



FAKULTAS
ILMU
KOMPUTER

Introduction to Platform-Based Programming

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What is platform?

Definition of Platform

<https://www.merriam-webster.com/dictionary/platform>



Definition of *platform*

1 a : a flat horizontal surface that is usually higher than the adjoining area: such as

(1) : a raised flooring (such as a stage or dais)

// ... a great stack of chairs piled up on and about the musicians' *platform* ...

— Joseph Conrad

// From this official table on a raised *platform* ... , Robert Thomas, the show's chairman, directs operations ...

— Liz Horwitt

(2) : an elevated area next to railroad tracks for the boarding of trains

// The *platform* was crowded with waiting passengers.

b : a device or structure incorporating or providing a platform

// a viewing *platform*

specifically : such a structure on legs used for offshore drilling (as for oil)

<https://kbbi.kemdikbud.go.id/entri/platform>



Informasi: Temukan bantuan menggunakan KBBI Daring [di sini](#).

platform



plat.form

→ Tesaurus

1. *n* rencana kerja; program
2. *n* pernyataan sekelompok orang atau partai tentang prinsip atau kebijakan
3. *n* tempat yang tinggi; panggung; pentas; mimbar: *masalah penciptaan adalah masalah yang dibahas dalam -- ilmu sastra*
4. *n* beranda stasiun; peron: *saya lihat beliau keluar dari -- Stasiun Tugu langsung menuju kendaraannya*

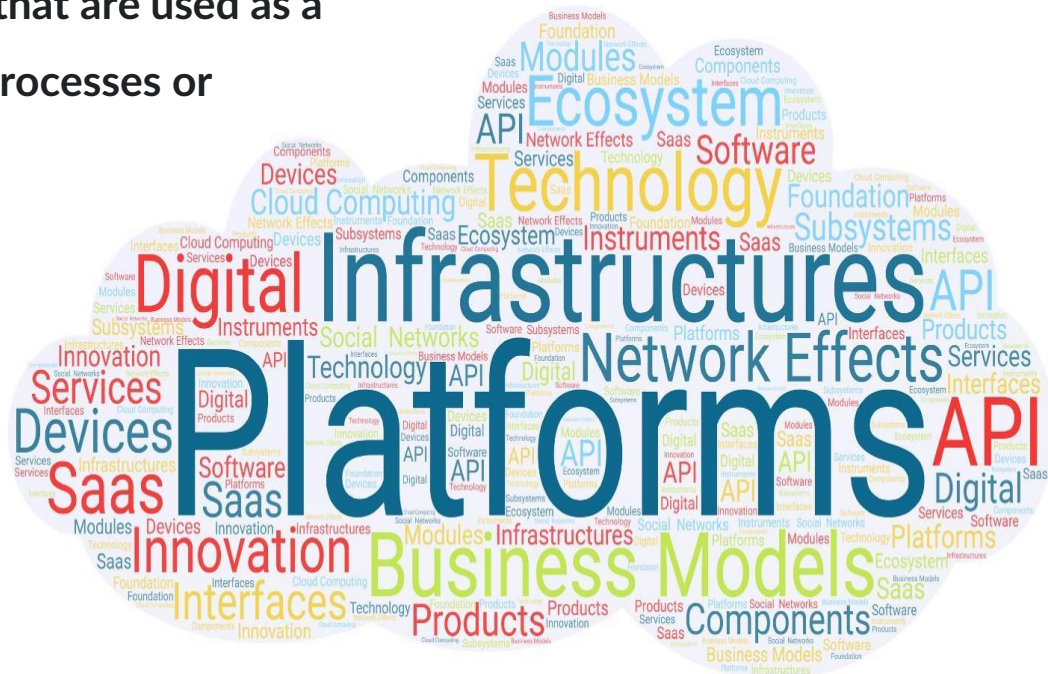
Example: Platform

- Platform at train station (in bahasa Indonesia: *peron*)
- Stage at art performance
- Structure



Definition of Platform (Technology)

A platform is a group of technologies that are used as a base upon which other applications, processes or technologies are developed



Example: Technology Platform

- Telecommunication: 3G / 4G / 5G
- Electricity (Current): AC (Alternating Current) / DC (Direct Current)
 - DC to AC => Converter (Inverter)
 - AC to DC => Converter (Adaptor)
- Machine/Automotive: Diesel vs Gasoline vs Electric



Definition of Platform (Computing)

- ❑ A platform serves as the basic foundation for the development and support of [hardware](#) and [software](#).
- ❑ Everything created on top of a foundation operates together within the same framework. As such, **each platform has its own set of rules, standards, and restrictions that dictate what hardware/software can be built and how each should work.**
- ❑ computer, computing device, computing machine, data processor, electronic computer, information processing system - a machine for performing calculations automatically
- ❑ ADP system, ADPS, automatic data processing system, computer system, computing system - a system of one or more computers and associated software with common storage
- ❑ operating system, OS - software that controls the execution of computer programs and may provide various services

Example: Computing Platform

Hardware:

X86 (Intel / AMD) 32bit / 64bit

ARM (Snapdragon)

ATMEL

Bluetooth

USB



Software:

Sistem Operasi (Linux, Android, Windows, iOS, dll)



Definition of Platform & Framework

- ❑ A platform is a set of hardware and software components that provide a space for developers to build and run applications.
- ❑ Platforms are designed to be environments for apps. Not only will developers build the app on a particular platform, but the finished product will also run on that platform.
- ❑ A framework is a software-only app skeleton that includes preset tools, libraries, software development kits, and other components.
- ❑ Frameworks are intended to be more like app templates. Their ready-made components provide some guidance to developers throughout the development process. However, the app will still need external support to run once it's complete.

<https://themanifest.com/app-development/blog/platform-vs-framework>

<https://www.brainspire.com/blog/mobile-development-platform-vs-framework-how-they-differ>

Definition of Programming Platform & Framework

- ❑ A programming platform is a software platform that encompasses all the necessary components, application programming interfaces and libraries required by programmers and developers to author, compile, debug and execute language-specific applications. Programming platforms are typically accompanied with development tools that enable effortless application development.
- ❑ A programming framework is a **prepackaged set of solutions** that solves common development problems.

Example: Programming Platform & Framework

Web:

- Server Based: **Django**, Laravel, Springbot, .NET
- Client Side: ReactJS, AngularJS, Flutter for Web

Mobile:

- ❑ Wearable Device
- ❑ Smart Phone: Native Android, Native iOS, Native Tizen, Native HarmonyOS, **Flutter**, ReactNative,

Home Appliance:

- ❑ Smart TV
- ❑ Smart Refrigerator

Desktop:

- ❑ QT, .NET Framework

Game:

- ❑ Streaming: Steam, Google Stadia
- ❑ Console: Nintendo, Xbox, Playstation, etc
- ❑ Mobile: Unity
- ❑ Desktop: Unity, Unreal engine, etc

Artificial Intelligence:

- ❑ Nvidia CUDA, Tensorflow

Embedded:

- ❑ IoT (Smart Lamp, etc)
- ❑ Education (Micro:bit, Raspberry Pi)

Digital Industrial Platform

Digital industrial platforms are essential for the **integration of key digital technologies, large-scale piloting and experimentation** is needed to gradually develop and mature such platforms. Equipped with appropriate business models, digital industrial platforms could be instrumental in the **creation of ecosystems** of market actors in a multi-sided marketplace. These ecosystems enable the creation of new innovative products and services and accelerate the development of worldwide standards.

Example: Digital Industrial Platform

Closed:



HUAWEI



Open: (Industrial Revolution 4.0)

- Cloud




- Open Protocol
 - Blockchain (Ethereum, Bitcoin, etc)
 - Open API (Open Banking, Digital Signature, etc)



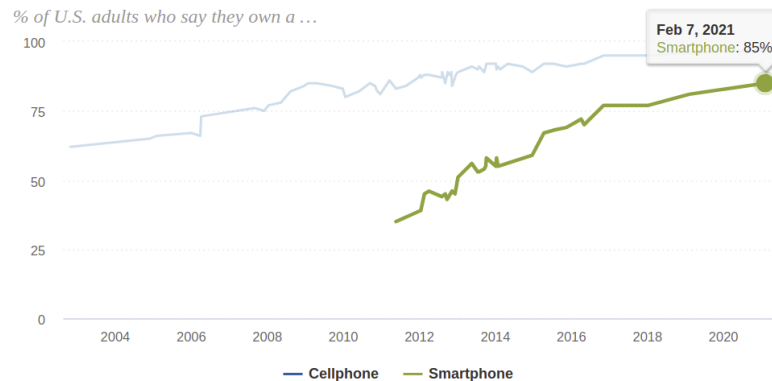
Why we need programming framework?

- ❑ The principles of rapid development, which means developers can do more than one iteration at a time without starting the whole schedule from scratch;
- ❑ DRY philosophy — Don't Repeat Yourself — which means developers can reuse existing code and focus on the unique one.
- ❑ As a result, it takes a lot less time to get the project to market

Why we need to understand web & mobile platform?

- ❑ Internet as primary needs
 - ❑ Application delivery on Internet as a Web Application
- ❑ Website as landing page for services, mobile applications for personalized interactions

- ❑ Mobile phone users: 85% (US Survey)
- ❑ Services deliver over mobile Apps



Web Platform

Web Platform (using Django Framework)

- ❑ Server Based: Django
- ❑ Client Based: Javascript jQuery



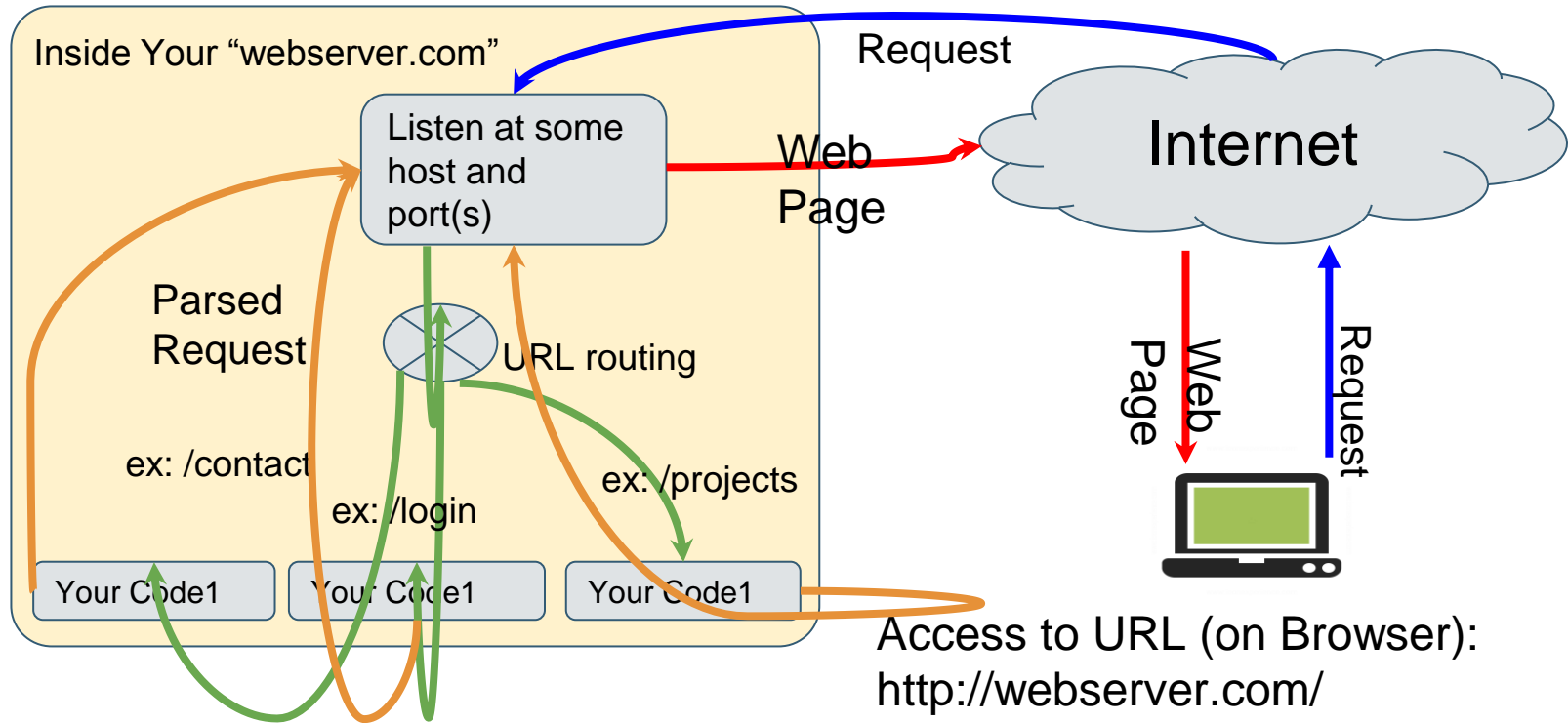
Code execution in Server
execution result HTML, CSS, JS
Deliver HTML, CSS, JS



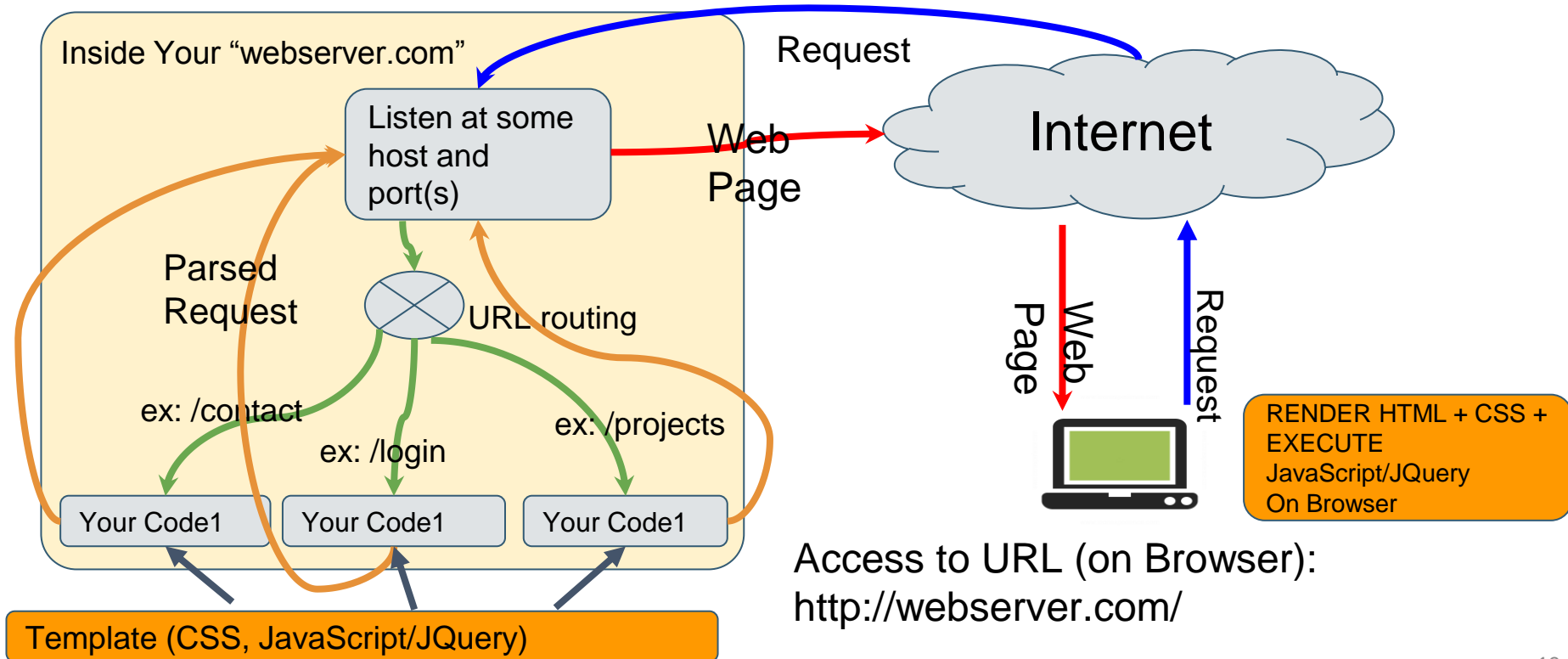
JavaScript

Browser receive JS Code from Server
Code execution on Browser

Web Platform: Server Based Application



Web Platform: Client Based Application

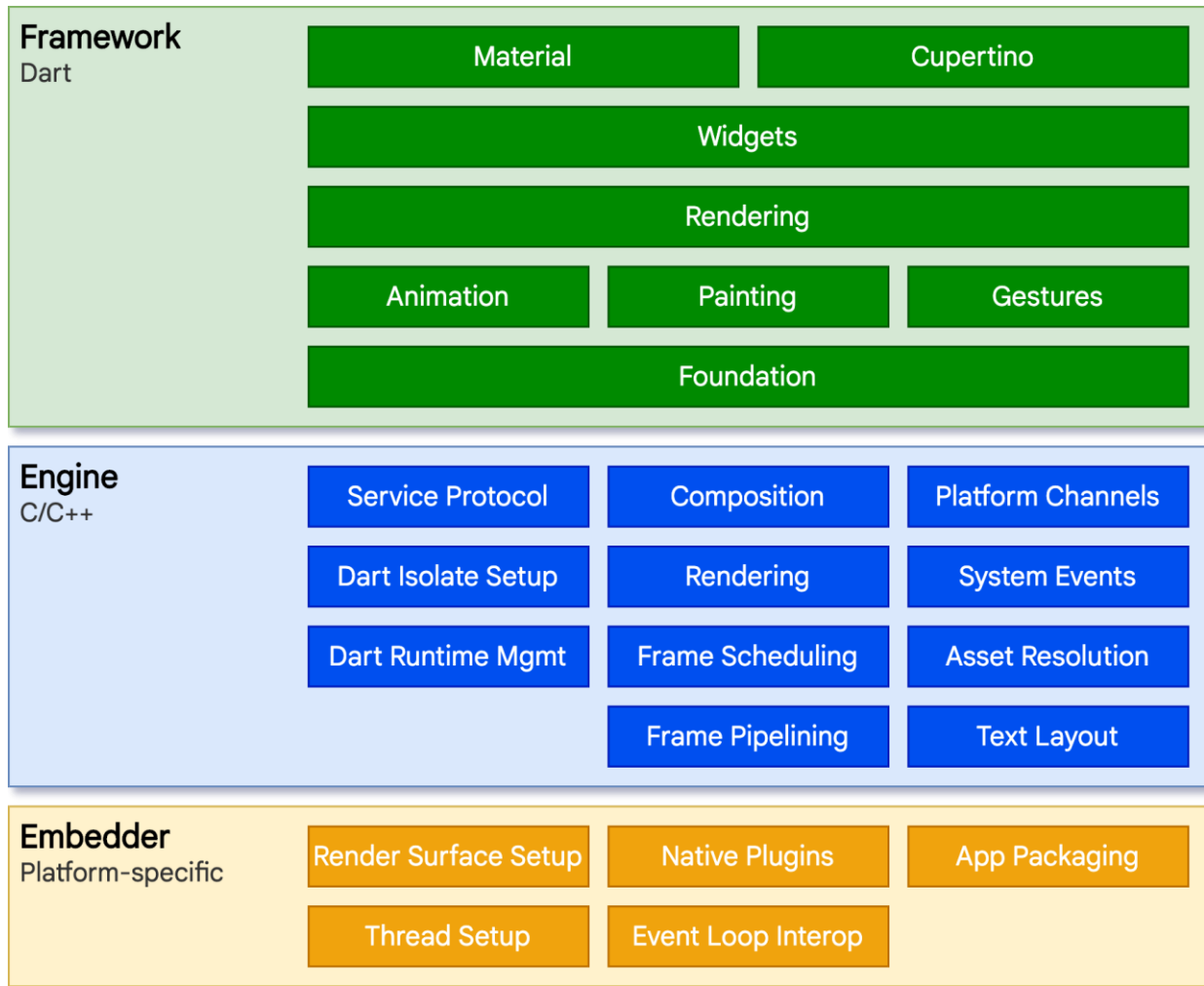


Mobile Platform

Mobile Platform (using Flutter Framework)

- Back in the days of Objective C/Swift and Java/Kotlin as primary languages for mobile development, building apps was expensive. You had to build two separate apps, which obviously meant doing the work twice.
- Flutter is a cross-platform framework that uses just one code to create apps for different devices.
- Applications that are programmed in **Dart** language act almost identically on each mobile operating platform (Android & iOS) and they have similar efficiency to their native solutions. Moreover, apps made with Flutter are indeed native.

Flutter Architecture



Flutter in Course Platform-Based Programming

- Emphasized on UI of mobile/smartphone application
- Multi-Computing Platform (Android - iOS)
- Communication with Backend (served by Django Web service)



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