

Introduction to Mobile App Development with Ionic **PART2**

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INTRODUCE YOURSELF

NAME....

FROM....

*Why you enroll?
Experience?*

About me

Multi Award Winning Mobile App Developer

- 15+ years experience in software development
 - Have been involved in a lot of IT based projects
- B.Eng Computer Interactive Systems, University of Birmingham, UK
- Masters in Management, University Of Wolverhampton, UK
- My speciality is in Javascript based technologies (AngularJS, ExpressJS, NodeJS, Ionic etc)

About me

Multi Award Winning
Mobile App Developer

MDEC National Big App Challenge Winner

Malaysia Airlines Hackathon Champion

MDEC ICON 2015

OTHER NOTABLE ROLES

Co Founder & Principal
Ukay Wizards
(2017-)

Former Director,
Kolej Teknologi Timur, Sepang
(2009-2017)



Transformative applications the result of Big Data Analytics

By Digital News Asia | Dec 21, 2017

- Called for applications that will help the public in their daily lives
- Team Ukey Wizards took first place, followed by Team PeGIS and Team D8



Grand prize winner Team Ukey Wizards (from left) Razman Yusof Bin Mohd Sait, Muhammed Hibatullah Rashid Razak, Ir. Dr. Karl Ng, and Ikkram Syakir Mohd Amin

BIG Data Analytics (BDA) continues to drive the development of innovative and transformative applications at the fourth National Big App Challenge, organised by Malaysia Digital Economy Corporation (MDEC) recently.

Held in the Asian Data Analytics Exchange (ADAX) headquarters, the challenge called upon students, working professionals and entrepreneurs to develop applications that will help the public in their daily lives.

BRIEF OVERVIEW TO IONIC FRAMEWORK

Apps in our life



Alarm Clock



Internet



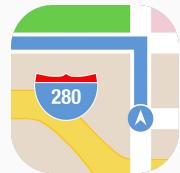
Whatsapp



Camera



FB & Instagram



Maps



Email



GRABTAXI

IOS & Android Software Development

In a nutshell



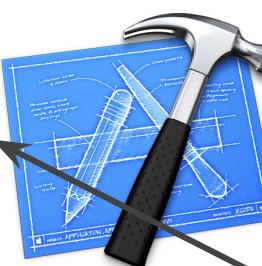
2 X WORK



Android Studio
(Java & Kotlin)



Android Device



XCode (Swift &
Objective C)



iPhone/iPad

1 x WORK



Cordova/ Phonegap

Hybrid

Still very messy

No standard
framework

Compile with Android SDK



Android Device



Xcode Project



iPhone/iPad

1 x WORK



Framework

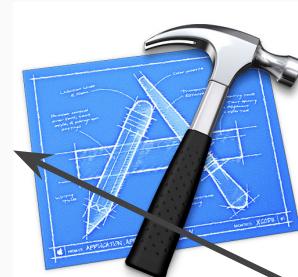
Hybrid



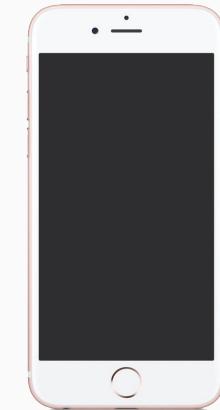
Android Studio



Android Device



XCode



iPhone/iPad

1 x WORK

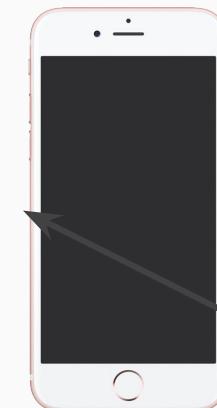


Build Progressive Web Apps

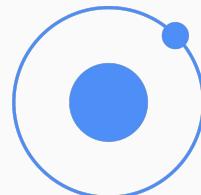


Android Device

Build Progressive Web Apps



iPhone/iPad

 **ionic**
Framework

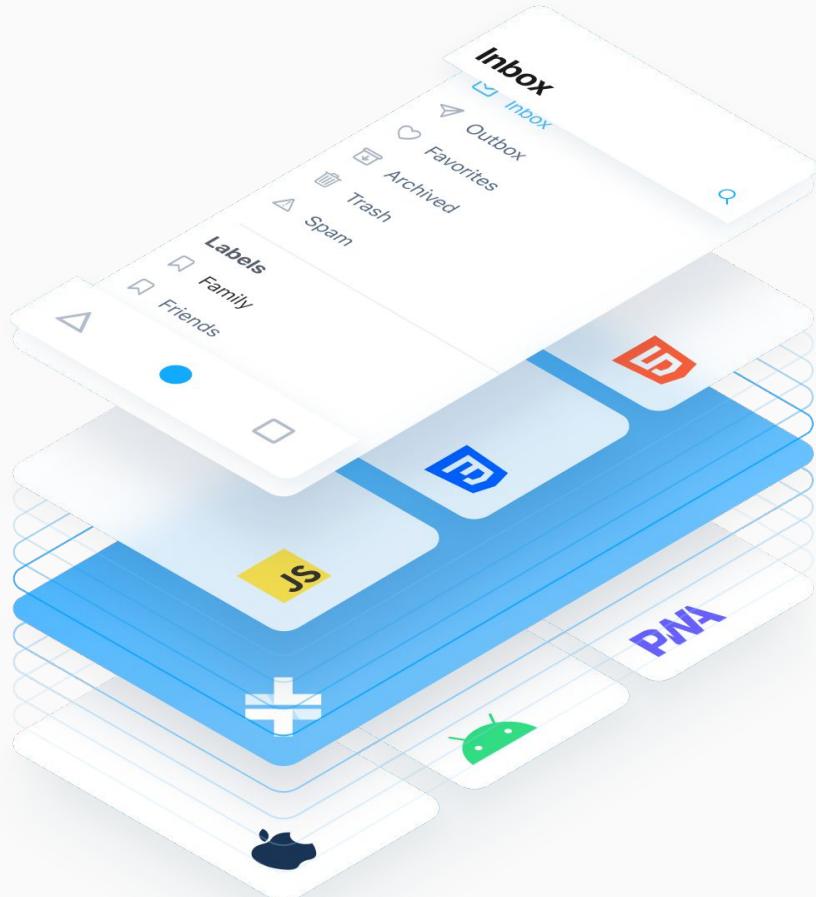
Hybrid



Ionic Framework

Hybrid





capacitor

<https://capacitor.ionicframework.com/>

WHY IONIC?

Framework specifically to develop apps

Multiple platforms-Android, IOS, Windows, Amazon etc

Apps development using HTML & Typescript (subset of Javascript)

Plugins (camera, thumbprint, bluetooth, printer etc etc etc)



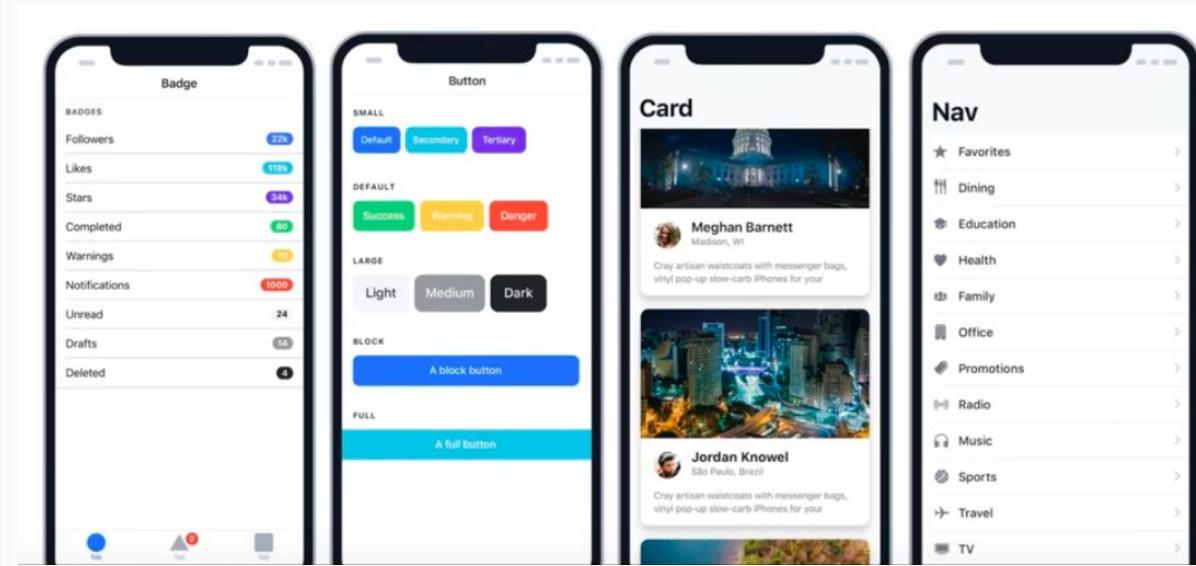
WHY IONIC?

Large COMMUNITY for support

Pre built gestures & animation

100+ UI Components

Everything is OPEN SOURCE



Built with Ionic

-HTML?

-CSS or SCSS?

-TypeScript

HTML

-Hyper Text Mark Up Language (HTML)

-Used to display the interface

-Write in tags,

-Example- `Hello` → **Hello**

-Ionic has its own built in tags

```
<ion-list></ion-list>
```

```
<ion-item></ion-item>
```

```
<ion-grid></ion-grid>
```

-HTML in Ionic is “AngularJS Flavoured”

-Have to use Angular Syntax for data and clicks

-Example- (click), *ngFor etc



CSS or SCSS

- Cascading Style Sheets (CSS)
- Used for styling, very straightforward
- Each generated Ionic page comes with built in own CSS
- Can assist in ‘theming’ the app
- Ionic has standard built in colours
 - Primary, Secondary, Danger, Light & Dark



```
$colors: (  
    primary:      #488aff,  
    secondary:    #32db64,  
    danger:       #f53d3d,  
    light:        #f4f4f4,  
    dark:         #222  
)
```

Built in colours that can be added/edited

TypeScript

- A subset of Javascript
- Part of ECMA6 standard
- The ‘brains’ behind your app
- Used for processing & handling data
 - Example- calculation, accessing DB etc
- At first glance, looks very complicated
 - It will be simpler with practice
- Ionic has standard built in to its TS:
 - NavController, ViewControllers etc



What is a **variable**?

A **variable**, by definition, is “a named space in the memory” that stores values

In other words, it acts as a container for values in a program

Data types:

Var

can be numbers or words

String

can only be words

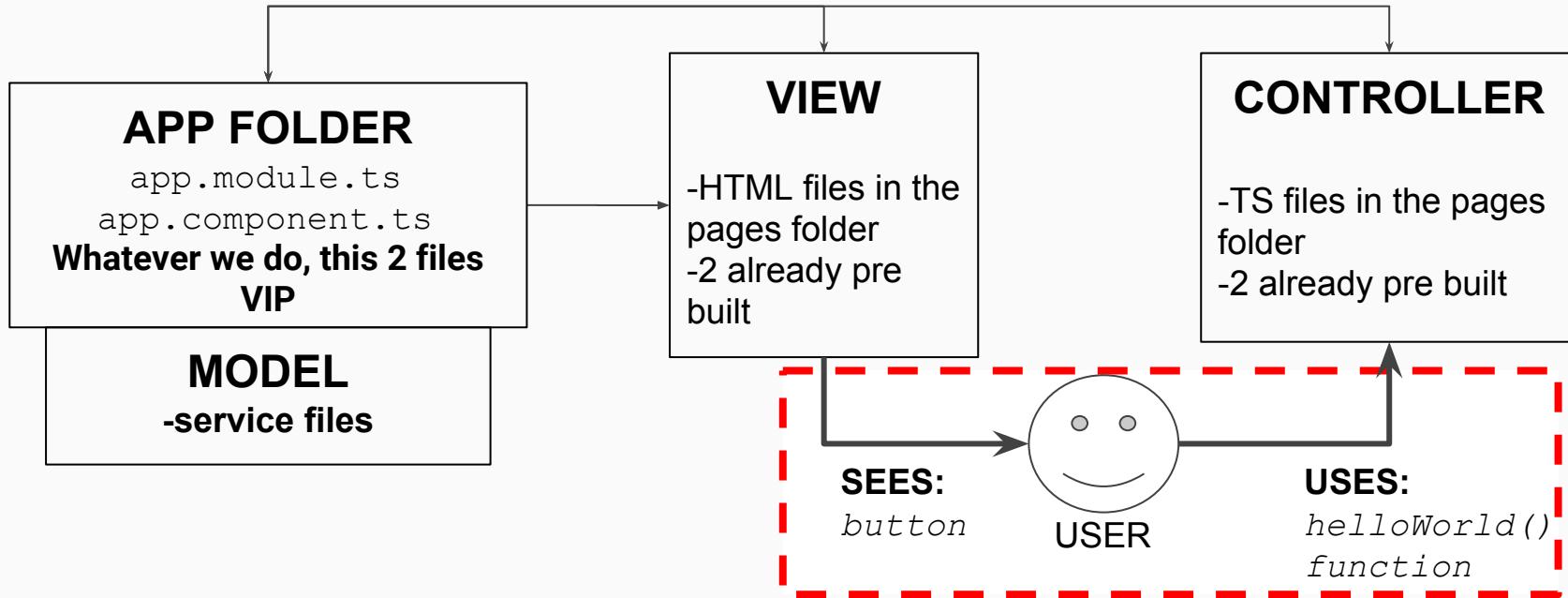
Objects

{name: “Mickey”}

Array

can be a collection of Var, Strings or Objects

WHAT YOU JUST DID?



This depends on each other, if one is broken, your app will not work

Using Angular Commands

(click)

(click) USED IN HTML to execute functions

Used to execute a function

Example:

IN TYPESCRIPT:

```
fireAlert()  
{  
    alert("FIRE");  
}
```

IN HTML:

```
<ion-button (click)="fireAlert()">  
    FIRE  
</ion-button>
```

[(ngModel)]

[(ngModel)] USED IN
HTML to capture what
is typed into input to
TypeScript

Example:

IN TYPESCRIPT:

```
user_xyz:any;
```

IN HTML:

```
<ion-input [(ngModel)]=“user_xyz”>  
</ion-input>
```

Anything typed into input box, will be ‘captured’
in the TypeScript

FOR LOOP USED IN TYPESCRIPT IS EXACTLY THE SAME AS JAVASCRIPT

Usually used for array iterations

Example:

```
the_array[0]= "ayam"  
the_array[1]= "lembu"  
the_array[2]= "kerbau"
```

```
for(var x=0;x<the_array.length;x++)  
{  
    console.log(the_array[x]);  
}
```

This will output in the console all the animals

For Loop and *ngFor

*ngFor LOOP USED IN HTML

Usually used for array iterations

Example:

IN TYPESCRIPT

```
the_array[0]= "ayam"  
the_array[1]= "lembu"  
the_array[2]= "kerbau"
```

IN HTML

```
<div *ngFor= "let item of the_array">  
    {{item}}  
</div>
```

This will output all the animals

IF...ELSE IF...ELSE AND *ngIfStatements

**IF...ELSE IF..ELSE
USED IN
TYPESCRIPT IS
EXACTLY THE SAME
AS JAVASCRIPT**

Usually used for selection and/or filtering

Example:

```
if(word_x== "duck")
{
    console.log("quack");
}
else if(word_x== "cow")
{
    console.log("moo");
}
else
{
    console.log("NO ANIMALS");
}
```

For Loop and *ngFor

Usually used for array iterations

Example:

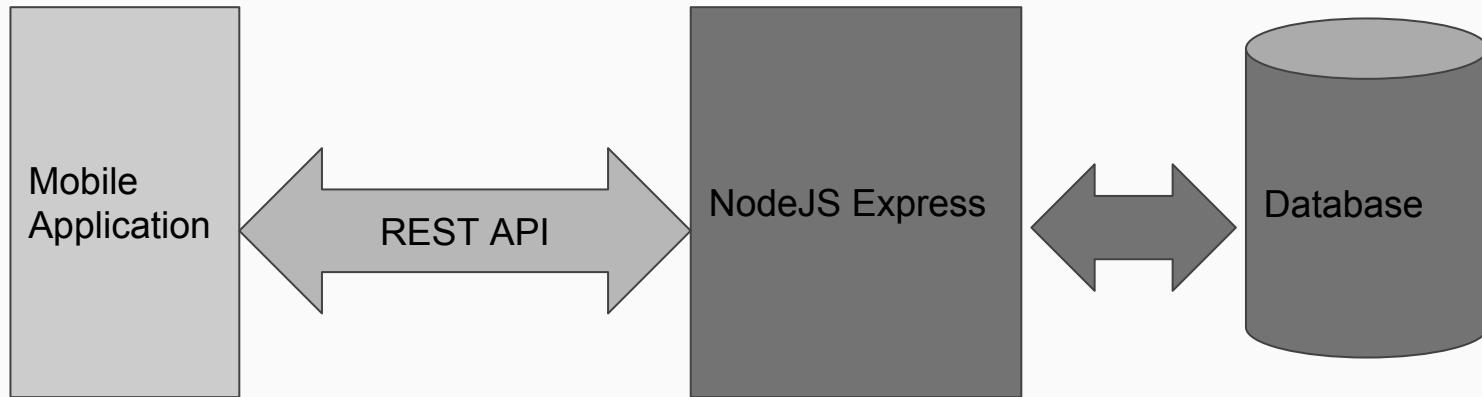
IN HTML

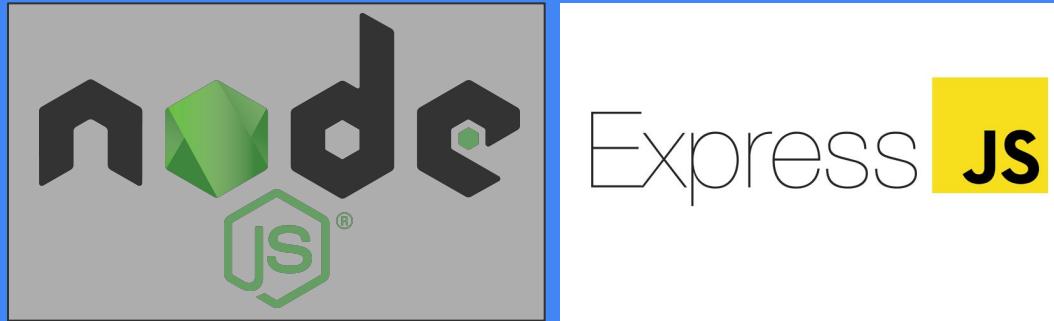
```
<div *ngIf=“ word_x==‘cow’ ”>  
    MOO!  
</div>  
<div *ngIf=“ word_x==‘duck’ ”>  
    QUACK!  
</div>  
<div *ngIf=“ word_x==null ”>  
    NO ANIMALS  
</div>
```

*ngIf USED IN HTML

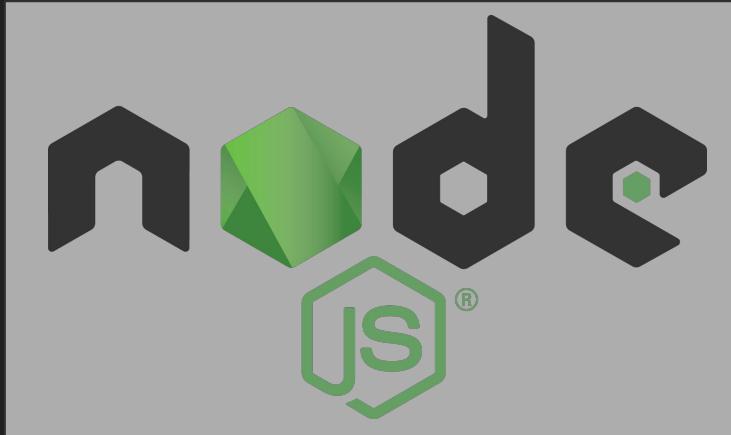
NodeJS Express Server

Structure with Mobile Application, NodeJS & MSSQL





WHAT IS NODEJS?



NODE JS is an open-source, cross-platform JavaScript run-time environment that executes JavaScript code outside of a browser

WHAT IS NODEJS?

Node.js was originally written by Ryan Dahl in 2009

Node.js allows the creation of Web servers and networking tools using JavaScript

Node.js is primarily used to build network programs such as Web servers

Node.js brings event-driven programming to web servers, enabling development of fast web servers in JavaScript

WHAT IS EXPRESSJS?



EXPRESSJS is a web application framework for Node.js, released as free and open-source software under the MIT License. It is designed for building web applications and APIs.

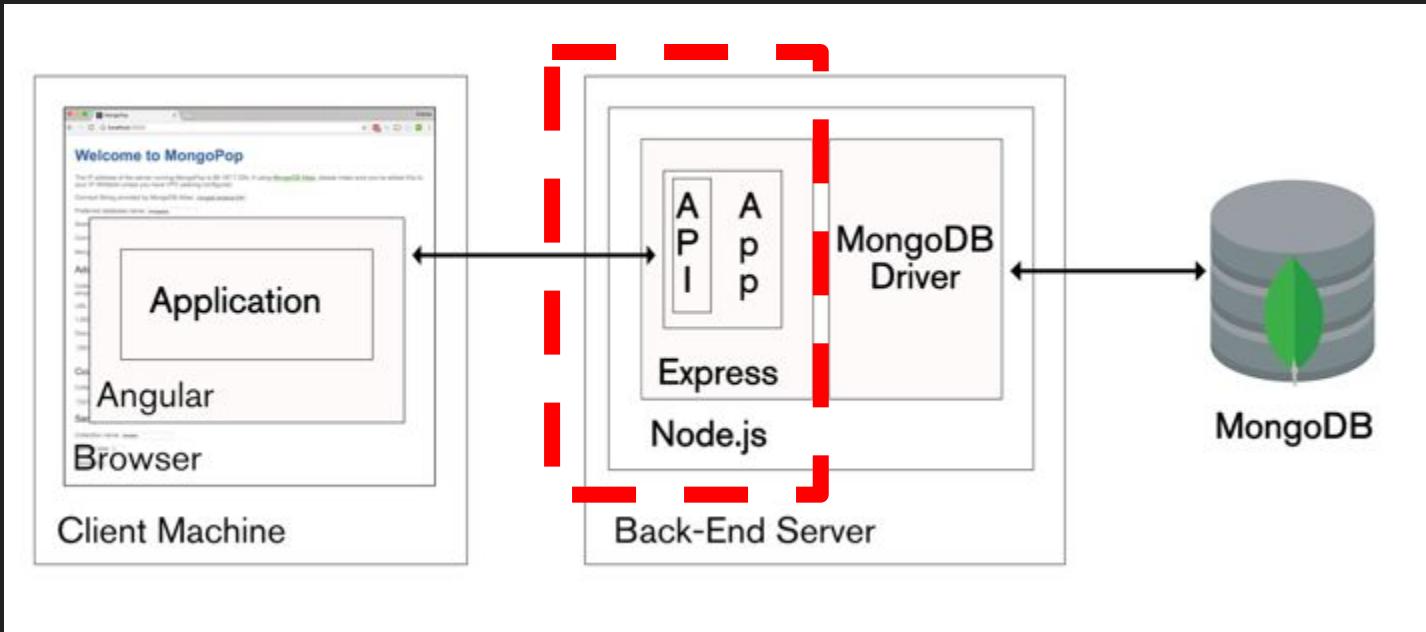
WHAT IS EXPRESSJS?

The de facto standard server framework for Node.js

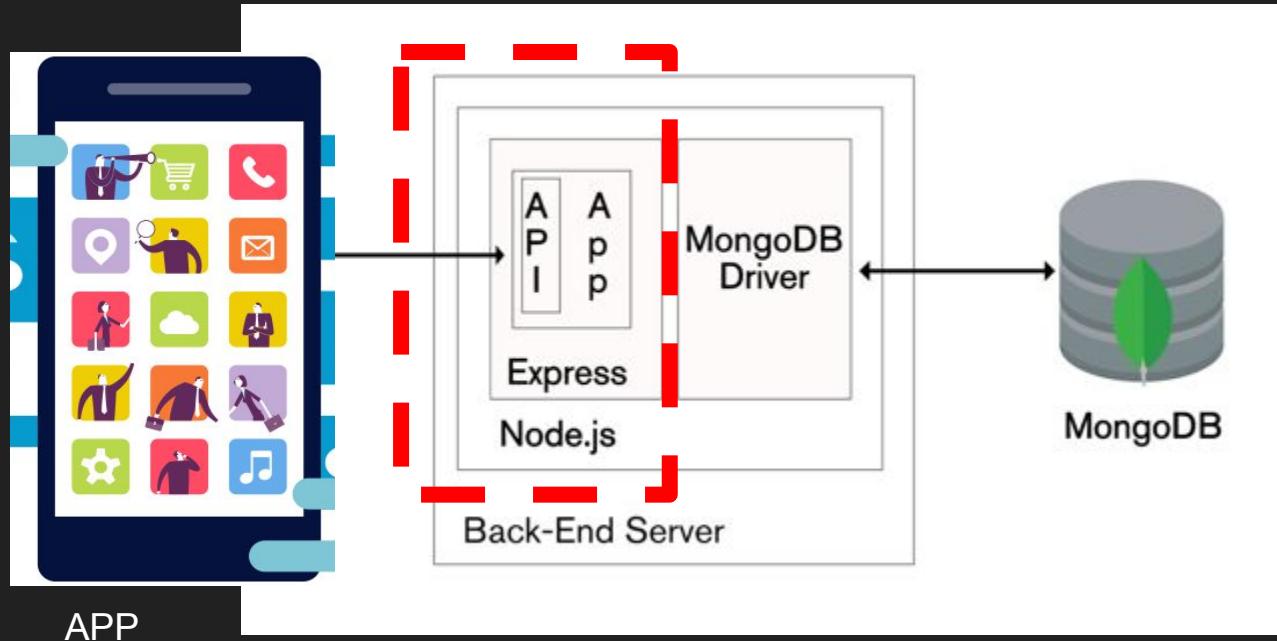
Relatively minimal with many features available as plugins through NPM

Express is the backend part of the MEAN stack, together with MongoDB database and AngularJS frontend framework

TYPICAL INFRASTRUCTURE 1



TYPICAL INFRASTRUCTURE 2



CREATE FOLDER

1. Create a new folder for your project
2. Navigate to folder on command prompt

npm init

npm install express --save

node index.js

GET & POST

What is GET?

GET method is to retrieve a page from
HTTP Server

GET method is not secure and hence not a
suitable choice for transferring confidential
data

Used to retrieve static content from site

What is POST?

POST method data is not sent as part of URL string to server instead in POST

Data is sent as part of message body

POST method is secure because data is not visible in URL String and can be safely encrypted using HTTPS for further security

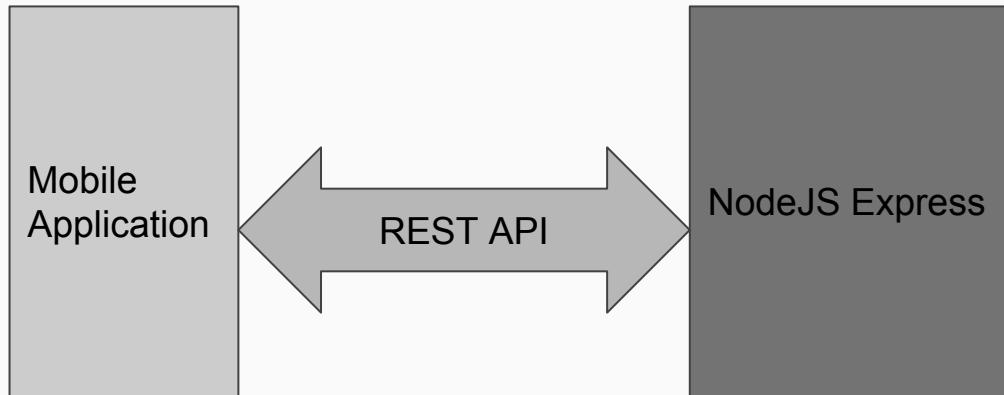
GET & POST

DIFFERENCES

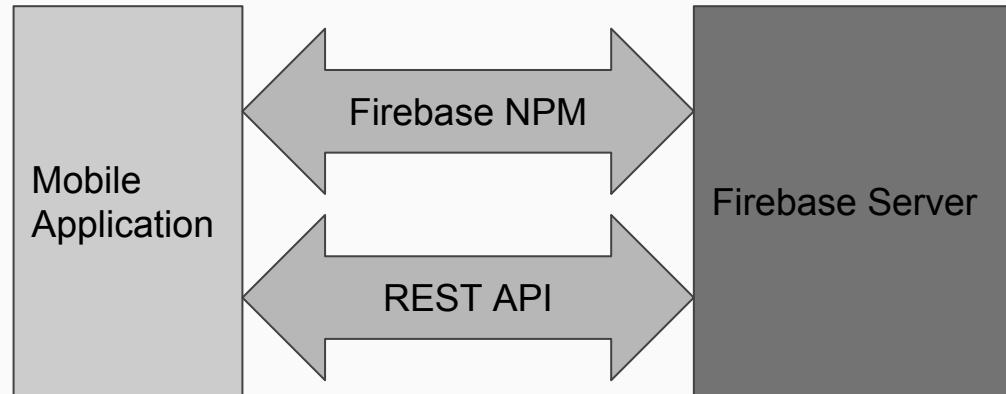
- 1) GET method passes request parameter in URL String while POST method passes request parameter in request body
- 2) GET request can only pass limited amount of data while POST method can pass large amount of data to server.
- 3) GET request can be bookmarked and cached unlike POST requests.
- 4) GET is mostly used for VIEW purpose, while POST is mainly use for UPDATE purpose

Integrating Ionic & NodeJS Express CRUD

Structure with Mobile Application, NodeJS & MSSQL



A better/easier way??



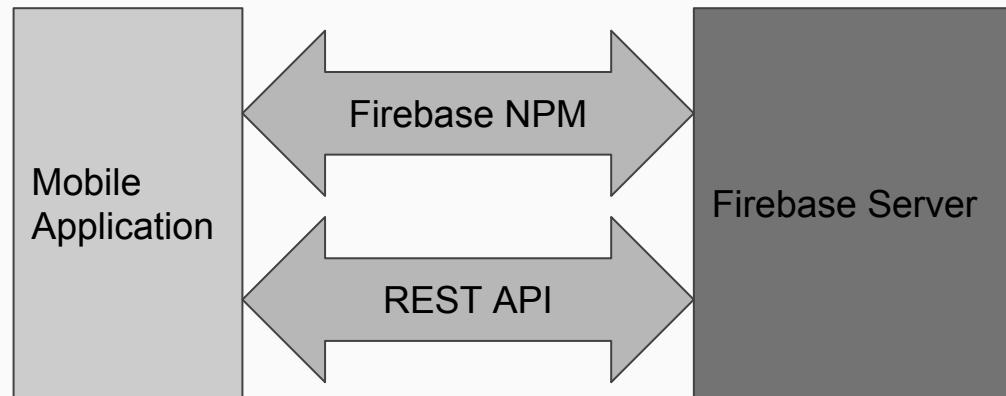
Firebase

INFRASTRUCTURE as a SERVICE (IaaS)

BACKEND as a SERVICE (BaaS)

SOFTWARE as a SERVICE (SaaS)

Structure with Mobile Application & Firebase



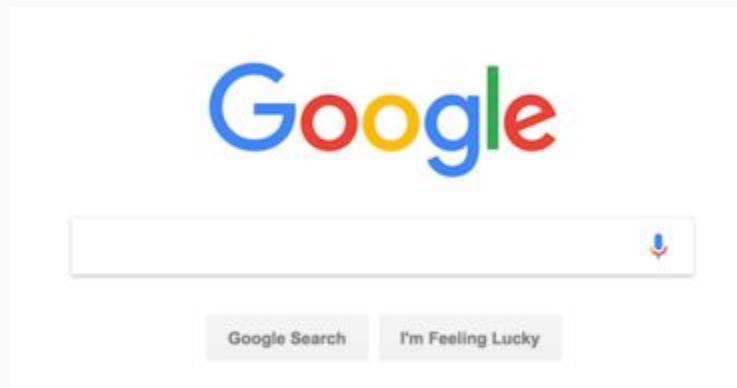
What is Firebase?

Server backend for your mobile app

Includes:

1. Auth (Email, Facebook, Google etc)
2. Database (NOSQL)
3. Hosting
4. Storage

Free for up to 100 concurrent users



Let's create a sample app- TO DO
LIST with Firebase

Using Ionic Capacitor Plugins

<https://capacitorjs.com/docs/apis>

Using Ionic Cordova Plugins

<https://ionicframework.com/docs/native/>

How to use?



1. Follow instruction to install
2. Add to providers in app.module.ts

LIVE CODING, will be shared in
Gitlab

DAY 2

Building & Designing Your App

Examples of Good Design

Water Tap



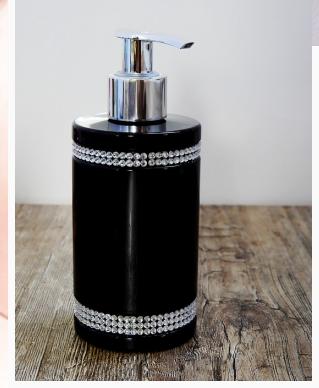
Radio Volume



Opening a door knob



Perfume bottle/soap dispenser



How to use a pen

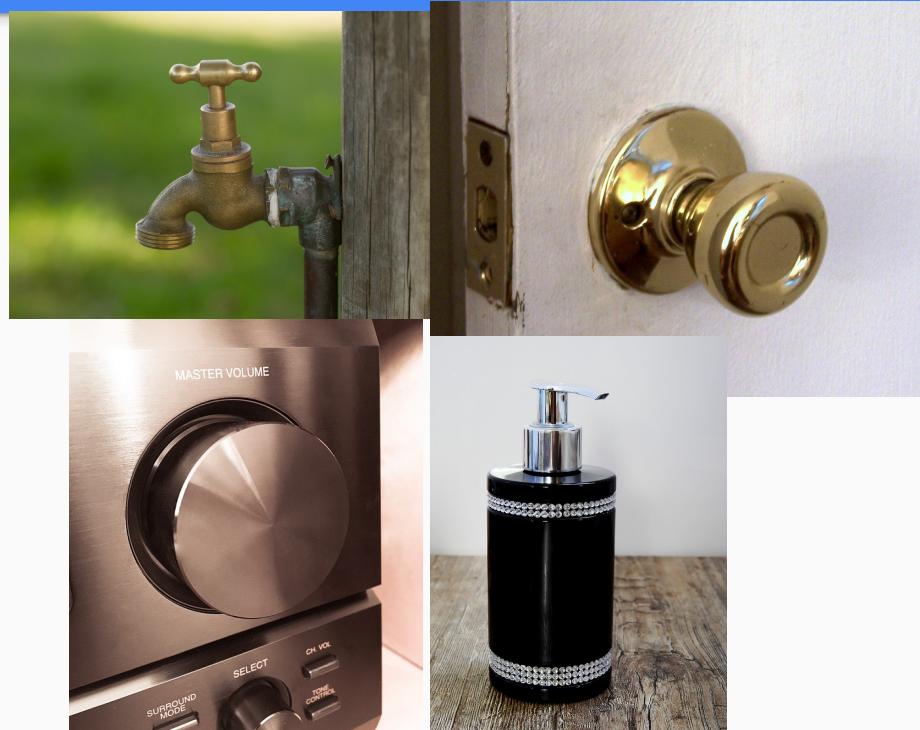
Design is important!

Not only physicality of design

Flow of how to use is also important

Determines success of product

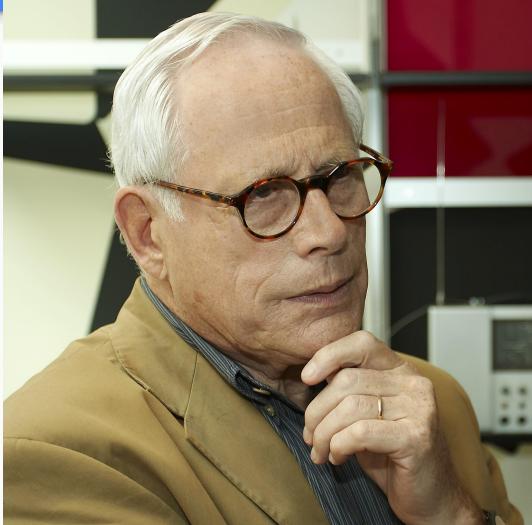
**Design is a success if it disappears
& become second nature**



BAD DESIGNS



Gurus Of Good Design

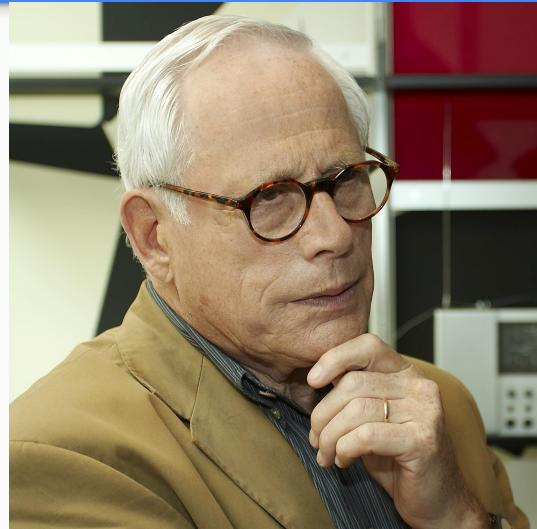


Dieter Rams



Don Norman @jnd1er

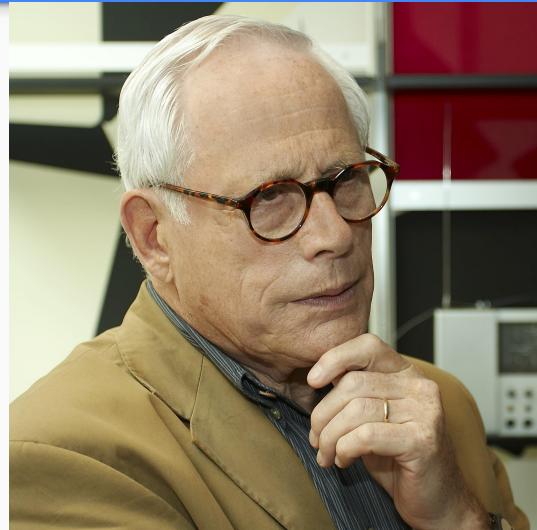
Dieter Rams 10 Principle of Good Design



Dieter Rams

1. Good design is innovative
2. Good design makes a product useful
3. Good design is aesthetic
4. Good design makes a product understandable
5. Good design is unobtrusive
6. Good design is honest
7. Good design is long lasting
8. Good design is thorough down to the last detail
9. Good design is environmentally-friendly
10. Good design is as little design as possible

Dieter Rams 10 Principle of Good Design



Dieter Rams



Don Norman 7 Principles of Design



Don Norman @jnd1er

1. Use knowledge in the real world and in the head
2. Simplify the structure of tasks
3. Make things visible
4. Get the mappings right
5. Exploit the power of constraints
6. Design for error
7. When all else fails, standardise

Mobile Apps Design

School of Design in Mobile Apps



Skeuomorphism

vs.

Flat Design

vs.

Material Design

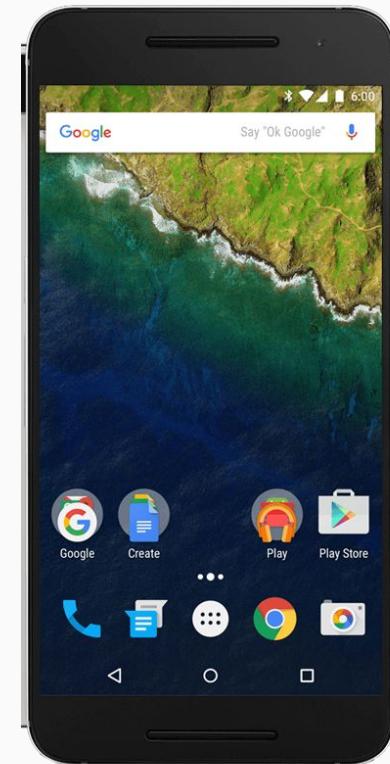
SKEUMORPHISM
iPhone 3GS



FLAT DESIGN
iPhone X



MATERIAL DESIGN
Android



Ionic is made to work
with both

But with certain difference

Example: See Ionicons

Styling & Theming Your App

Global Theme File

variable.scss

global.scss

Local Theme File

home.scss

Adding your own colours

<https://ionicframework.com/docs/theming/colors>

Adding your own fonts

```
@font-face
{
    font-family: ExoThin;
    src: url("../assets/fonts/Exo-Thin.otf");
}
```

Finally, let's build our app!

Preparing Resources For Your Application

Add the following folder with

resources/android/icon.png

Icon size: (1024px x 1024px)

resources/android/splash.png

Splash size: (2732px x 2732px)

Run the following command:

```
cordova-res --skip-copy --copy
```

Adding Android to your project

Install Android Studio and run the following commands:

1. ionic build
2. npx cap add android (First time only)
3. npx cap copy android
4. npx cap open android

Contact

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