

Firebase for Web Apps

Google I/O Extended 2016
Đinh Quang Trung



Đinh Quang Trung
Web Engineer

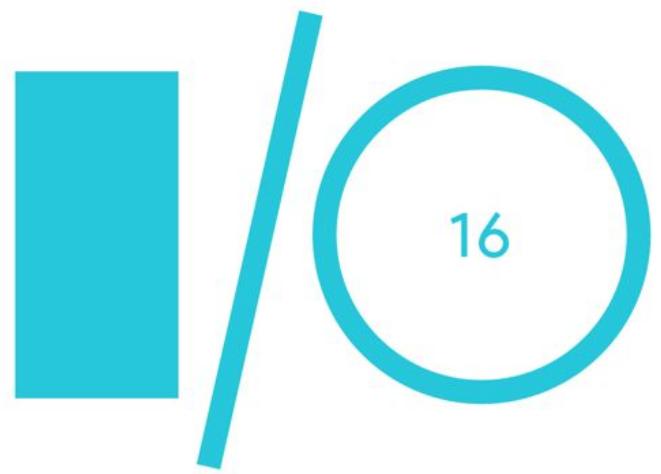


[fb.com/trungdq88](https://www.facebook.com/trungdq88) 

@trungdq88 

github.com/trungdq88 

- 12/1993 - Born
- 12/2009 - Wrote very first lines of code
- 01/2013 - Started learning **Web Development**
- 09/2015 - Graduated **FPT University**
- 12/2015 - Web Engineer at **Silicon Straits Saigon**
- 04/2016 - Web-tech Expert from **Google Developer Experts Program**



16

Firebase Lego Workshop



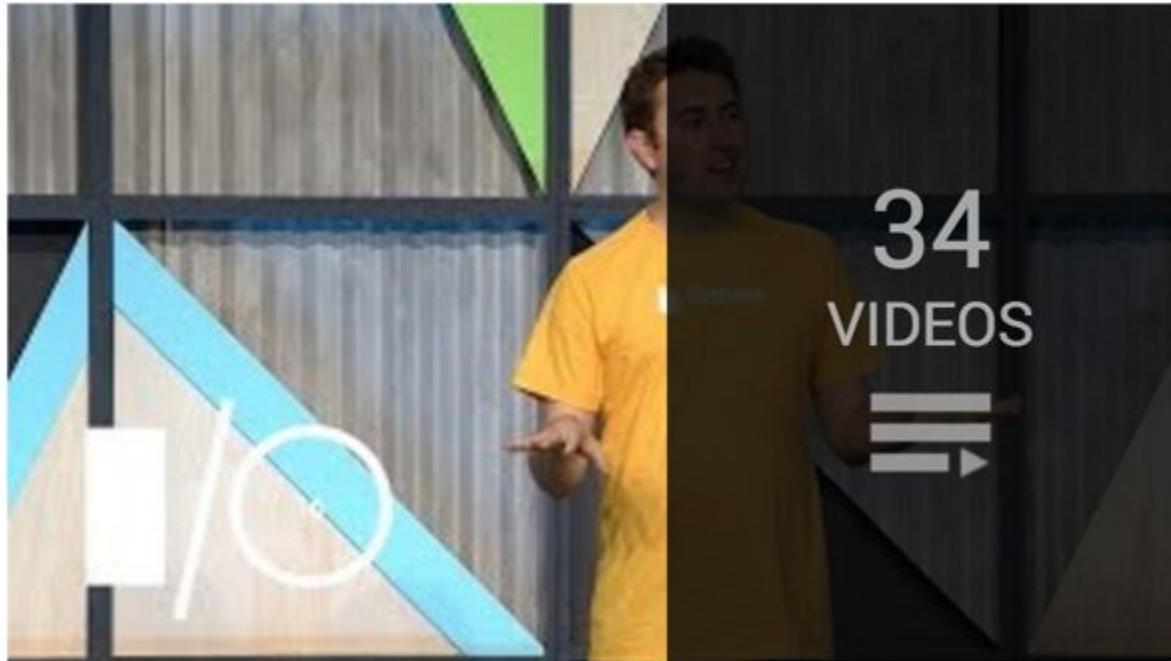




Firebase Foosball







Firebase at Google I/O 2016

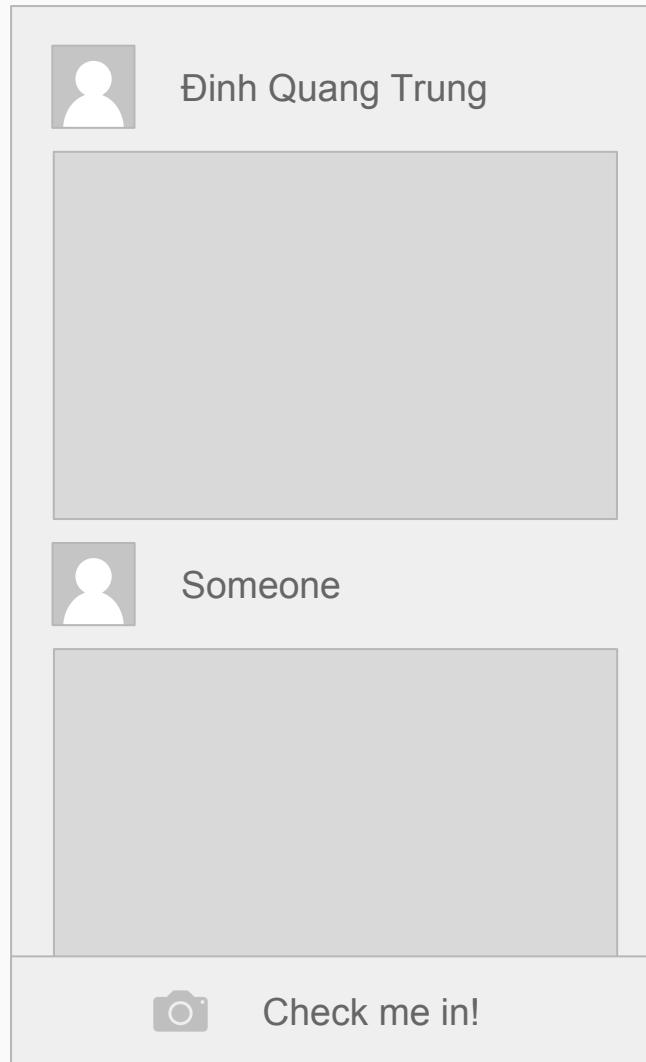
<https://www.youtube.com/user/Firebase/playlists>

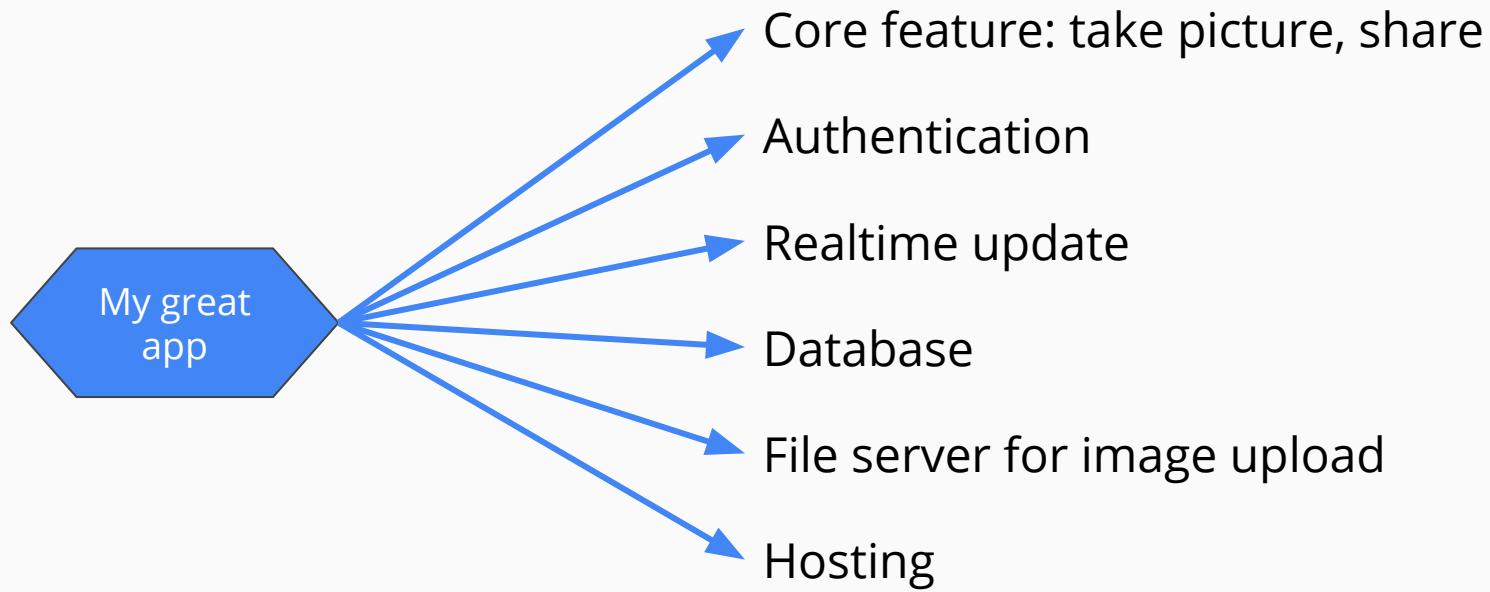


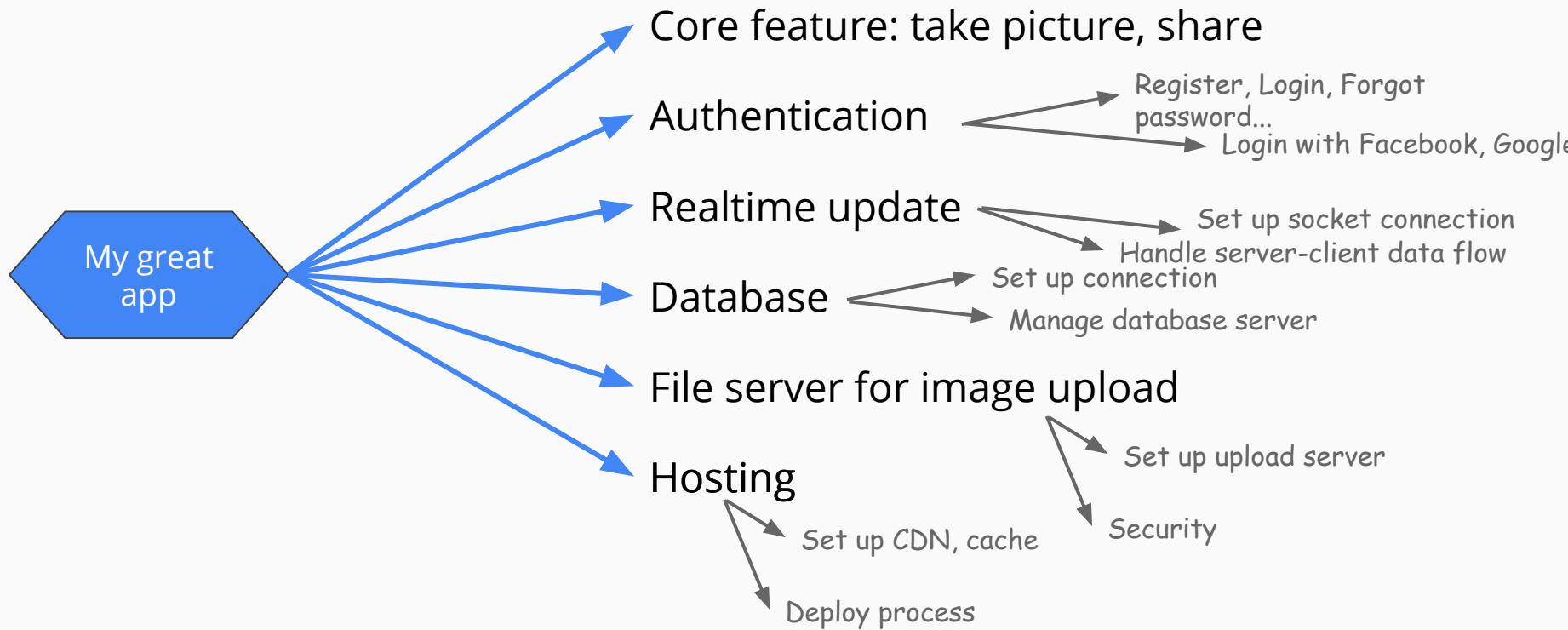
Firebase

I have an app idea

“Check In” app



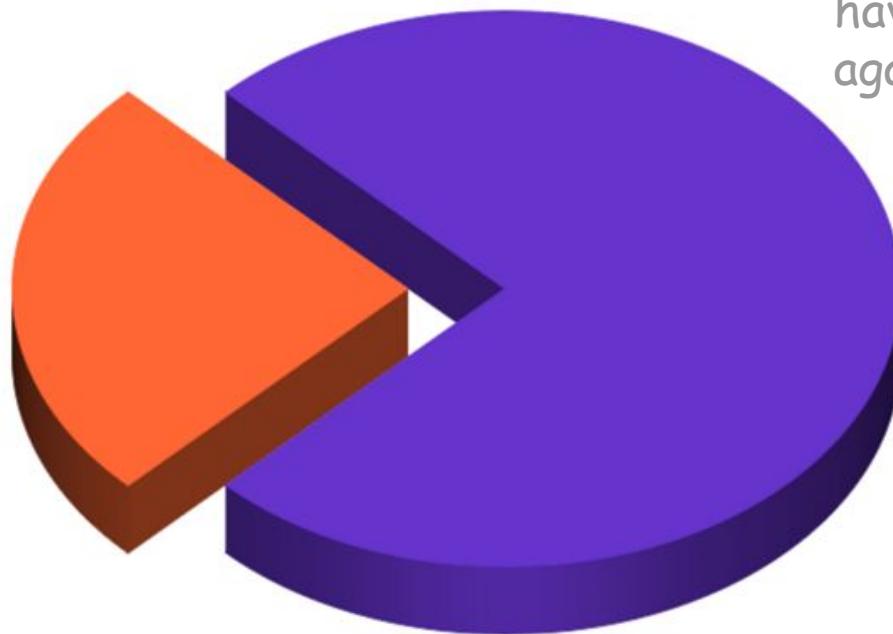




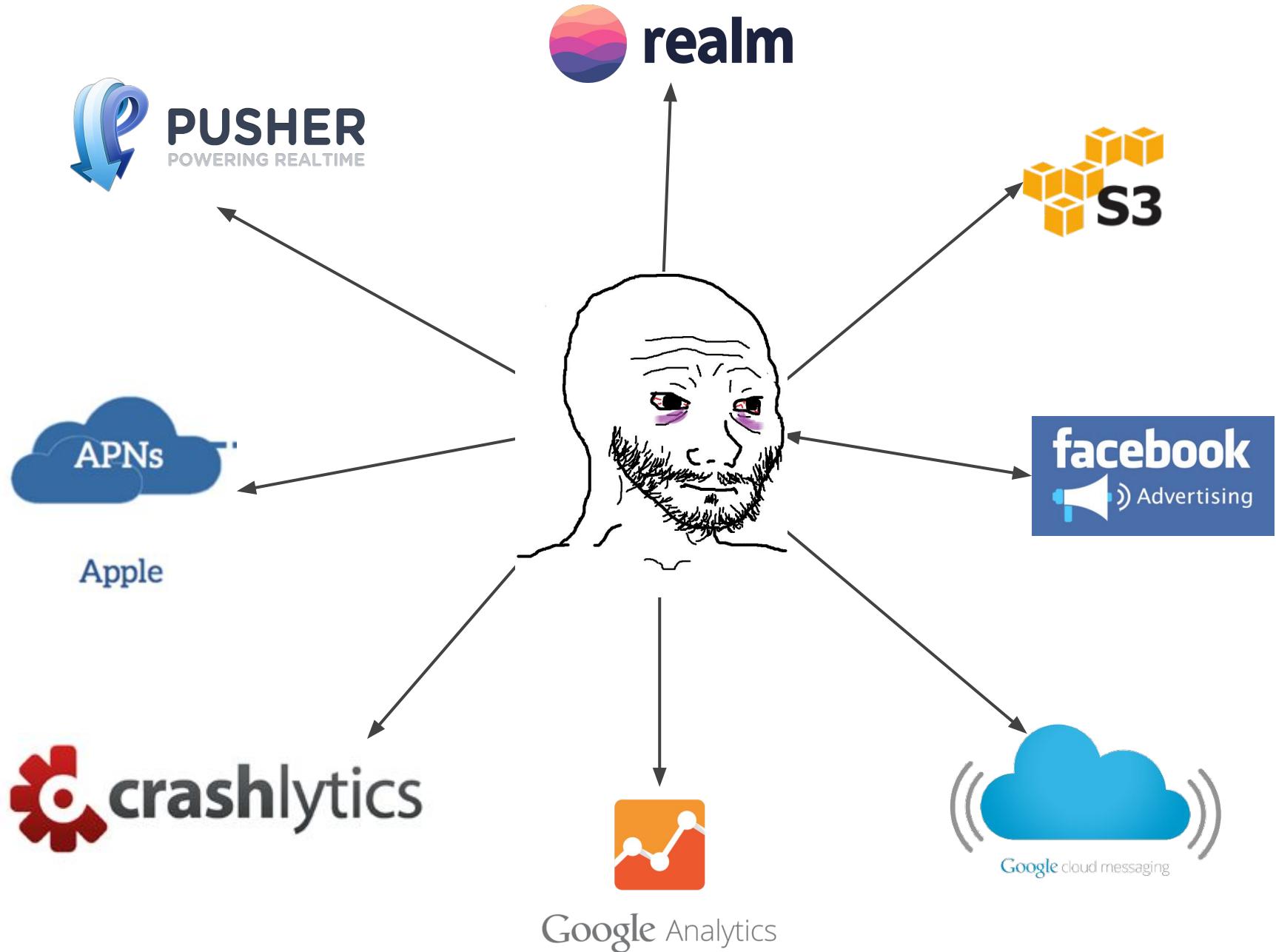
And when your app grows...

- Analytics
- Push notifications
- Crash report
- Advertising
- ...

Features that
really matters



Boring stuff I
have to set up
again and again

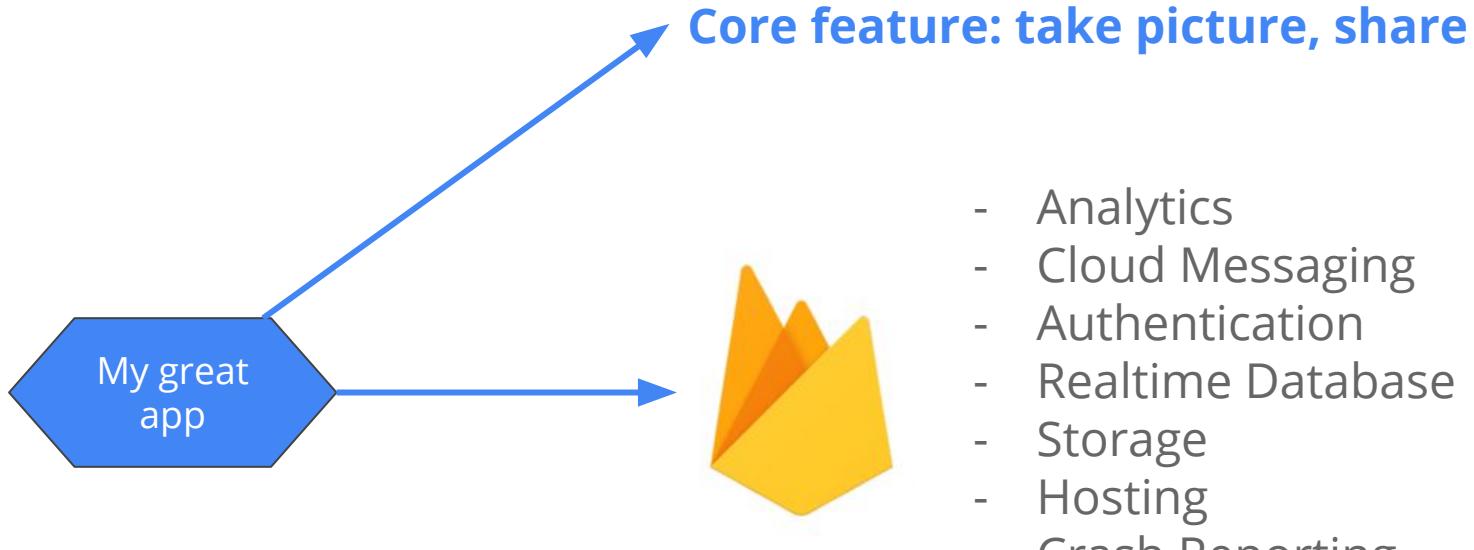


Move Fast



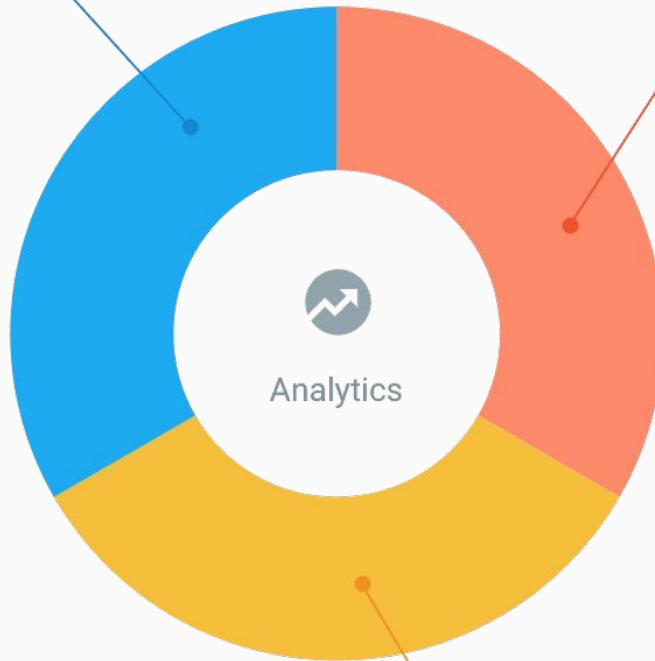
Firebase

“Firebase gives you the tools to develop high-quality apps, grow your user base, and earn more money. We cover the essentials so you can monetize your business and focus on your users.”



DEVELOP

-  Realtime Database
-  Authentication
-  Cloud Messaging
-  Storage
-  Hosting
-  Remote Config
-  Test Lab
-  Crash Reporting



GROW

-  Notifications
-  App Indexing
-  Dynamic Links
-  Invites
-  AdWords



AdMob

This presentation

1. Introduce Firebase features
2. Build a simple app with Firebase
 - a. Authentication
 - b. Realtime Database
 - c. Storage
 - d. Hosting
3. Summary

[firebase-checkin](#)

Overview

[Analytics](#)

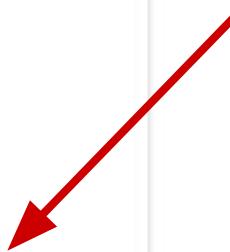
DEVELOP

[Auth](#)[Database](#)[Storage](#)[Hosting](#)[Remote Config](#)[Test Lab](#)[Crash](#)

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Welcome to Firebase! Get started here.

Add Firebase to
your Android appAdd Firebase to
your iOS appAdd Firebase to
your web app

Discover Firebase



Let's build a web app with

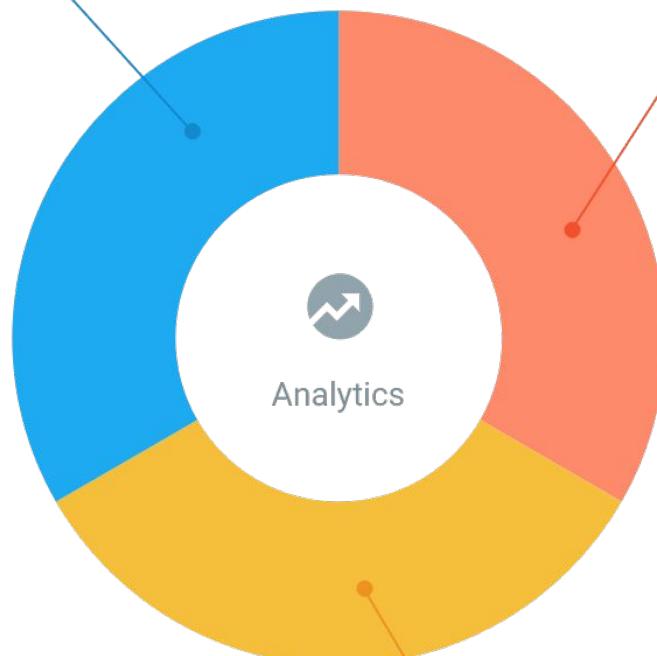


Firebase

Add Firebase

DEVELOP

-  Realtime Database
-  Authentication
-  Cloud Messaging
-  Storage
-  Hosting
-  Remote Config
-  Test Lab
-  Crash Reporting



GROW

-  Notifications
-  App Indexing
-  Dynamic Links
-  Invites
-  AdWords

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firebase-checkin

Analytics

DEVELOP

- Auth**
- Database
- Storage
- Hosting
- Remote Config
- Test Lab
- Crash

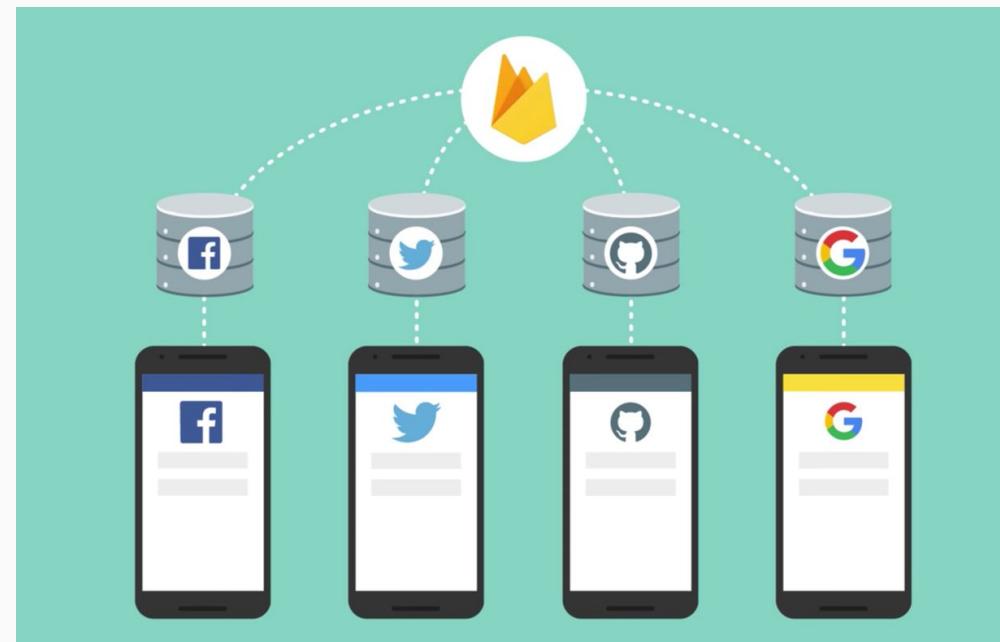
GROW

- Notifications
- Dynamic Links

EARN

- AdMob

Authentication



firebase-checkin

Analytics

DEVELOP

Auth

Database

Storage

Hosting

Remote Config

Test Lab

Crash

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Notifications

Dynamic Links

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Realtime Database



firebase-checkin

Analytics

DEVELOP

Auth

Database

Storage

Hosting

Remote Config

Test Lab

Crash

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Notifications

Dynamic Links

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Storage



firebase-checkin

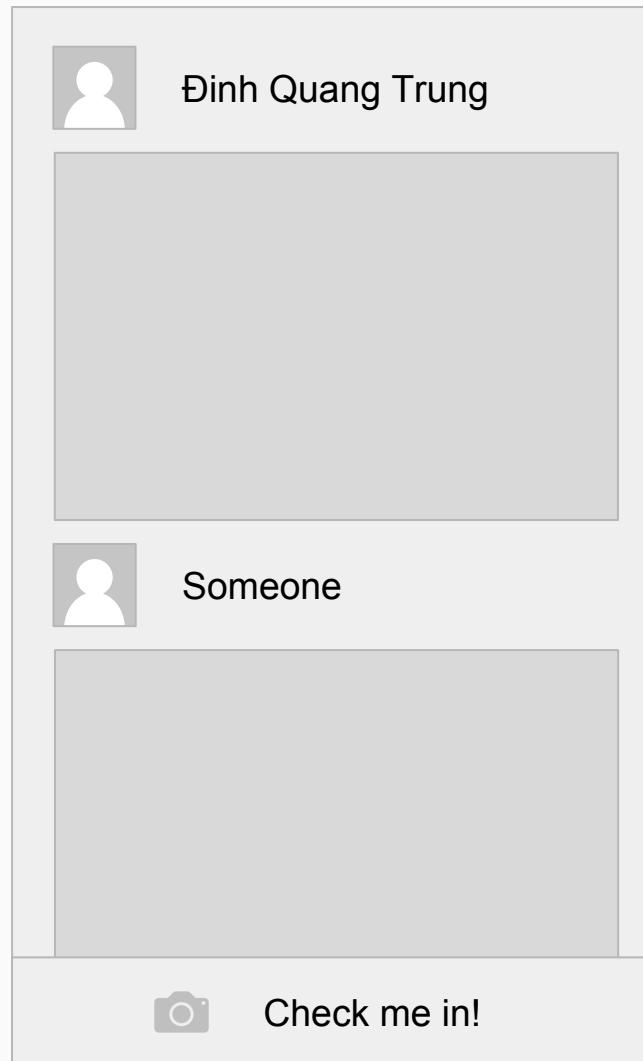
- Analytics
- DEVELOP
- Auth
- Database
- Storage
- Hosting**
- Remote Config
- Test Lab
- Crash
- GROW
- Notifications
- Dynamic Links
- EARN
- AdMob

Hosting



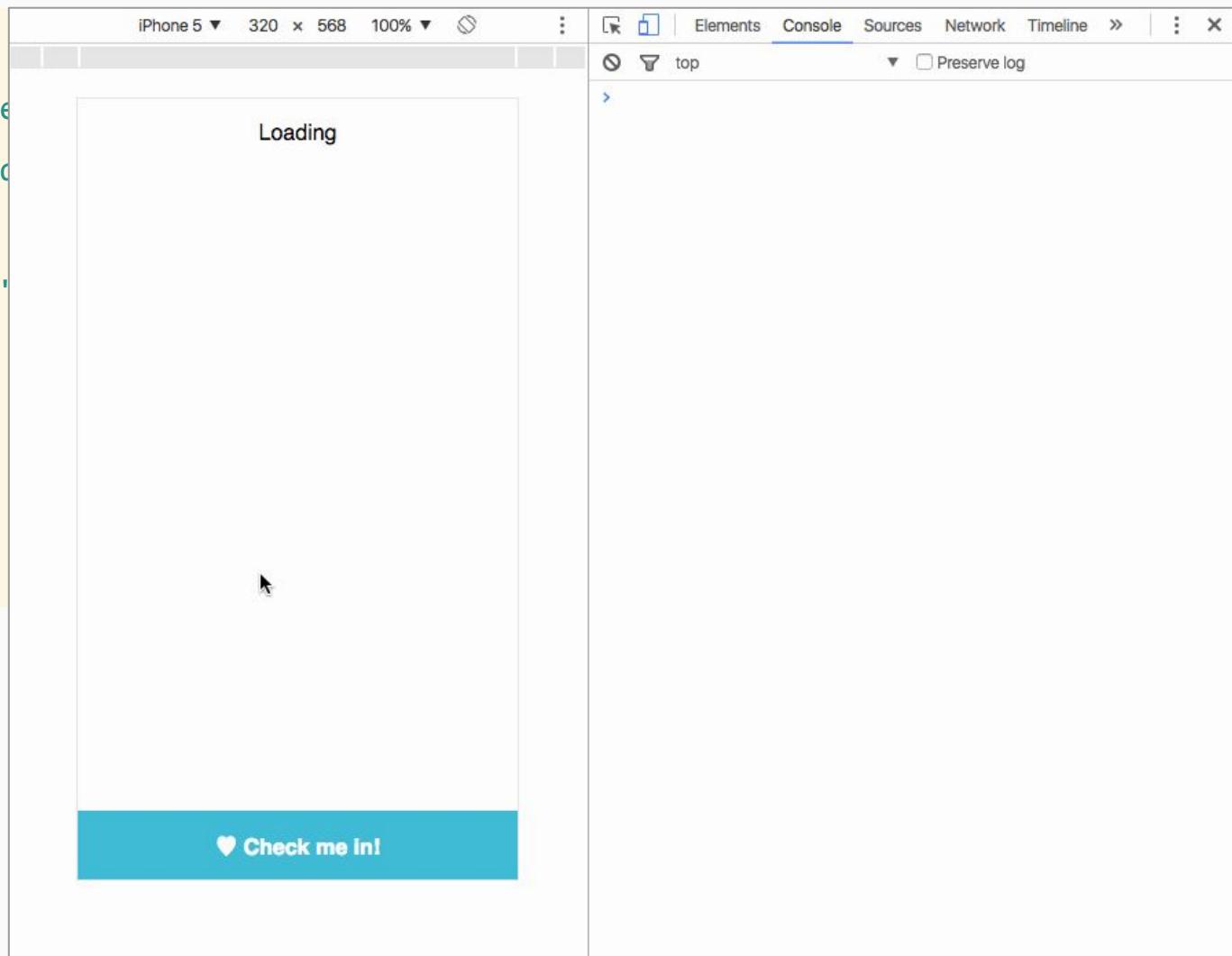
Get started

Core Feature



Core Feature

```
<body>  
  <div id="entries">  
    <div id="upload">  
      <label>  
        <input id='>  
        ♥ Check me in!  
      </label>  
    </div>  
  </body>
```



Core Feature

The screenshot shows a browser window with developer tools open. The top bar indicates a mobile view for an iPhone 5 (320 x 568 pixels) at 100% zoom. The main area displays a portion of a code editor with some JavaScript code:

```
// A
function checkIn() {
    // ...
}
```

Below the code editor is a large white rectangular area representing the mobile screen. In the bottom right corner of this area, there is a blue button with the text "Check me in!" and a small heart icon.

The developer tools interface includes a toolbar with icons for selection, copy, Elements, Console, Sources, Network, and Timeline. The "Console" tab is currently selected. The console log shows a single entry: "top". There is also a checkbox for "Preserve log".



Welcome back to Firebase

Continue building your apps with Firebase using some of the resources below.

[Documentation](#) [Sample code](#)

Projects using Firebase

firebase-checkin

[fir-checkin.firebaseio.com](#)

Create a project

[X](#)

Project name

Country/region [?](#)

United States

By default, your Firebase Analytics data will enhance other Firebase features and Google products. You can control how your Firebase Analytics data is shared in your settings at anytime. [Learn more](#)

[CANCEL](#) [CREATE PROJECT](#)

Projects currently at Firebase.com [Manage plans and collaborators](#)

[random-desktop](#)

[trungdq88](#)

[firebase-checkin](#)

Overview

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[Auth](#)[Database](#)[Storage](#)[Hosting](#)[Remote Config](#)[Test Lab](#)[Crash](#)

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Free

UPGRADE

Welcome to Firebase! Get started here.

Add Firebase to
your Android appAdd Firebase to
your iOS appAdd Firebase to
your web app

Discover Firebase



Analytics

Get detailed analytics to measure and



Auth

Authenticate and manage users from a



Database

Store and sync data in realtime across all

Add Firebase to your web app

X

Copy and paste the snippet below at the bottom of your HTML or before other script tags.

```
<script src="https://www.gstatic.com/firebasejs/live/3.0/firebase.js"></script>
<script>
  // Initialize Firebase
  var config = {
    apiKey: "AIzaSyCHjukjXJBYpd97wcYxtbpUxN6y-jlfzGY",
    authDomain: "fir-checkin.firebaseio.com",
    databaseURL: "https://fir-checkin.firebaseio.com",
    storageBucket: "",
  };
  firebase.initializeApp(config);
</script>
```

COPY

Check these resources to
learn more about Firebase for
web apps:

[Get Started with Firebase for Web Apps](#)

[Firebase Web SDK API Reference](#)

[Firebase Web Samples](#)

Add Firebase

```
<script src="https://www.gstatic.com/firebasejs/live/3.0/firebase.js"></script>
<script>
  // Initialize Firebase
  var config = {
    apiKey: "AIzaSyCHjukjXJBYPd97wcYxtbpUxN6y-jlfzGY",
    authDomain: "fir-checkin.firebaseio.com",
    databaseURL: "https://fir-checkin.firebaseio.com",
    storageBucket: "fir-checkin.appspot.com",
  };
  firebase.initializeApp(config);
</script>
```

DEVELOP



Realtime Database



Authentication



Cloud Messaging



Storage



Hosting



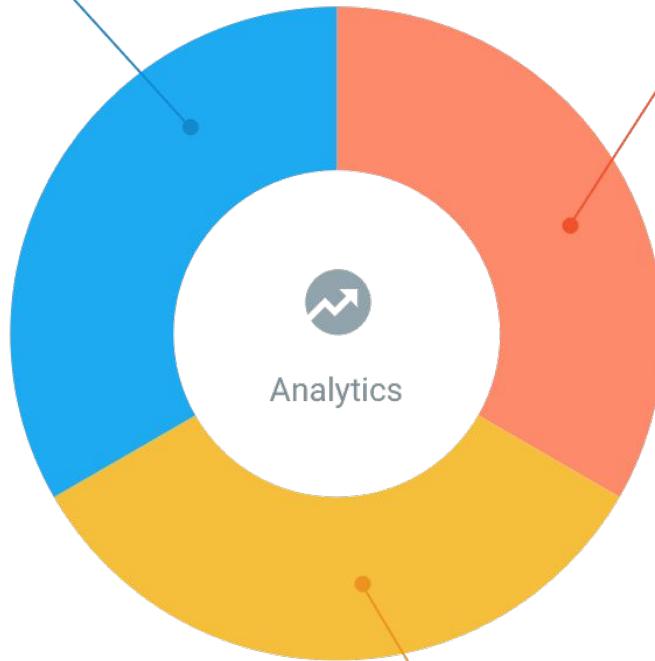
Remote Config



Test Lab



Crash Reporting



GROW



Notifications



App Indexing



Dynamic Links



Invites



AdWords

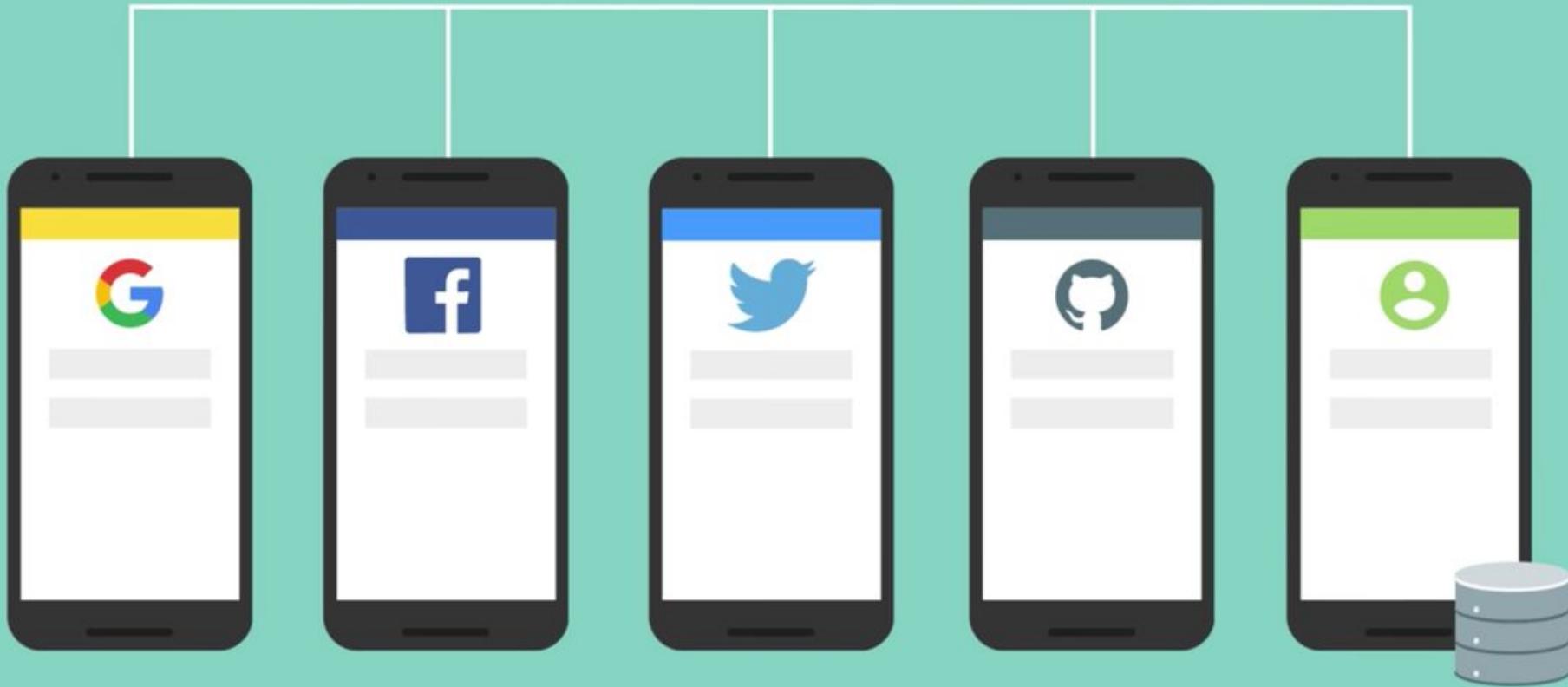


AdMob

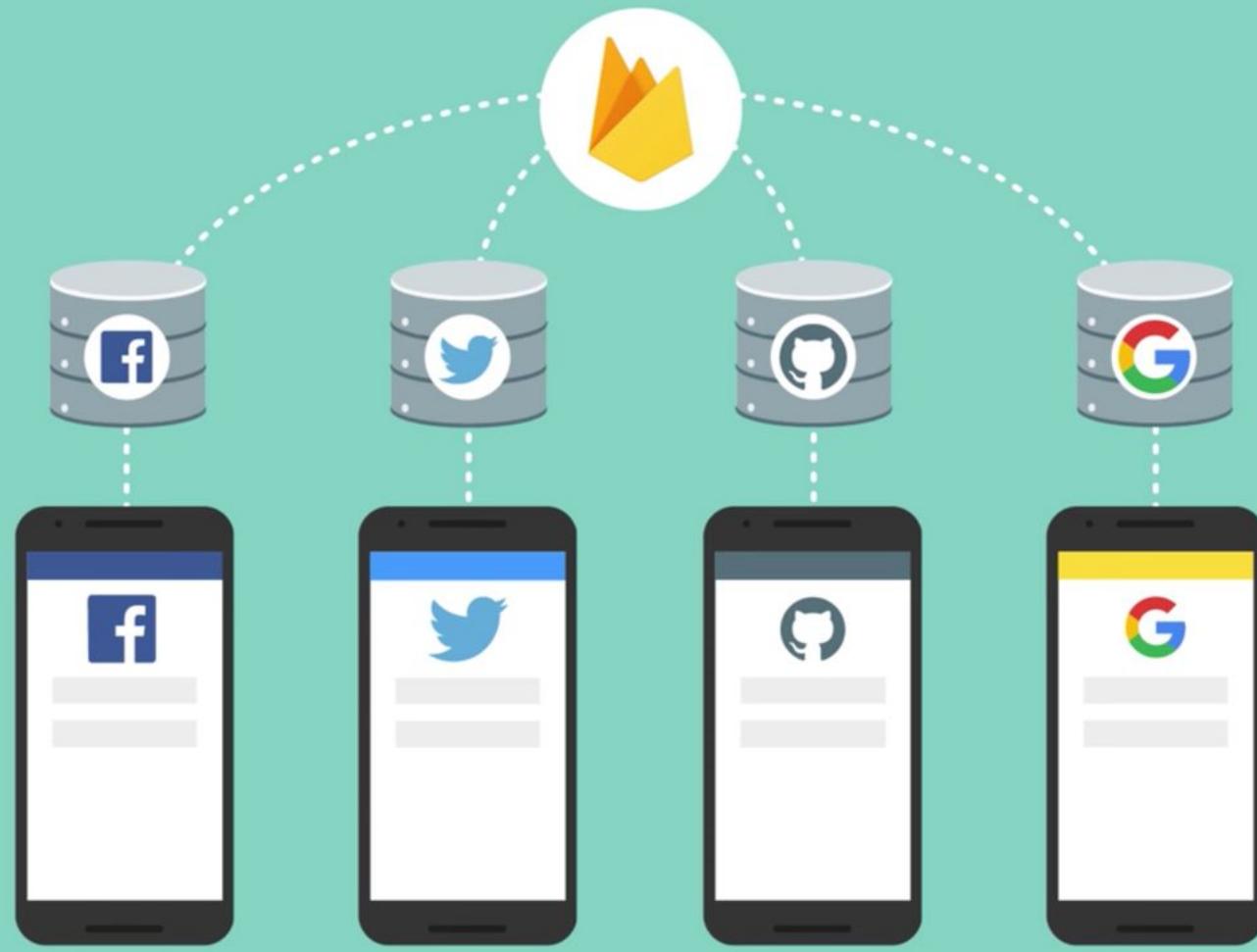


Authentication

Firebase



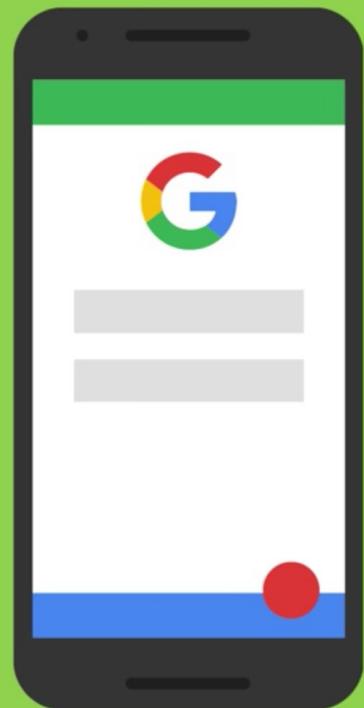
Multiple Authentication Method



OAuth

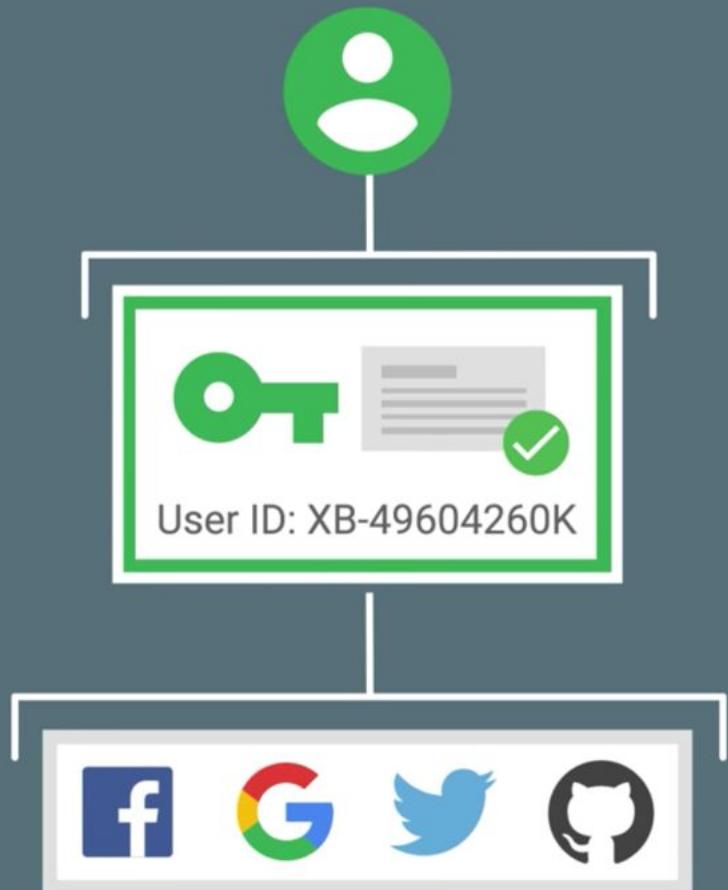


Custom Authentication System

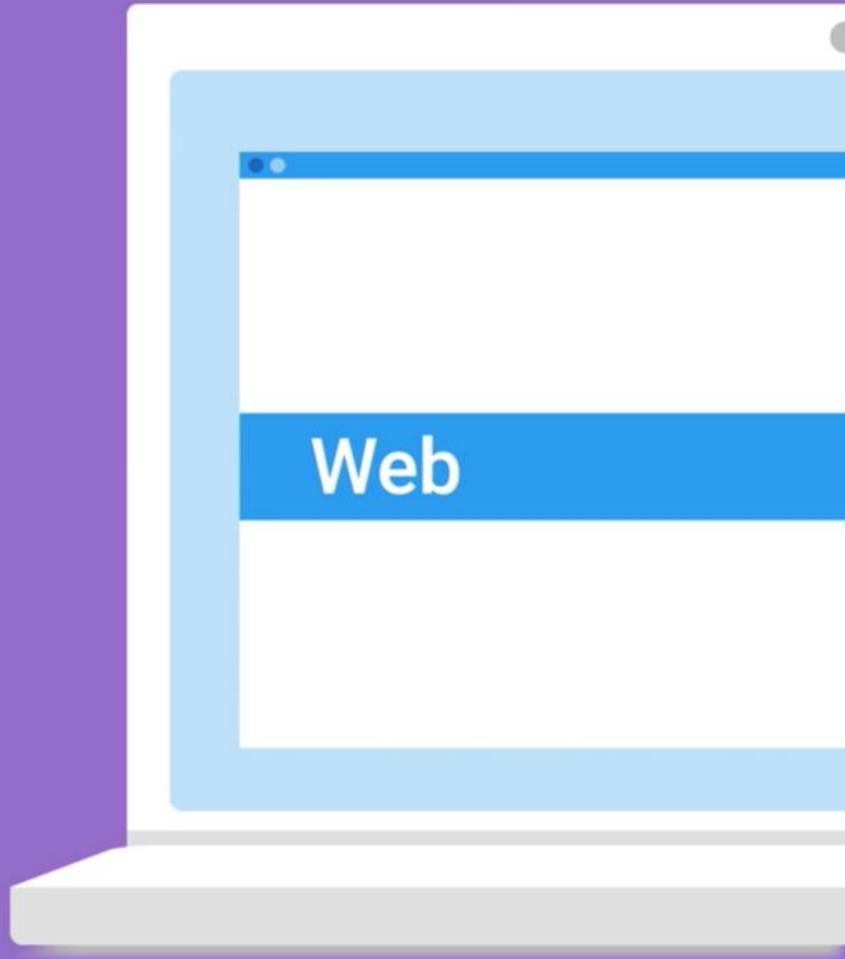
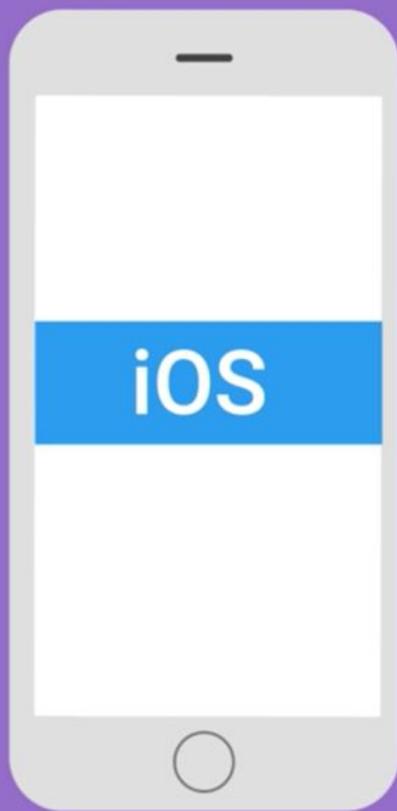
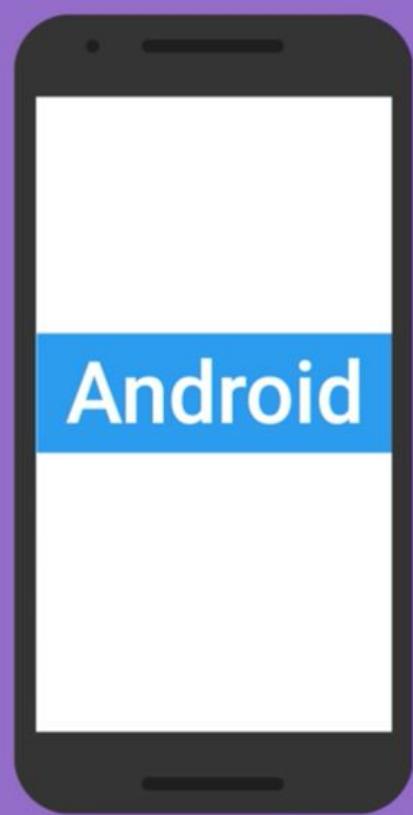


- ✓ Open Source
- ✓ Fully Customizable
- ✓ Google Backed Design

Built-in Signin UI



Unique User Identity



Multiple Platform

Write code

[firebase-checkin](#)[Analytics](#)

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[Auth](#)[Database](#)[Storage](#)[Hosting](#)[Remote Config](#)[Test Lab](#)[Crash](#)

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Authentication

[WEB SETUP](#)[USERS](#)[SIGN IN METHOD](#)[EMAIL TEMPLATES](#)

Sign in providers

Provider	Status
Email/password	Disabled
Google	<input checked="" type="checkbox"/> Enable

Google sign-in is automatically configured on your connected iOS and web apps. To set up Google sign-in for your Android apps, you need to add the [SHA1 fingerprint](#) for each app on your [Project Settings](#).

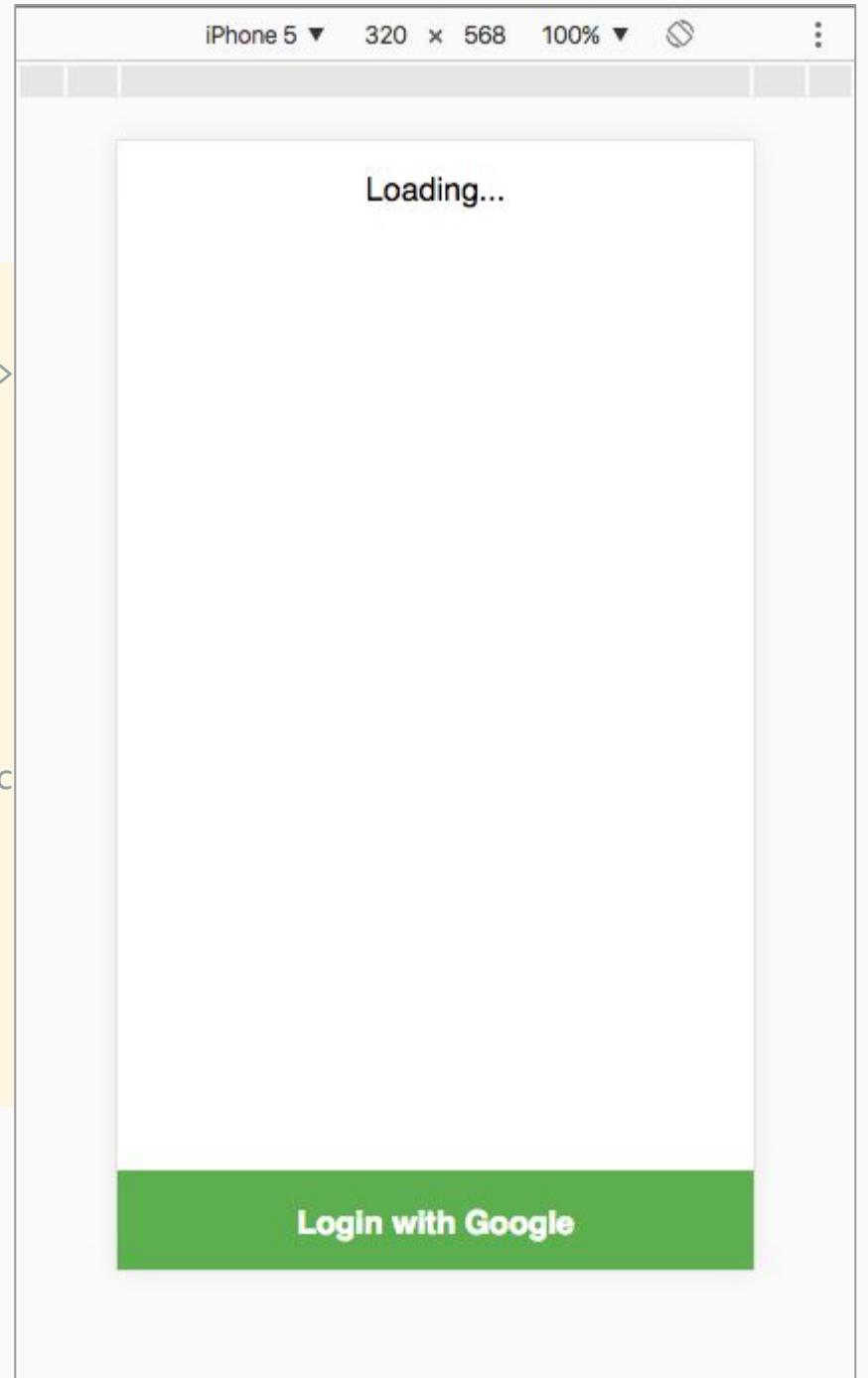
Whitelist client IDs from external projects
(optional) [?](#)

Web SDK configuration (optional) [?](#)

[CANCEL](#)[SAVE](#)[Facebook](#) Disabled[Twitter](#) Disabled[GitHub](#) Disabled

Authentication

```
<body>  
  <div id="entries"><p>Loading...</p></div>  
  <div id="upload">  
    <label id="googleLogin">  
      Login with Google  
    </label>  
  
    <label>  
      <input id="imageInput" type="file" ac  
      ♥ Check me in!  
    </label>  
  </div>  
</body>
```



Authentication

A screenshot of a browser's developer tools, specifically the Console tab, showing the output of a JavaScript script. The console displays the message "No one checked in yet!" in black text. The browser interface includes a header bar with device simulation settings (iPhone 5, 320 x 568, 100% zoom), tabs for Elements, Console, Sources, Network, and Timeline, and a status bar at the bottom.

```
iPhone 5 ▾ 320 × 568 100% ▾ ⋮ ↻ ⌂ Elements Console Sources Network Timeline > ⋮ ×
No one checked in yet!
> |
```

The code block on the left shows parts of a script being run:

```
goog
f:
});
fire
i:
}
}
});
```

A green button labeled "Login with Google" is visible at the bottom of the page.

[firebase-checkin](#)

Authentication

[WEB SETUP](#)[Analytics](#)

DEVELOP

[Auth](#)[Database](#)[Storage](#)[Hosting](#)[Remote Config](#)[Test Lab](#)[USERS](#) [SIGN IN METHOD](#) [EMAIL TEMPLATES](#) Search by exact email address (email@domain.com)[ADD USER](#)

Email	Providers	Created	Signed-in	User UID
trungdq88@gmail.com		Jun 21, 2016	Jun 21, 2016	MkBEdGzuBIQQw0GtPM3G..

Displays up to 500 users 

Rows per page: 50 ▾ 1-1 of 1 < >



DEVELOP



Realtime Database



Authentication



Cloud Messaging



Storage



Hosting



Remote Config



Test Lab



Crash Reporting

The screenshot shows a mobile application interface for an iPhone 5 with a resolution of 320 x 568 and a 100% zoom level. The app's main screen displays the message "No one checked in yet!" in black text. At the bottom of the screen is a prominent green button with the white text "Login with Google". Above the app's content, a portion of a blue and orange pie chart is visible, with a small black dot pointing towards the center of the chart. To the right of the app's window, a browser's developer tools are open, specifically the Console tab, which is currently empty. The tabs in the developer tools include Elements, Console, Sources, Network, and Timeline.

GROW

DEVELOP



Realtime Database

Authentication

Cloud Messaging

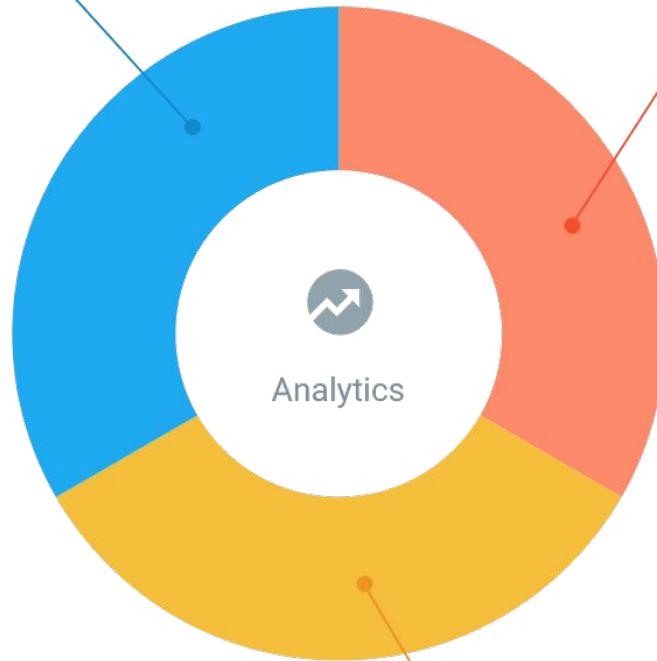
Storage

Hosting

Remote Config

Test Lab

Crash Reporting



GROW



Notifications



App Indexing



Dynamic Links



Invites



AdWords

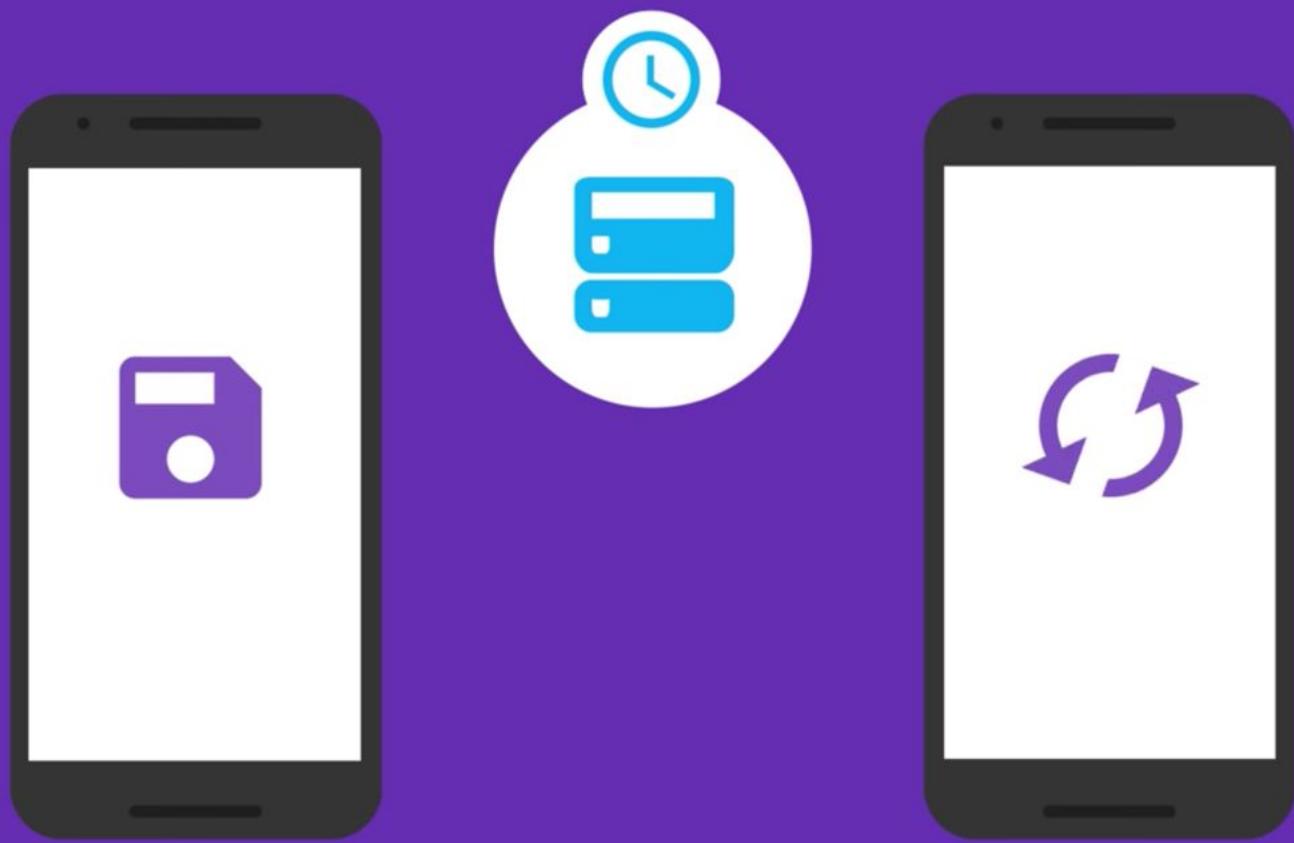
EARN



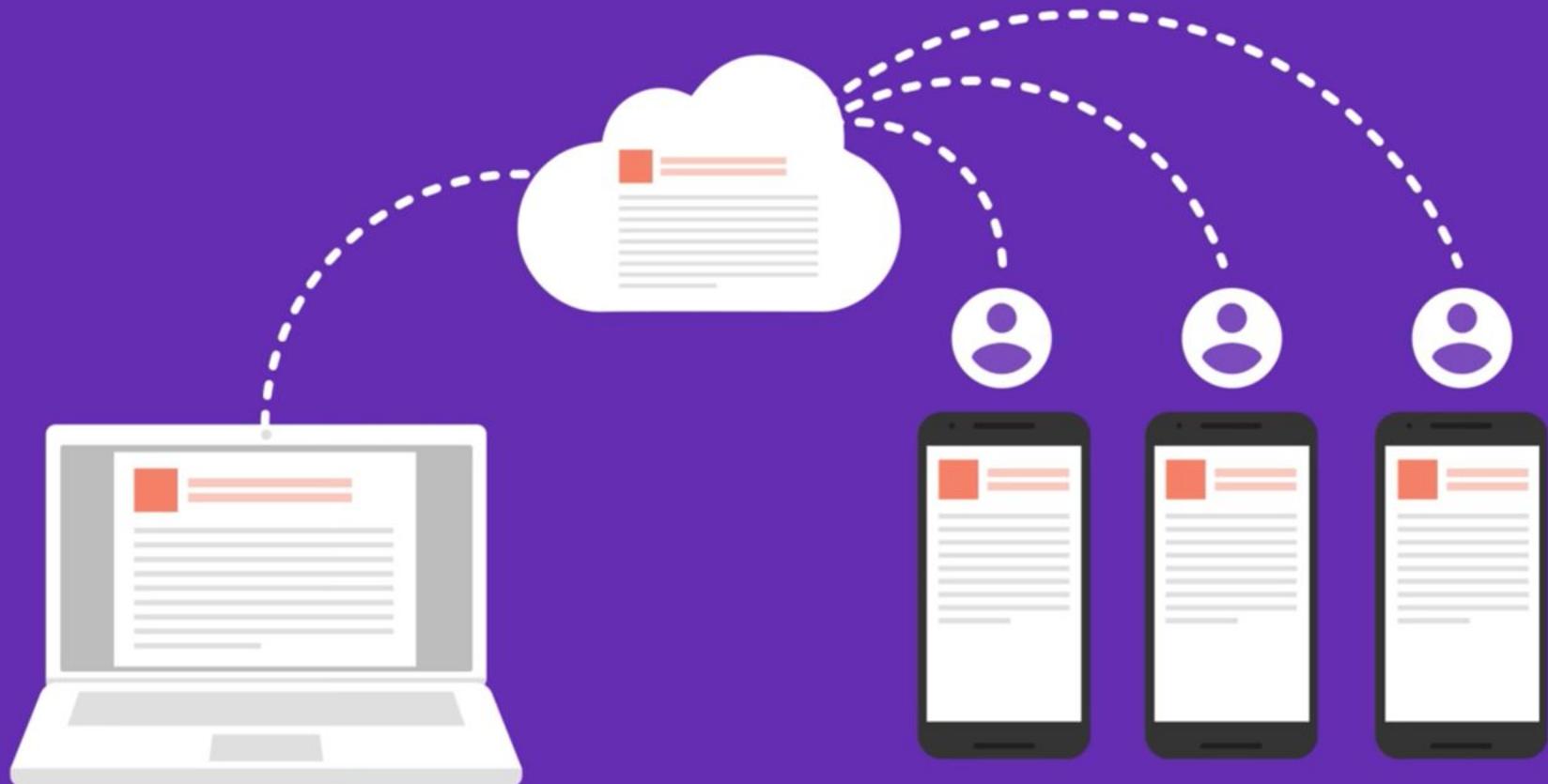
AdMob



Database



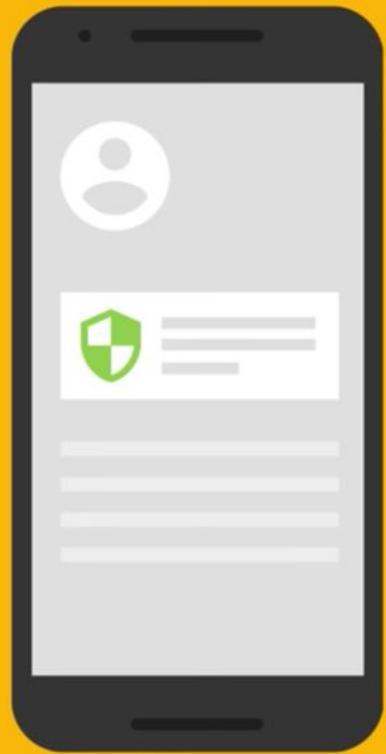
Realtime update



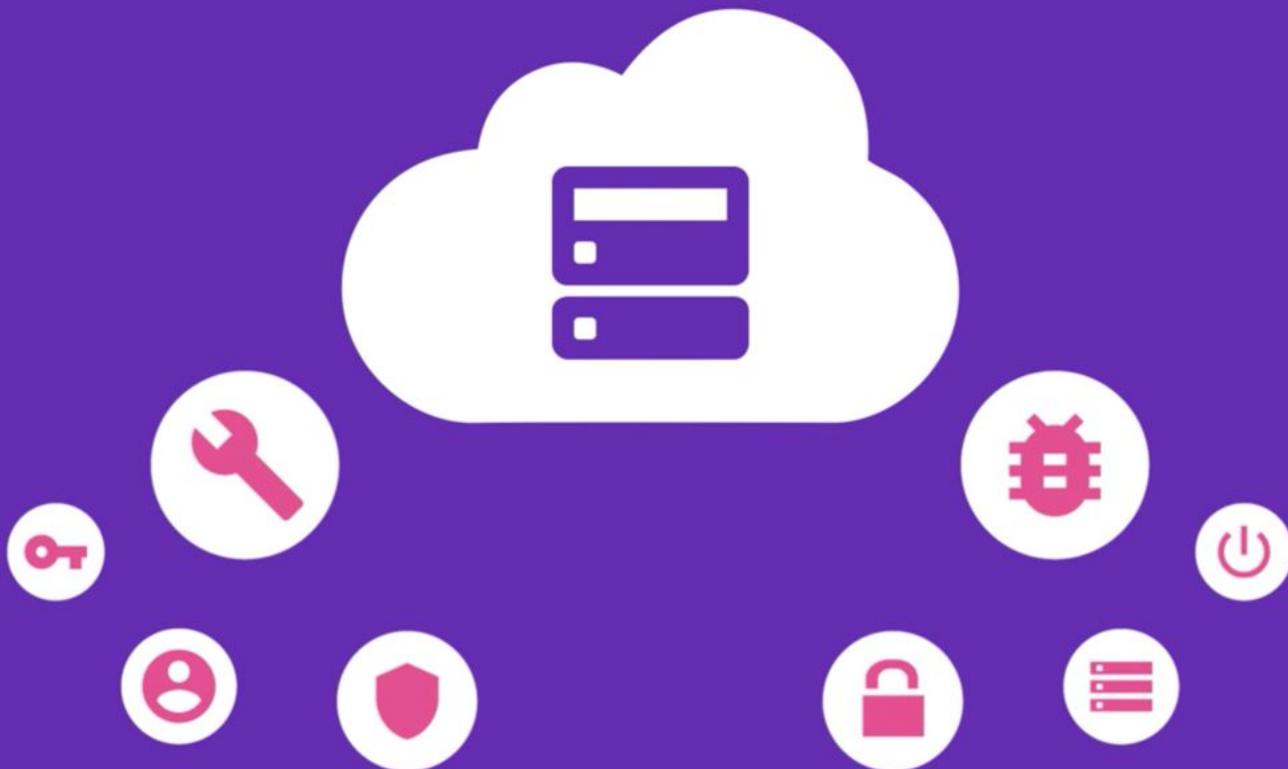
Auto sync with all clients



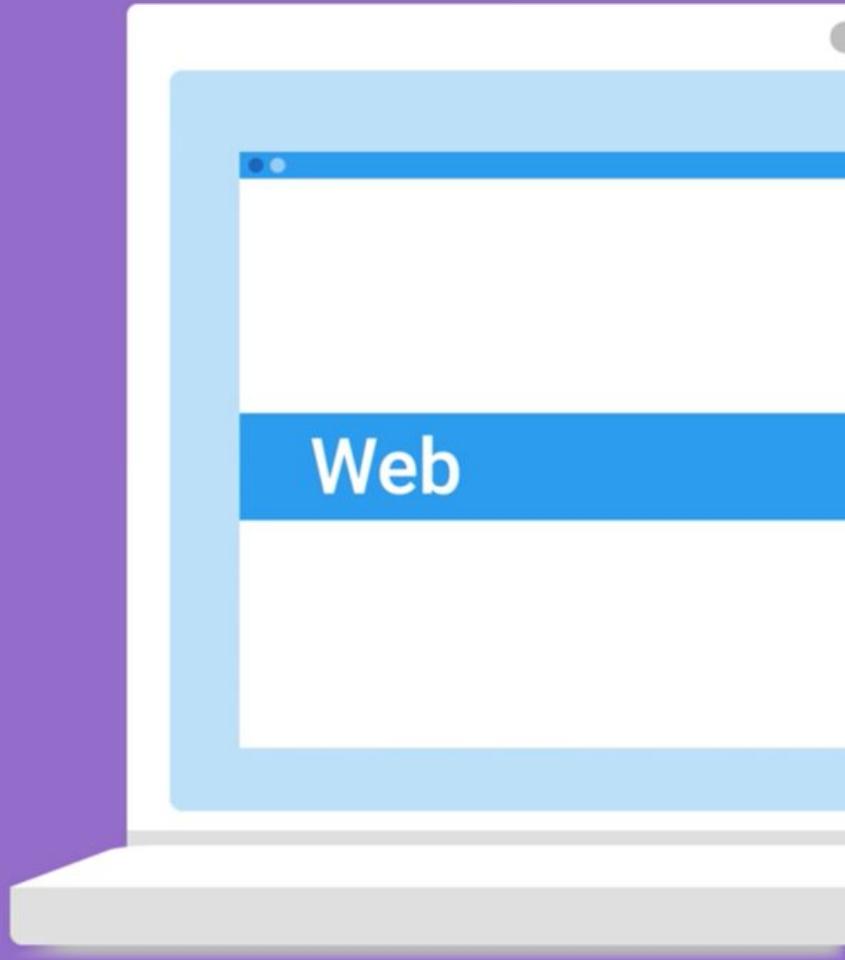
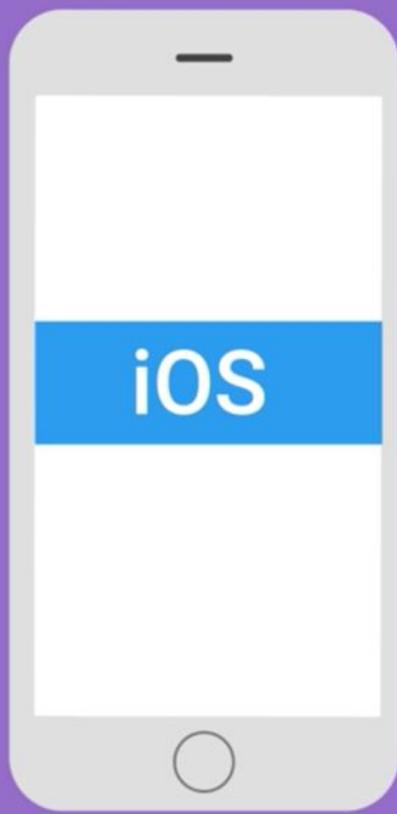
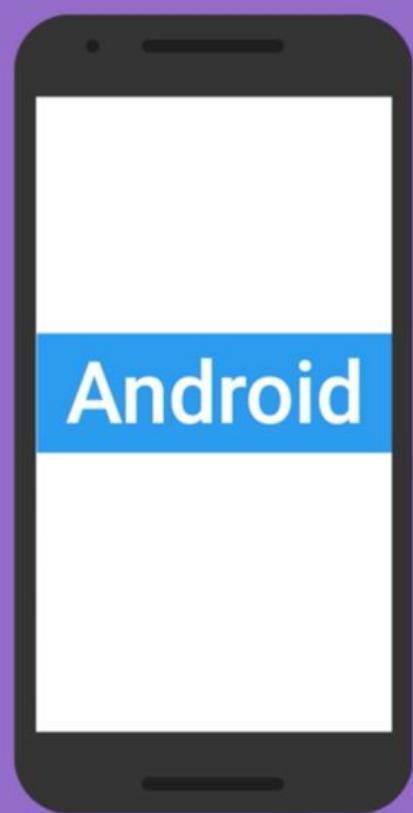
Manage Connection



Authorization & Rules



Cloud Managed Database



Multiple Platform

Write code



firebase-checkin ▾ Go to docs



firebase-checkin



Analytics

DEVELOP

Auth

Database

Storage

Hosting

Remote Config

Test Lab

Crash

GROW

Notifications

Dynamic Links

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AdMob

Realtime Database

DATA

RULES

🔗 https://fir-checkin.firebaseio.com/



fir-checkin: null



Database schema

```
{  
  "entries": {  
    "a1cb34": {  
      "name": "Đinh Quang Trung",  
      "avatar": "https://example.com/profile.jpg",  
      "image": "https://example.com/image.jpg",  
    },  
    "f3b1n2": {  
      "name": "Nguyễn Văn A",  
      "avatar": "https://example.com/profile.jpg",  
      "image": "https://example.com/image.jpg",  
    }  
  }  
}
```

User ID



Realtime database

The screenshot shows the Firebase Realtime Database interface. On the left, there is a code editor window displaying JavaScript code related to a check-in application. The code includes functions for handling check-ins and user authentication.

```
firebase.database().ref('fir-checkin').on('value', function(snapshot) {
  var data = snapshot.val();
  if (data === null) {
    enterName();
    return;
  }
  var user = firebase.auth().currentUser;
  if (user === null) {
    if (data.name === null) {
      addUser();
    }
    addCheckIn();
  }
});
```

In the center, the Realtime Database interface shows a single node at the root level:

fir-checkin: null

To the right, a large preview window displays the state of the application. It shows a message "No one checked in yet!" and a prominent blue button labeled "Check me in!".

Realtime database

A screenshot of a web browser window displaying a realtime database application. The URL in the address bar is <https://fir-checkin.firebaseio.com/>. The page content is as follows:

- The main area displays the message: "No one checked in yet!"
- At the bottom, there is a blue button with the text "Check me in!" and a heart icon.

The browser interface includes a sidebar on the left with the title "fir-checkin" and a status bar at the top indicating the screen resolution is 320 x 568. On the right side, there is a "Console" tab open, showing the command "top".

Database Rules

```
{  
  "rules": {  
    "entries": {  
      ".read": true,  
      ".write": "auth != null",  
      "$uid": {  
        ".read": true,  
        ".write": "$uid === auth.uid"  
      }  
    }  
  }  
}
```

DEVELOP



Realtime Database



Authentication



Cloud Messaging



Storage



Hosting



Remote Config



Test Lab



Crash Reporting

The screenshot shows a mobile application interface. At the top, there is a navigation bar with icons for back, forward, search, and other controls. Below the navigation bar, the title "fir-checkin" is displayed above a URL field containing "https://fir-checkin.firebaseio.com/". A text input field shows the value "null". To the right of the input field are three buttons: a green plus sign, a blue square, and a red minus sign. The main content area of the app displays a message: "No one checked in yet!". At the bottom of the screen is a large blue button with the text "Check me in!" and a heart icon.

Realtime Database

Authentication

Cloud Messaging

Storage

Hosting

Remote Config

Test Lab

Crash Reporting

320 × 568

No one checked in yet!

Check me in!

GROW

Notifications

Console

top

DEVELOP

 Realtime Database

 Authentication

 Cloud Messaging

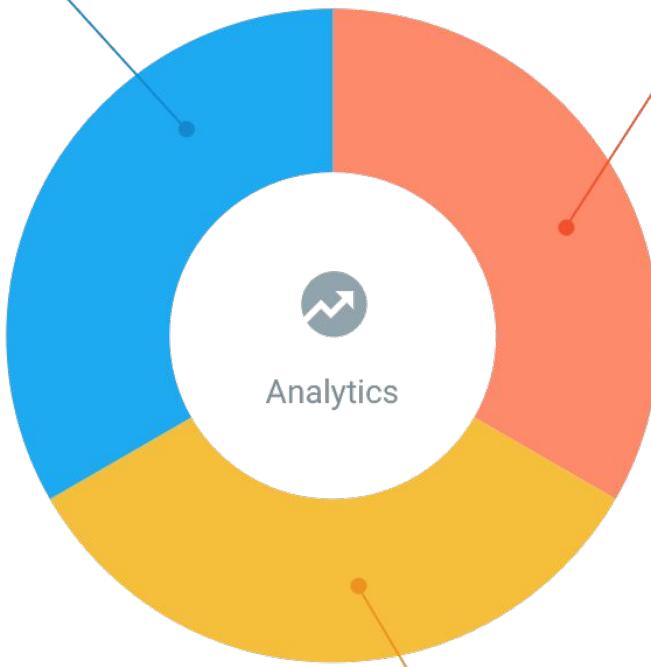
 Storage

 Hosting

 Remote Config

 Test Lab

 Crash Reporting



GROW

 Notifications

 App Indexing

 Dynamic Links

 Invites

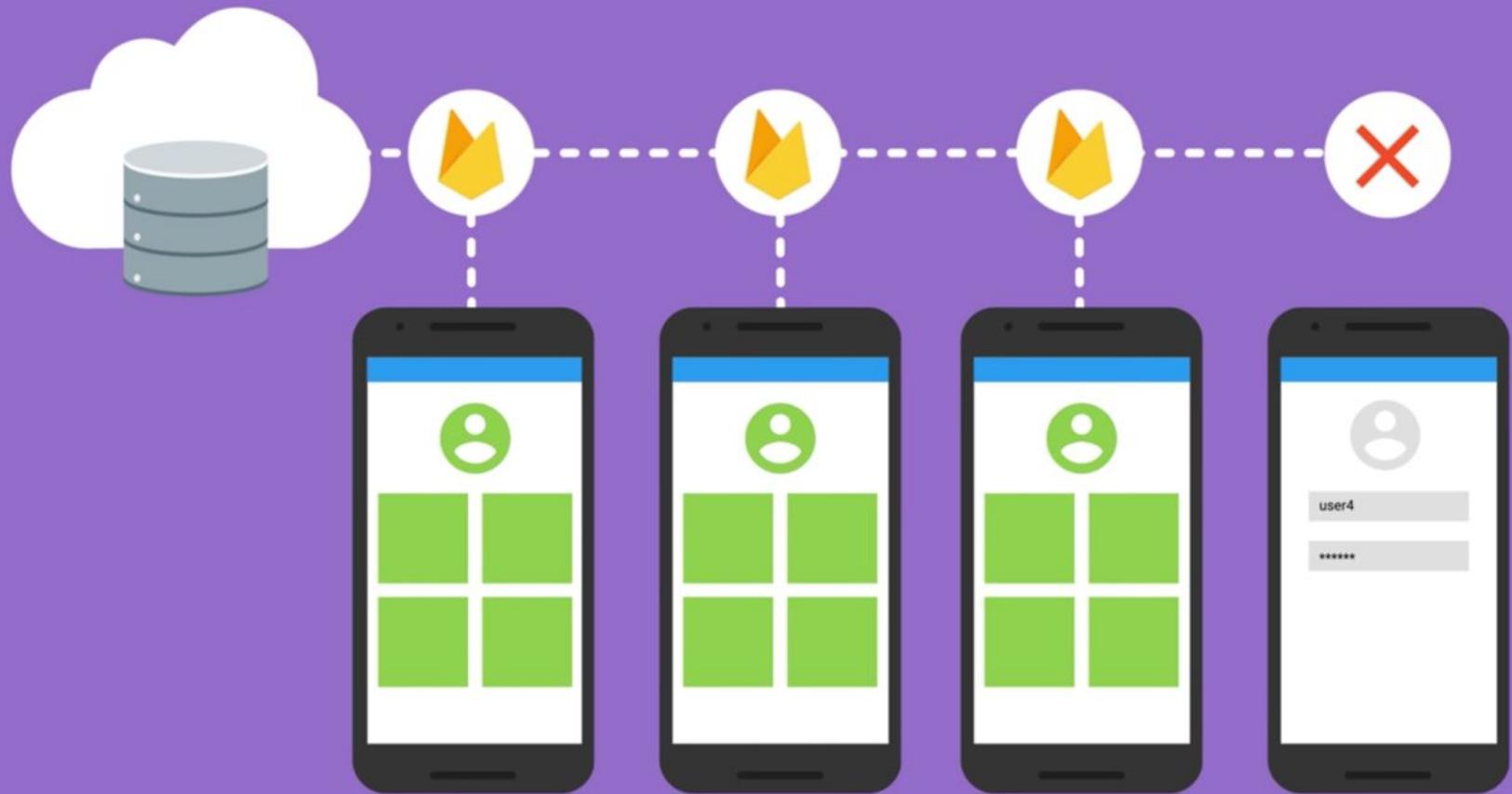
 AdWords

EARN

 AdMob



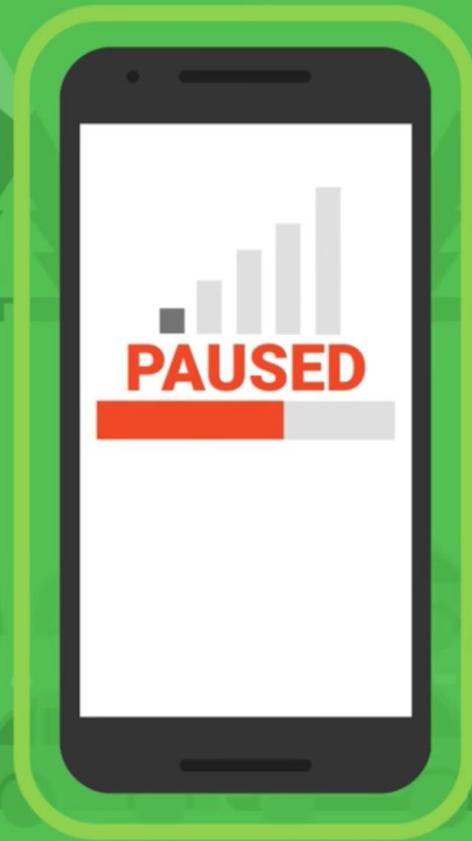
Storage



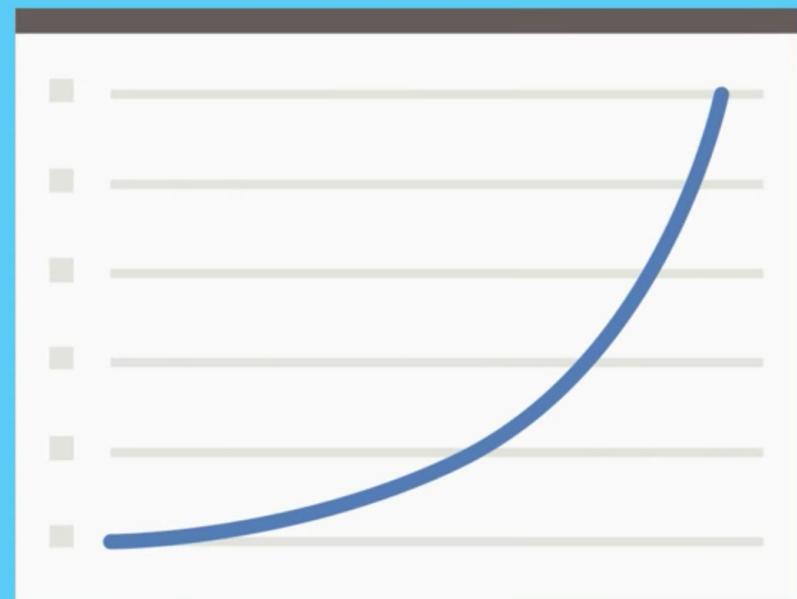
Support Authorization



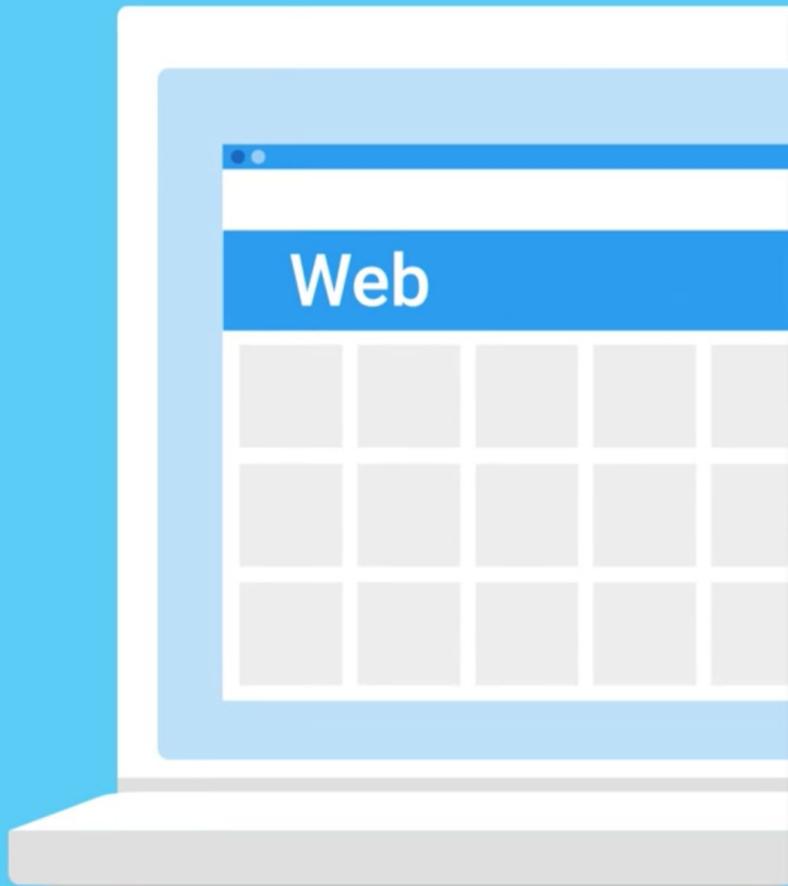
Secure SSL Connection



Manage Upload Process



Hosted by Google Storage Bucket with auto scale



and... multiple platform

Write code

Storage

```
// Handle image input

function sendPic() {
  if (imageInput.files.length === 0) return;
  var user = auth.currentUser;
  var file = imageInput.files[0];

  window.uploadTask = storage.ref().child(user.uid + file.name).put(file);

  window.uploadTask.on('state changed', function(snapshot){
    var progress = (snapshot.bytesTransferred / snapshot.totalBytes) * 100;
    txtStatus.innerText = 'Uploading... ' + Math.round(progress) + '%';
  }, function(error) {
    console.log(error);
  }, function() {
    var downloadURL = window.uploadTask.snapshot.downloadURL;
    postEntry(user.uid, user.displayName, user.photoURL, downloadURL);
  });
}
```

Storage

```
<body>

  <div id="entries"><p>Loading...</p></div>

  <div id="upload">

    <label id="googleLogin">
      Login with Google
    </label>

    <label id="uploading">
      <span id="txtStatus">
        Uploading... 0%
      </span>
      <span id="cancelUpload">Cancel</span>
    </label>

    <label>
      <input id="imageInput" type="file" accept="image/*;capture=camera">
      ♥ Check me in!
    </label>
  </div>

</body>
```

Storage

The image shows a mobile application interface. On the left, a yellow sidebar displays a portion of the JavaScript code:

```
function cancelbase  
window.upload  
txtStatus.  
}  
fir-checkin: null + -
```

The main content area has a header "320 x 568". It features a blue header bar with the text "fir-checkin" and a "null" value. Below this is a white section with the message "No one checked in yet!". At the bottom is a teal footer bar with the text "Check me in!" and a heart icon.

[firebase-checkin](#)[Analytics](#)

DEVELOP

[Auth](#)[Database](#)[Storage](#)[Hosting](#)[Remote Config](#)[Test Lab](#)[Crash](#)

GROW

[Notifications](#)[Dynamic Links](#)

CLOUD

Storage

FILES

RULES



gs://fir-checkin.appspot.com

[UPLOAD FILE](#)

<input type="checkbox"/>	Name	Size	Type	Last modified
<input type="checkbox"/>	 IMG_0475.JPG	2.69 MB	image/jpeg	Jun 21, 2016
<input type="checkbox"/>	 IMG_0491.PNG	92.73 KB	image/png	Jun 21, 2016
<input type="checkbox"/>	 IMG_0536.JPG	3.34 MB	image/jpeg	Jun 21, 2016
<input type="checkbox"/>	 MkBEdGzuBIQQw0GtPM3GiE6aRav2de...	176.76 KB	image/gif	Jun 21, 2016
<input type="checkbox"/>	 MkBEdGzuBIQQw0GtPM3GiE6aRav2im...	1.2 MB	image/jpeg	Jun 22, 2016
<input type="checkbox"/>	 MkBEdGzuBIQQw0GtPM3GiE6aRav2IM...	92.73 KB	image/png	Jun 21, 2016



Storage

FILES

RULES

```
1  service firebase.storage {
2      match /b/fir-checkin.appspot.com/o {
3          match /{allPaths=**} {
4              allow read, write: if request.auth != null;
5          }
6      }
7  }
8
```

DEVELOP

 Realtime Database

 Authentication

 Cloud Messaging

 Storage

 Hosting

 Remote Config

 Test Lab

 Crash Reporting

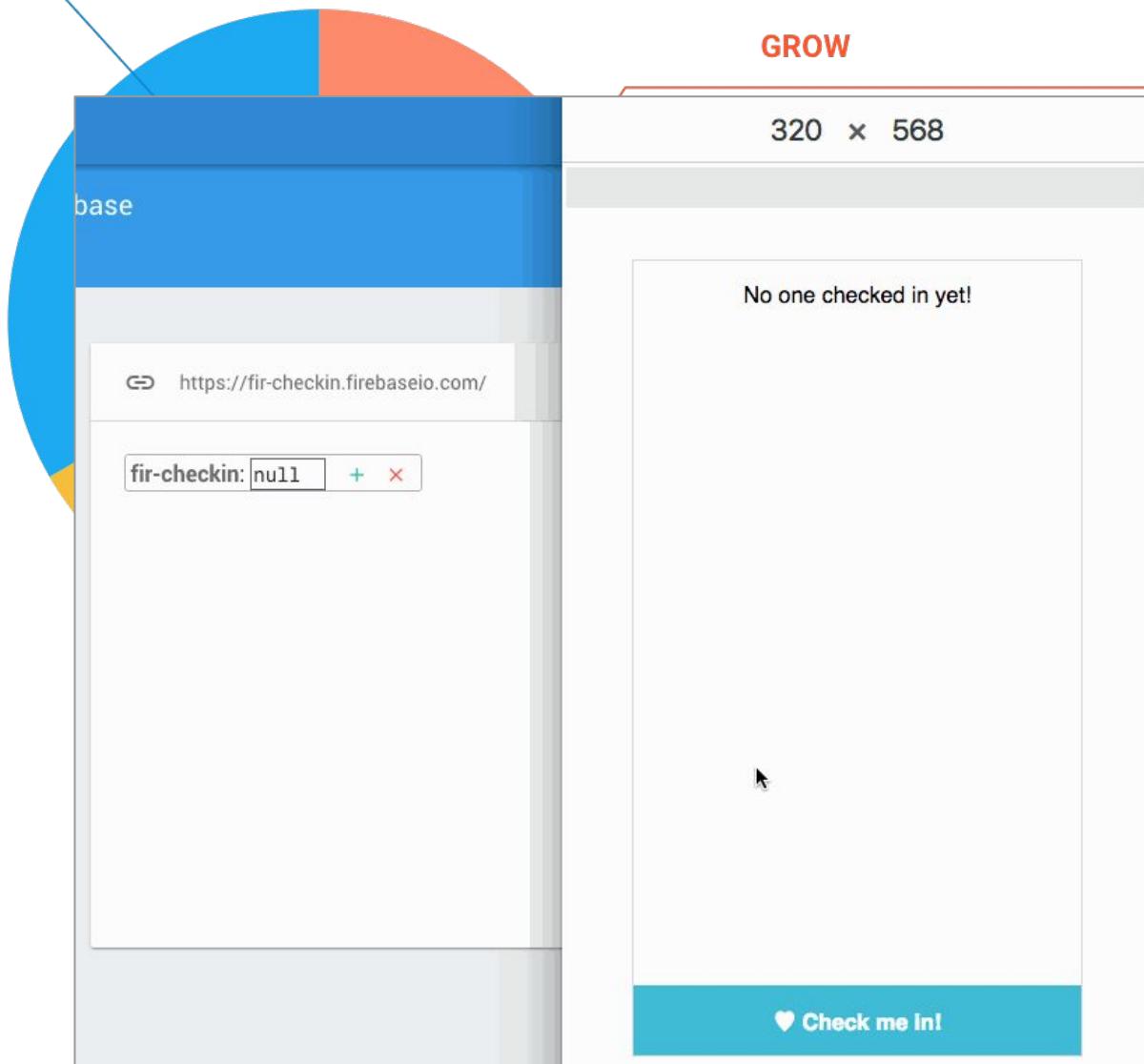
GROW

320 x 568

No one checked in yet!



Check me in!



DEVELOP

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GROW

 Notifications

 App Indexing

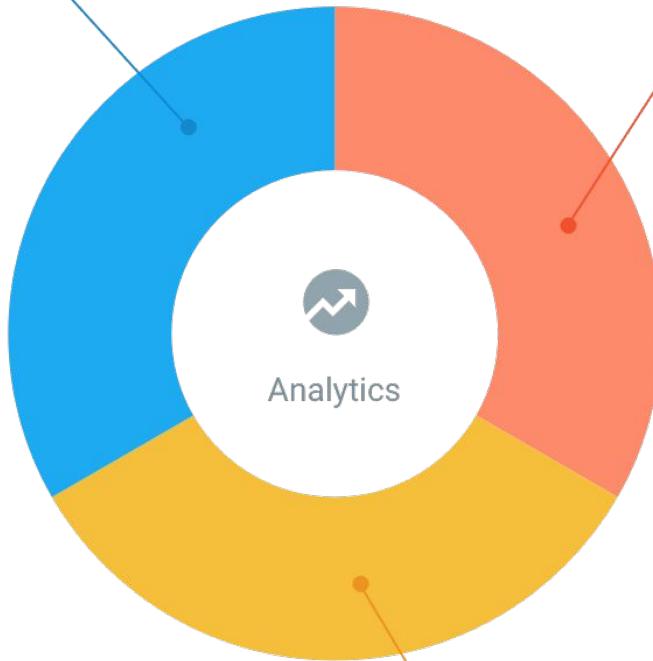
 Dynamic Links

 Invites

 AdWords

EARN

 AdMob





Hosting



Host static files



Global CDN



Secure SSL connection

~~Write code~~

Live Deploy!

```
npm install -g firebase-tools
```

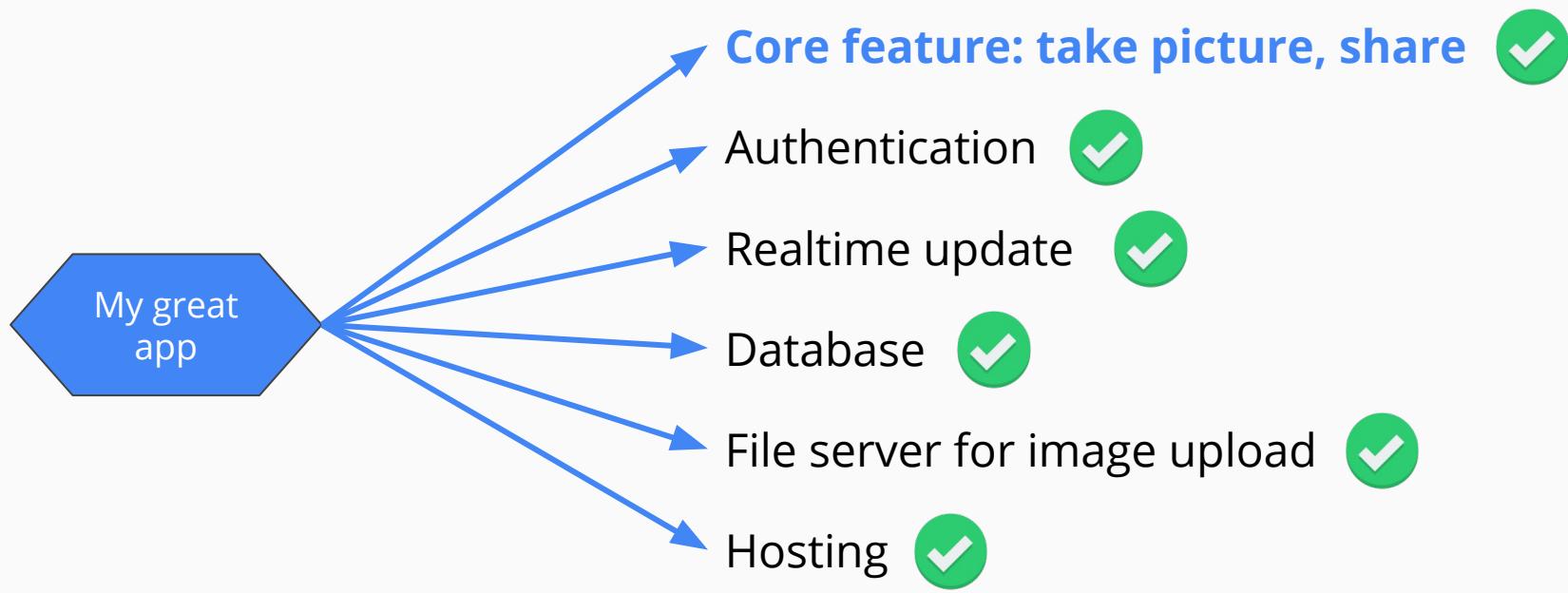
```
firebase init
```

```
firebase deploy
```

Our app is ready!



bit.ly/fb-checkin





- Simple integration
- Simple API
- Central dashboard to manage everything
- Secure
- Scaleable

Features

- Analytics
 - Firebase Analytics
- Develop
 - Cloud Messaging
 - Authentication
 - Realtime Database
 - Storage
 - Hosting
 - Remote Config
 - Test Lab
 - Crash Reporting
- Grow
 - Notifications
 - App Indexing
 - Dynamic Links
 - Invites
 - AdWords
- Earn
 - AdMob

	iOS	Android	Web
Analytics	Yes	Yes	No
Cloud Messaging	Yes	Yes	Yes
Authentication	Yes	Yes	Yes
Realtime Database	Yes	Yes	Yes
Storage	Yes	Yes	Yes
Hosting	No	No	Yes
Remote Config	Yes	Yes	No
Test Lab	No	Yes	No
Crash Reporting	Yes	Yes	No
Notifications	Yes	Yes	No
App Indexing	Yes	Yes	No
Dynamic Links	Yes	Yes	No
Invites	Yes	Yes	No
AdWords	Yes	Yes	No
AdMob	Yes	Yes	No

Try something new?



bit.ly/firebase-example

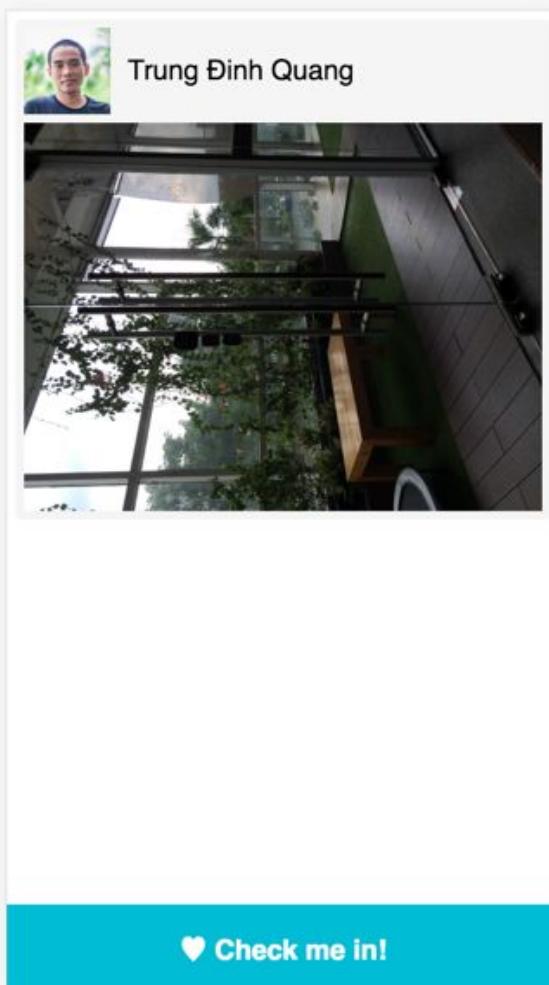
SPARK Free	FLAME \$25/month	BLAZE Pay as you go
Generous limits for hobbyists	Predictable pricing for growing apps	Commodity pricing for apps at scale

Included Free

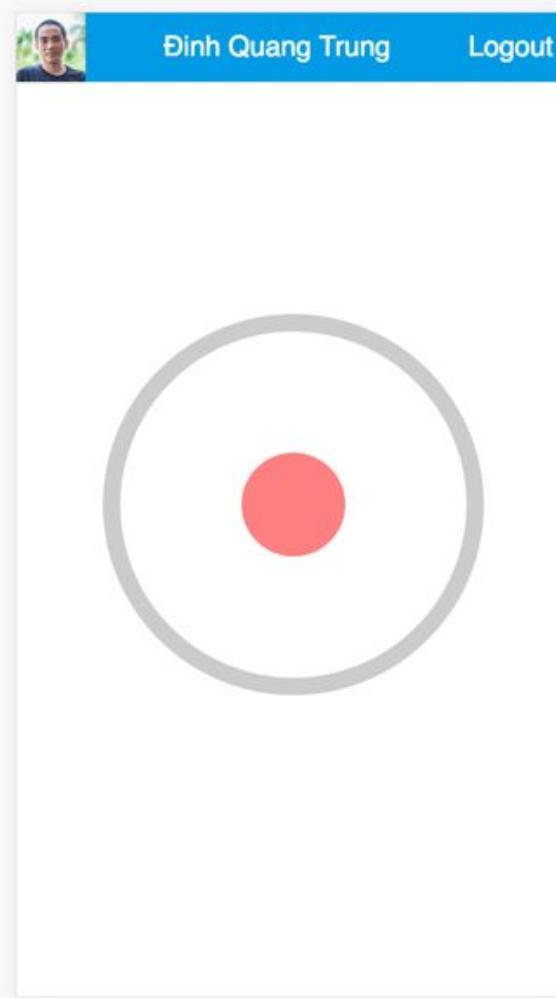
Analytics, App Indexing, Authentication, Dynamic Links, Invites, Notifications, Crash Reporting, & Remote Config

Realtime Database	Simultaneous connections	100	Unlimited ¹	Unlimited ¹
	GB stored	1 GB	2.5 GB	\$5/GB
	GB transferred	10 GB	20 GB	\$1/GB
	Daily private backups	✗	✓	✓

Happy develop!



"Check In" app:
<https://github.com/trungdq88/firebase-checkin>



Agar game:
<https://github.com/trungdq88.firebaseio-example>

References & Resources

This slide: <http://bit.ly/firebase-for-web-apps>

Firebase Homepage:

- <http://firebase.google.com/>

Firebase Developer Documentation:

- <https://firebase.google.com/docs/>

Videos:

- <https://www.youtube.com/user/Firebase>

“Check In” app:

- <https://github.com/trungdq88.firebaseio-checkin>

Agar game:

- <https://github.com/trungdq88.firebaseio-example>

Google I/O 2016 Firebase Code Lab:

- <https://codelabs.developers.google.com/io2016?cat=Firebase>

Thank you!

22 June 2016
Silicon Straits Saigon
Đinh Quang Trung



Đinh Quang Trung
Web Engineer



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- 12/1993 - Born
- 12/2009 - Wrote very first lines of code
- 01/2013 - Started learning **Web Development**
- 09/2015 - Graduated **FPT University**
- 12/2015 - Web Engineer at **Silicon Straits Saigon**
- 04/2016 - Web-tech Expert from **Google Developer Experts Program**