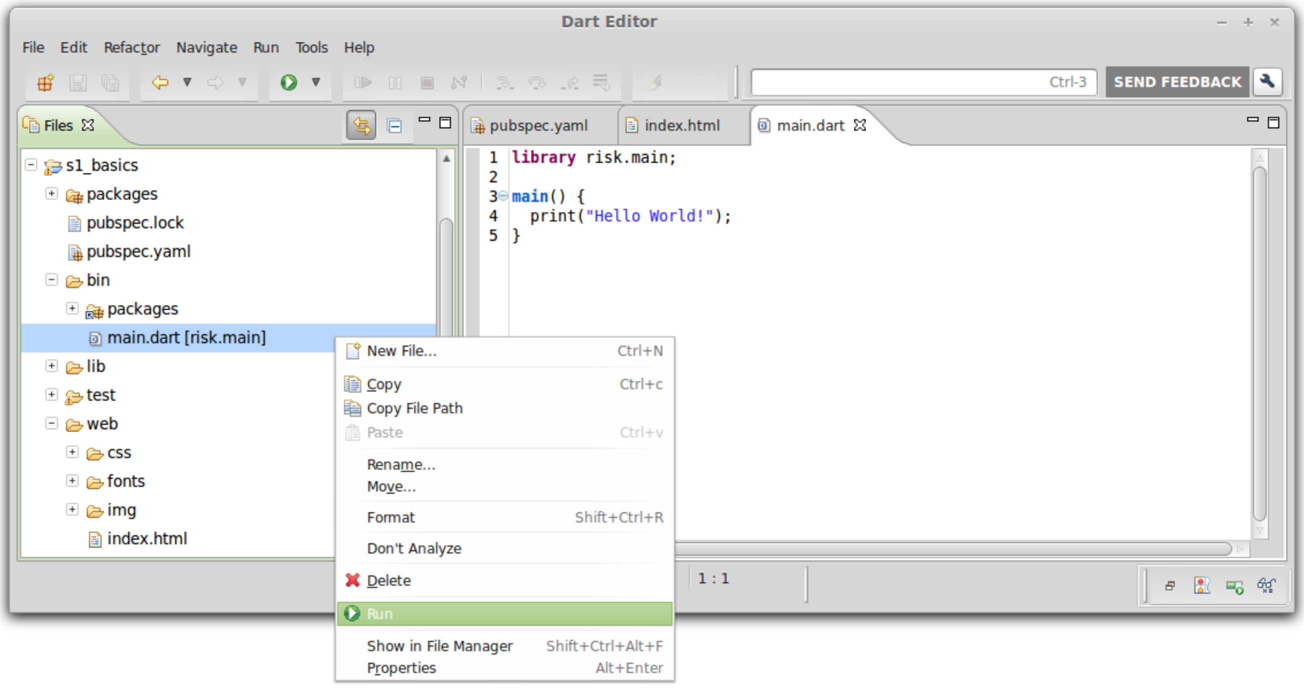
```
<!DOCTYPE html>

<html>
  <head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Risk</title>
    <link rel="stylesheet" href="css/risk.css">
    <link rel="stylesheet" href="packages/bootstrap_for_pub/3.1.0/css/bootstrap.
    <link rel="stylesheet" href="packages/bootstrap_for_pub/3.1.0/css/bootstrap-
  </head>
  <body>
    <header class="navbar navbar-default navbar-inverse">
      <div class="container-fluid">
        <div class="navbar-header">
          <a class="navbar-brand" href="#">Risk</a>
          <ul class="nav navbar-nav">
            <li><a href="/new">New Game</a></li>
          </ul>
        </div>
```

.

Dart Editor launches *Dartium*, a special build of Chromium that has the Dart Virtual Machine built in, and loads the `index.html` file.
You should see the *Risk* navigation bar and a TO DO comment. *Ignore the warning in the console from Polymer Linter.*

Run the server app

→ Right-click `bin/main.dart` and select **Run**.



```
library risk.main;

main() {
  print("Hello World!");
}
```

.

Dart Editor launches `bin/main.dart` script as a standalone app. Standard output is printed in a console window inside the IDE.
You should see *Hello World!*.

Home | < Previous | Next >