

Dart is a client-optimized language for fast apps on any platform – made by Google

## GROUND UP SERIES



# DART

Release 2.4 Updated



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Original Series

# Slide Version Updates

Last Updated	Version	Release Date	Updated by	Code Plays Done @

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Original Series

# Program Agenda

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Original Series

DAY 1

DAY 2

DAY 3

DAY 4

DAY 5

DAY 6

DAY 7

DAY 8

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# DART

- An open-source structured programming language for creating complex, browser based web application.
- Applications can run in a browser supported by Dart or Dart code converting into Javascript.
- Dart has similar syntax to Java programming and optionally types and **singe threaded**.
- **It has a concurrency model called isolates that allows parallel execution.**
- **Dart can be run on command line, and hosted in Dart Virtual Machine, allowing both the client and server parts of your apps to be coded in the same language.**

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## DART

## JAVA

## JAVASCRIPT

FEATURE	
TYPE SYSTEM	OPTIONAL AND DYNAMIC
FIRST-CLASS CITIZEN FUNCTIONS	YES
CLOSURES	YES
CLASSES	YES, SINGLE INHERITANCE
INTERFACES	YES, MULTIPLE INTERFACES
CONCURRENCY	YES, WITH ISOLATES

FEATURE	
TYPE SYSTEM	STRONG,STATIC
FIRST-CLASS CITIZEN FUNCTIONS	CAN SIMULATE WITH ANONYMOUS FUNCTIONS
CLOSURES	YES, WITH ANONYMOUS CLASSES
CLASSES	YES, SINGLE INHERITANCE
INTERFACES	YES, MULTIPLE INTERFACES
CONCURRENCY	YES, WITH THREADS

FEATURE	
TYPE SYSTEM	WEAK,DYNAMIC
FIRST-CLASS CITIZEN FUNCTIONS	YES
CLOSURES	YES
CLASSES	PROTOTYPICAL
INTERFACES	NO
CONCURRENCY	YES, WITH HTML5 WEB WORKERS

SYED AWASE

# DART INSTALLATION & SETUP.

# DART

## DART DESKTOP INSTALLATION

### 1. INSTALL CHOCOLATEY

<https://chocolatey.org>

### 2. INSTALL DART

choco install dart-sdk

### 3. INSTALL STAGEHAND

pub global activate stagehand

### 4. DART TOOLS

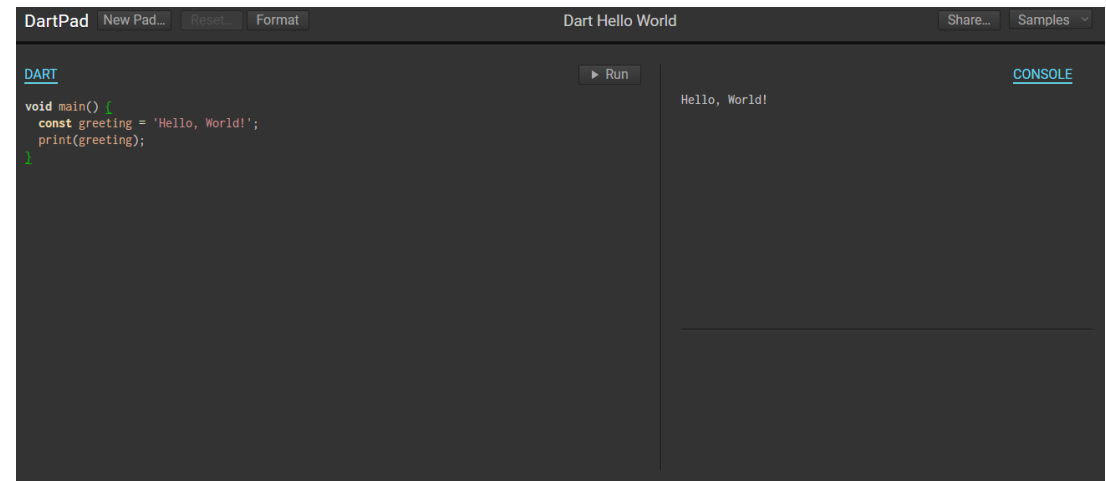
<https://dart.dev/tools#ides-and-editors>

### 5. INSTALL FLUTTER

<https://flutter.dev/setup>

<https://dartpad.dev/27e044ec9e2957d9c5c7062871ce8bf3>

## DART PAD



no-download-required way to learn Dart syntax

```
PS E:\awase-harddisk\CT\Dart\codeplayscenario> dart --version
```



# DART TOOLS

## IDE PLUGINS



Android Studio



Visual Studio Code



IntelliJ IDEA

(and other JetBrains IDEs)



Atom

## COMMAND-LINE TOOLS

1. DartAnalyzer  
<https://dart.dev/tools/dartanalyzer>
2. Dartdoc <https://dart.dev/tools/dartdoc>
3. Dartfmt <https://dart.dev/tools/dartfmt>
4. Pub Manages dart packages  
<https://dart.dev/tools/pub/cmd>
5. Build\_runner  
[https://dart.dev/tools/build\\_runner](https://dart.dev/tools/build_runner)
6. Dartfix a tool for migrating dart source code  
<https://pub.dev/packages/dartfix>

# DART TOOLS

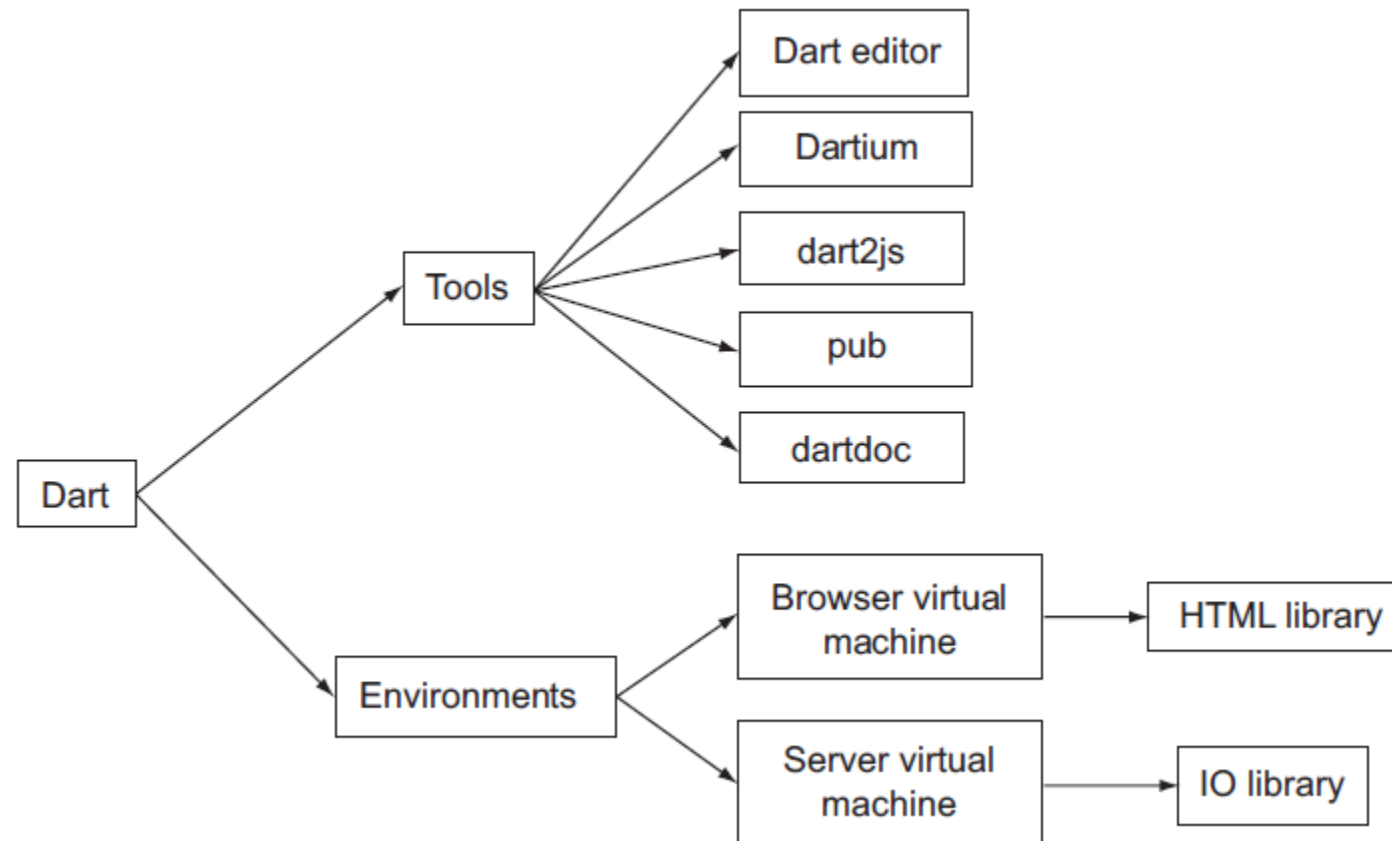
## WEB APPS

1. WEBDEV : CLI FOR WEB APP DEV  
<https://dart.dev/tools/webdev>
2. DART2JS DART TO JS COMPILER  
<https://dart.dev/tools/dart2js>
3. DARTDEVCDART DEV COMPILER  
MODULAR <https://dart.dev/tools/dartdevc>
4. BUILD\_RUNNER : A BUILD PACKAGE  
USED BY WEB DEV CLI  
<https://dart.dev/tools/webdev>

## COMMAND LINE APPS

1. STANDALONE DART VM:DART  
<https://dart.dev/tools/dart-vm>
2. AOT COMPILER AND RUNTIME  
<https://dart.dev/tools/dart2aot>
3. PUB PACKAGE MANAGE:PUB  
<https://dart.dev/tools/pub/cmd>

# DART ECOSYSTEM



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# DART COMMANDLINE SETUP

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Original Series

1. CHOCO INSTALL DART-SDK	INSTALLING DART CORE PACKAGES
2.PUB GLOBAL ACTIVATE STAGEHAND	SCAFFOLDER FOR CREATING DART APPS USING TEMPLATES
3. MKDIR CLI AND CD CLI	CREATE FOLDER AND NAVIGATE TO FOLDER
4. STAGEHAND PROJECT-NAME	SCAFFOLD A NEW PROJECT
5. PUB GET	GET APP DEPENDENCIES FOR CLI
6. dart bin/main.dart	RUNNING YOUR DART APPLICATION
7. dart2aot bin/main.dart bin/main.dart.aot	COMPILE FOR PRODUCTION
8. dartaotruntime bin/main.dart.aot	RUN THE COMPILED APP FOR PRODUCTION

time dartaotruntime bin/main.dart.aot

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# DART WEBDEV SETUP

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Original Series

1. CHOCO INSTALL DART-SDK	INSTALLING DART CORE PACKAGES
2.PUB GLOBAL ACTIVATE WEBDEV	INSTALL WEB DEVELOPMENT TOOLS
3. PUB GLOBAL ACTIVATE STAGEHAND	SCAFFOLDER FOR CREATING DART APPS USING TEMPLATES
4. WEBDEV	WEBDEV ENVIRONMENT
5.STAGEHAND web-simple	CREATE WEBDEV PROJECT USING STAGEHAND SCAFFOLDER
6.Cd project-name	NAVIGATE TO THE PROJECT
7. Pub get	GET APP DEPENDENCIES FOR WEB APP
8.Webdev serve	RUN THE COMPILED APP FOR PRODUCTION

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# DART WEBDEV ANGULAR SETUP

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Original Series

1. CHOCO INSTALL DART-SDK	INSTALLING DART CORE PACKAGES
2.PUB GLOBAL ACTIVATE WEBDEV	INSTALL WEB DEVELOPMENT TOOLS
3. PUB GLOBAL ACTIVATE STAGEHAND	SCAFFOLDER FOR CREATING DART APPS USING TEMPLATES
4. WEBDEV	WEBDEV ENVIRONMENT
5.STAGEHAND web-angular	CREATE WEBDEV PROJECT USING STAGEHAND SCAFFOLDER
6.Cd project-name	NAVIGATE TO THE PROJECT
7. Pub get	GET APP DEPENDENCIES FOR WEB APP
8.Webdev serve	RUN THE COMPILED APP FOR PRODUCTION

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# DART WEBDEV STAGEXL SETUP

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Original Series

1. CHOCO INSTALL DART-SDK	INSTALLING DART CORE PACKAGES
2.PUB GLOBAL ACTIVATE WEBDEV	INSTALL WEB DEVELOPMENT TOOLS
3. PUB GLOBAL ACTIVATE STAGEHAND	SCAFFOLDER FOR CREATING DART APPS USING TEMPLATES
4. WEBDEV	WEBDEV ENVIRONMENT
5.STAGEHAND web-stagexl	CREATE WEBDEV PROJECT USING STAGEHAND SCAFFOLDER
6.Cd project-name	NAVIGATE TO THE PROJECT
7. Pub get	GET APP DEPENDENCIES FOR WEB APP
8.Webdev serve	RUN THE COMPILED APP FOR PRODUCTION

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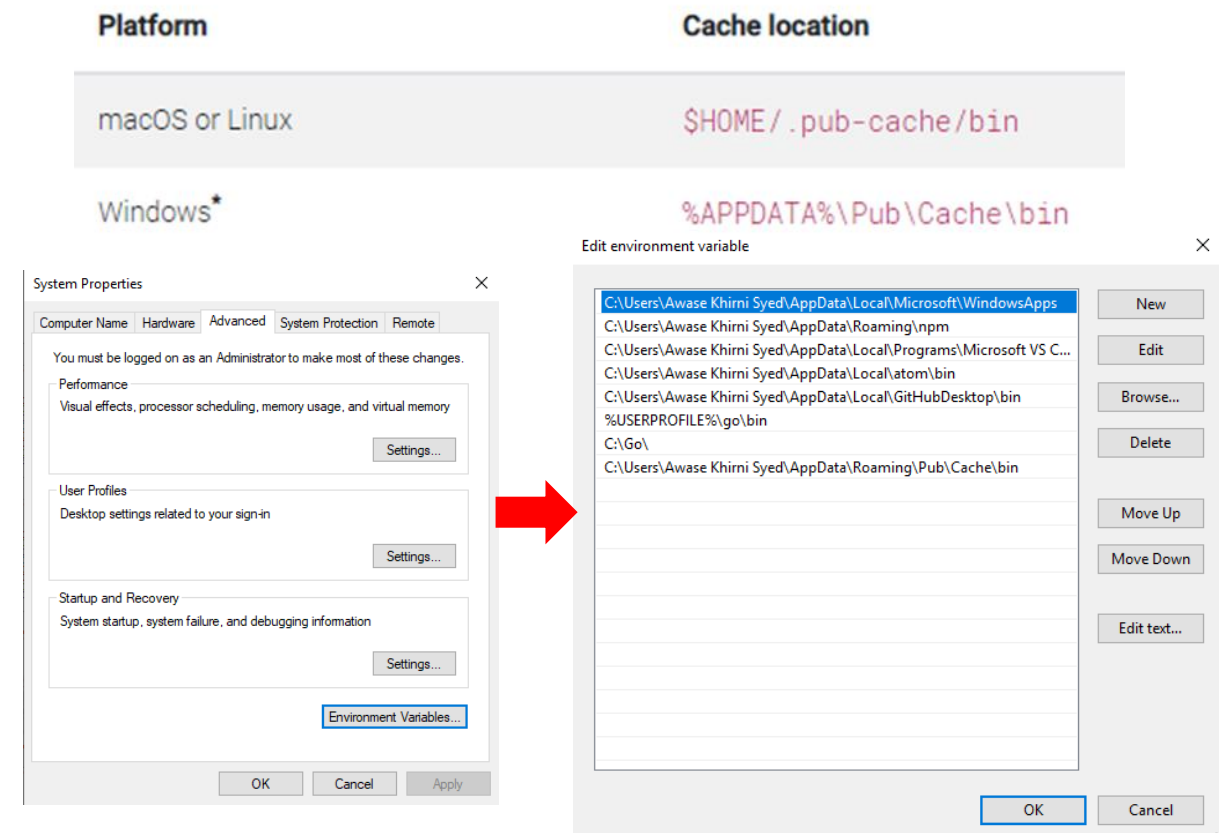
# Pub global

`pub global activate [--noexecutables] [--executable=<name>] [--overwrite] <package> [constraint]`

## PUB TOOL GLOBAL

- It allows us to run DART scripts from the command line.
- Activate : allows us to run scripts from that package's bin directory
- Deactivate: remove the package from the list of globally available packages.

## SET UP YOUR PATH VARIABLES



Platform	Cache location
macOS or Linux	\$HOME/.pub-cache/bin
Windows*	%APPDATA%\Pub\Cache\bin

The screenshot shows the Windows System Properties dialog box with the Environment Variables tab selected. The Environment Variables list contains the following paths:

- C:\Users\Awase Khirni Syed\AppData\Local\Microsoft\WindowsApps
- C:\Users\Awase Khirni Syed\AppData\Roaming\npm
- C:\Users\Awase Khirni Syed\AppData\Local\Programs\Microsoft VS C...
- C:\Users\Awase Khirni Syed\AppData\Local\atom\bin
- C:\Users\Awase Khirni Syed\AppData\Local\GitHubDesktop\bin
- %USERPROFILE%\go\bin
- C:\Go\
- C:\Users\Awase Khirni Syed\AppData\Roaming\Pub\Cache\bin

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# STAGEHAND

## GENERATORS

CONSOLE-  
FULL

COMMAND LINE APP

PACKAGE-  
SIMPLE

DART LIBRARIES

SERVER-SHELF

WEBSERVER WITH SHELF  
PACKAGE

WEB-  
ANGULAR

ANGULAR APP WITH  
MATERIAL DESIGN

WEB-SIMPLE

WEB APP WITH CORE DART  
LIBRARIES

WEB-STAGEXL

2D ANIMATIONS AND  
GAMES

## STAGEHAND --HELP

```
Welcome to Stagehand! We collect anonymous usage statistics and crash reports in
order to improve the tool (http://goo.gl/6wsncI). Would you like to opt-in to
additional analytics to help us improve Stagehand [y/yes/no]?
y
```

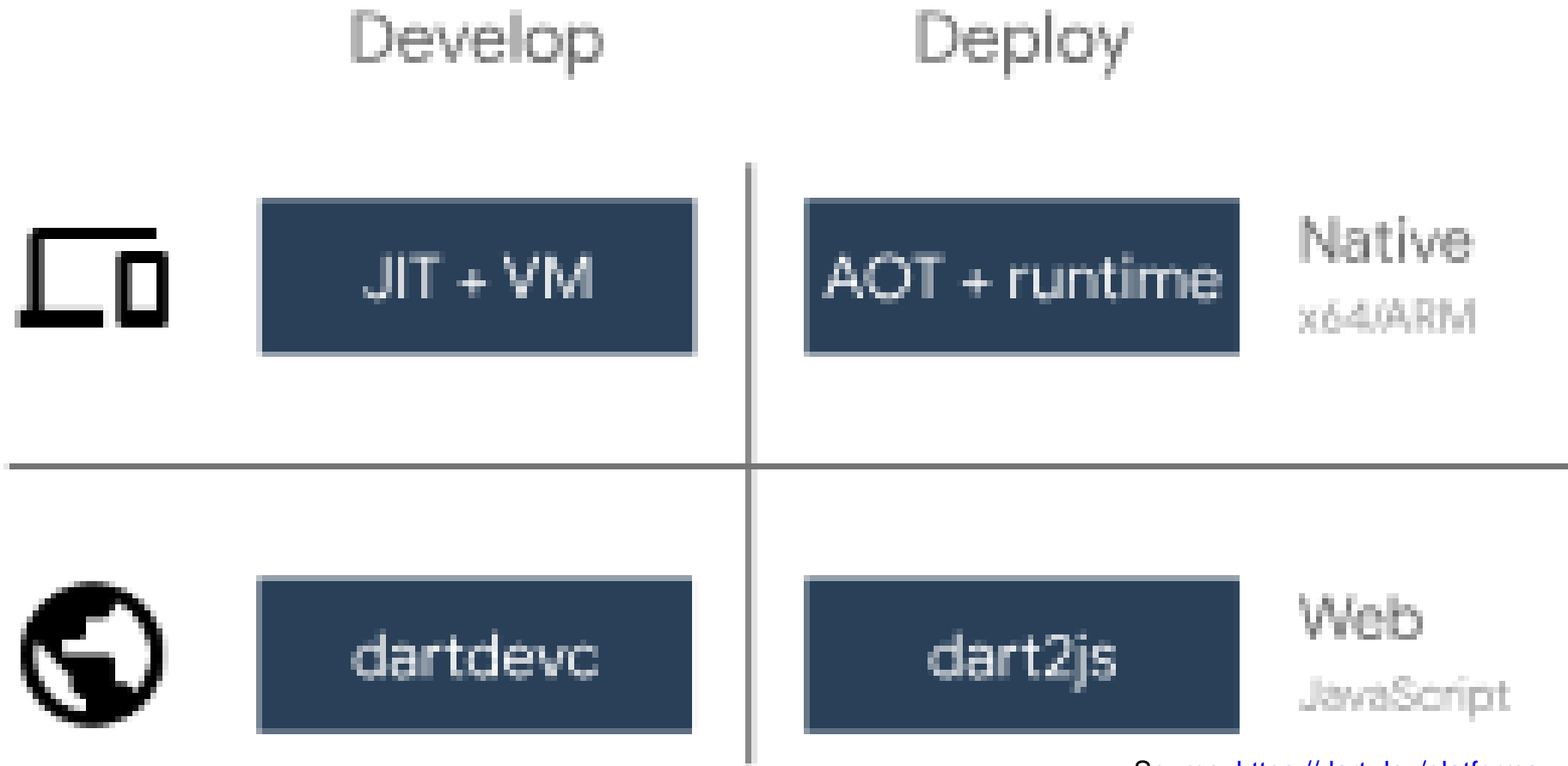
```
Stagehand will generate the given application type into the current directory.
```

```
usage: stagehand <generator-name>
  --[no-]analytics  Opt out of anonymous usage and crash reporting.
-h, --help          Help!
  --version          Display the version for stagehand.
  --author           The author name to use for file headers.
                    (defaults to "<your name>")
```

```
Available generators:
console-full        - A command-line application sample.
flutter-web-preview - A simple Flutter Web app.
package-simple      - A starting point for Dart libraries or applications.
server-shelf        - A web server built using the shelf package.
web-angular         - A web app with material design components.
web-simple          - A web app that uses only core Dart libraries.
web-stagexl        - A starting point for 2D animation and games.
```

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# DART PLATFORMS



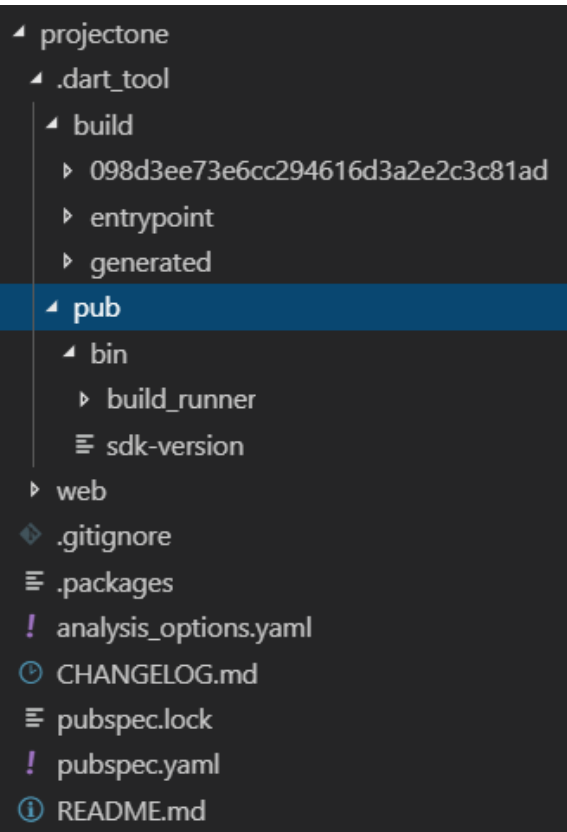
Source: <https://dart.dev/platforms>

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# PROJECT STRUCTURE

## SIMPLE WEB PROJECT WITH DART

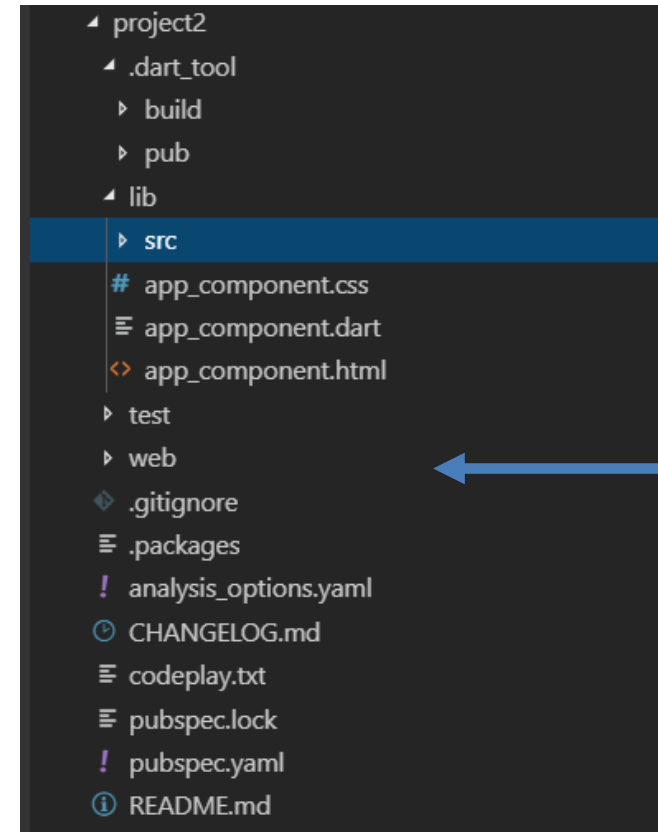
### DART WEB-SIMPLE PROJECT



Run >> webdev serve

## ANGULAR APPLICATION WITH MATERIAL DESIGN

### DART WEB-ANGULAR PROJECT



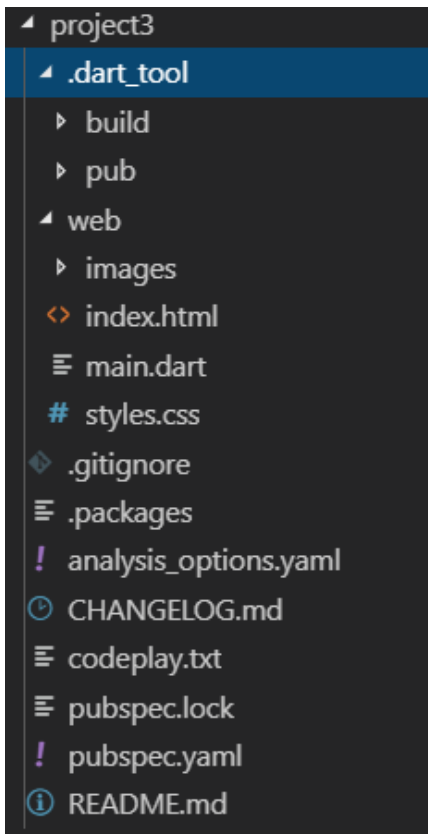
Run >> webdev serve

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# PROJECT STRUCTURE

## 2D ANIMATIONS AND GAMES

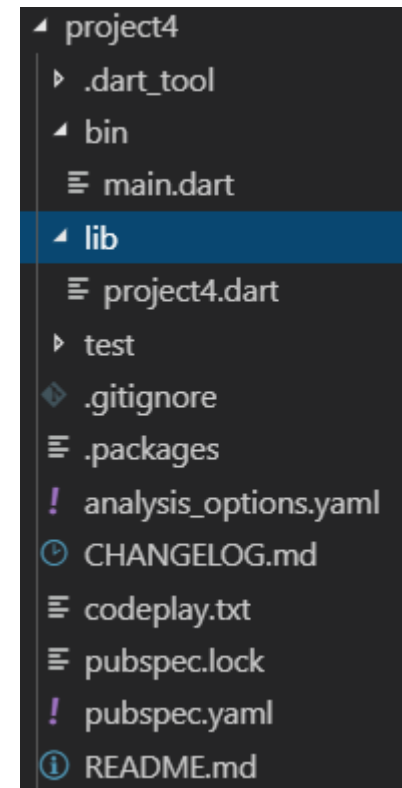
### DART WEB-STAGEXL PROJECT



Run >> webdev serve

## COMMAND LINE APPLICATION

### DART CONSOLE-FULL PROJECT

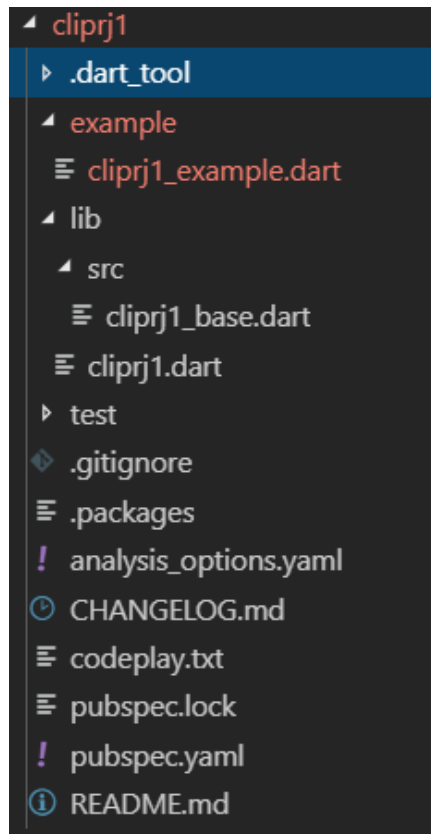


Run >> `dart bin/main.dart`

# PROJECT STRUCTURE

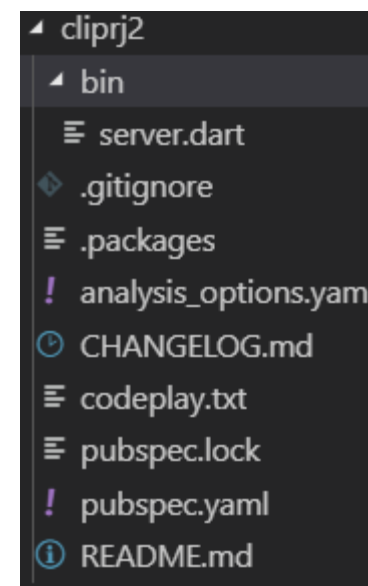
## CREATING DART LIBRARIES

### DART PACKAGE-SIMPLE



## WEBSERVER WITH DART

### DART SERVER-SHELF



Run >> "dart bin/server.dart"

SYED AWASE

# DART COMMAND LINE APPLICATIONS