

hey lets grab a meal sometime!

yeah sure! when are you free this week?

wednesday dinner would work well for me

does that work for you

aw I have rehearsal wednesday from 5-8

does thursday lunch work for you?

nooo i have class then 😞 how about next week then

yeah lets do next week



✓ Read 2 weeks ago

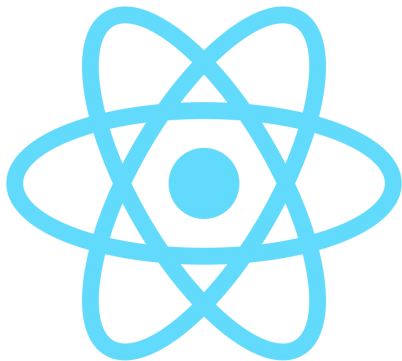


MealUp

Andrew Zeng
Annie Zou
May Jiang
Chi Yu

React Native

- React Native is a mobile app framework that lets you build native mobile apps for iOS and Android using JavaScript and React
- Use the same code for developing and deploying app to iOS and Android, compared to using XCode/Swift and Android Studio/Java



Expo

- Expo is a free and open source toolchain built around React Native to help you build native iOS and Android projects using JavaScript and React.
- Expo Client app - simulator for testing app on phone
- Libraries for native app permissions, push notifications, exporting to calendar, Facebook authentication
- Publishing to app stores - simple way to publish changes to app on command line



Backend



Cloud Firestore BETA

Pay to scale iOS  



Database



Cloud Firestore

BETA



DATA

RULES

INDEXES

USAGE



> users > 1021088968678...



auth-f86eb



users



10210889686788547

[+ ADD COLLECTION](#)

users

[+ ADD DOCUMENT](#)

10112677140780074

1020820311402926

10210889686788547



1119346371540839

1225548207576016

1337487066353589

1343883555712372

1382692735165619

1437290426371050

1511690908958208

1579743102074471

1629164063820057

[+ ADD COLLECTION](#)

Freetime

Friends

Groups

Meals

[+ ADD FIELD](#)

▶ Calendar: {AzQtCdbvTEqd0iPIglQj: {ca...}}

Name: "Andrew Zeng"

Token: "ExponentPushToken[1fs0P_OifobhySov7FtN3A]"

▶ selectedCalendar: {accessLevel: "owner", all...}

☰ 10210889686788547



📄 Meals



☰ AzQtCdbvTEqd0iPIglQj



+ ADD COLLECTION

Friends

Groups

Meals >

hasFreeFriends

+ ADD FIELD

▶ Calendar: {AzQtCdbvTEqd0iPIglQj:
 {ca...}}

Name: "Andrew Zeng"

Token: "ExponentPushToken[1fs0P_Oifc...]"

▼ selectedCalendar

accessLevel: "owner"

▼ allowedAttendeeTypes

0 "none"

1 "required"

+ ADD DOCUMENT

AzQtCdbvTEqd0iPIglQj >

+ ADD COLLECTION

+ ADD FIELD

DateTime: May 8, 2018 at 12:30:00 PM UTC-4

Length: 0.5

Location: "Rocky"

TimeString: "12:30-1:00 pm"

groupName: "COS 333"

initiator: "2042768522715597"

isGroup: true

▼ members

▼ 10210889686788547

accepted: true

declined: false

name: "Andrew Zeng"

<div><div>☰</div>10210889686788547<div>⋮</div></div>	<div><div>📄</div>Friends<div>⋮</div></div>	<div><div>☰</div>1020820311402926<div>⋮</div></div>
<div><div>+ ADD COLLECTION</div><div>FreeFriends</div><div>Freetime</div><div>Friends ></div><div>Groups</div><div>+ ADD FIELD</div><div><div>▶</div>Calendar: {AzQtCdbvTEqd0iPIglQj: {ca...}}</div><div>Name: "Andrew Zeng"</div><div>Token: "ExponentPushToken[1fs0P_Oifc...]"</div><div><div>▼</div>selectedCalendar<div>accessLevel: "owner"</div><div><div>▼</div>allowedAttendeeTypes<div><div>0</div>"none"</div><div><div>1</div>"required"</div></div></div></div>	<div><div>+ ADD DOCUMENT</div><div>1020820311402926 ></div><div>1225548207576016</div><div>1337487066353589</div><div>1343883555712372</div><div>1579743102074471</div><div>1629164063820057</div><div>1685311528229627</div><div>1739271066183909</div><div>1834102679968207</div><div>1852690164775994</div><div>1860395457592875</div><div>1893368474007587</div><div>1908749022490722</div><div>1915319701821466</div></div>	<div><div>+ ADD COLLECTION</div><div>+ ADD FIELD</div><div>CanViewFriend: true</div><div>CanViewMe: true</div><div>Name: "Geoffrey Zheng"</div><div>numOfMeals: 0</div></div>

<div><div>☰</div>10210889686788547<div>⋮</div></div>	<div><div>📅</div>Freetime<div>⋮</div></div>	<div><div>☰</div>Monday<div>⋮</div></div>
<div><div>+ ADD COLLECTION</div><div>FreeFriends</div><div>Freetime ></div><div>Friends</div><div>Groups</div><div>+ ADD FIELD</div><div>▶ Calendar: {AzQtCdbvTEqd0iPIglQj: {ca...}}</div><div>Name: "Andrew Zeng"</div><div>Token: "ExponentPushToken[1fs0P_Oifo...]"</div><div>▼ selectedCalendar<div>accessLevel: "owner"</div><div>▼ allowedAttendeeTypes<div>0 "none"</div><div>1 "required"</div></div></div></div>	<div><div>+ ADD DOCUMENT</div><div>Friday</div><div>Monday ></div><div>Saturday</div><div>Sunday</div><div>Thursday</div><div>Tuesday</div><div>Wednesday</div></div>	<div><div>+ ADD COLLECTION</div><div>+ ADD FIELD</div><div>▼ Freetime<div><div>0</div>0</div><div><div>1</div>0</div><div><div>2</div>0</div><div><div>3</div>0</div><div><div>4</div>0</div><div><div>5</div>0</div><div><div>6</div>0</div><div><div>7</div>0</div><div><div>8</div>1</div><div><div>9</div>1</div><div><div>10</div>1</div></div></div>

Request by Time

Problem:

Efficiently query which friends are free at a specific time

Original solution:

Query the freetime arrays for all friends and look through them

Issue: Too slow

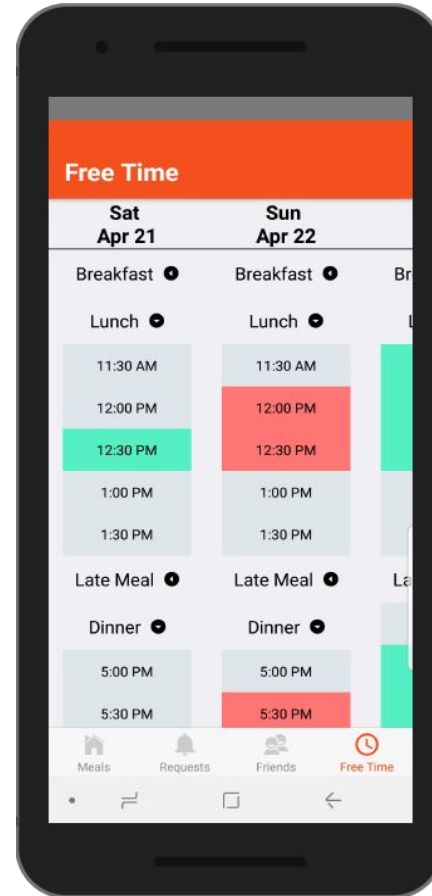
Updated solution: Store which friends are free at each time

Friday > users > 1021088968678... > FreeFriends > Monday		
10210889686788547	FreeFriends	Monday
+ ADD COLLECTION	+ ADD DOCUMENT	+ ADD COLLECTION
FreeFriends >	Friday	+ ADD FIELD
Freetime	Monday >	▼ Freefriends
Friends	Saturday	▼ 0
Groups	Sunday	1893368474007587: false
+ ADD FIELD	Thursday	1965652200171493: true
► Calendar: {AzQtCdbvTEqd0iPiglQj: {ca...}}	Tuesday	847228102145618: true
Name: "Andrew Zeng"	Wednesday	▼ 1
Token: "ExponentPushToken[1fs0P_Oifc...]"		1893368474007587: false
▼ selectedCalendar		1965652200171493: true
accessLevel: "owner"		847228102145618: true
▼ allowedAttendeeTypes		▼ 2
0 "none"		1893368474007587: true
1 "required"		1965652200171493: true

Request by Time

New Problem:

Selecting free times was too slow



Final Solution

Cloud Functions for Firebase

iOS



C++



Cloud Functions for Firebase lets you automatically run backend code in response to events triggered by Firebase features and HTTPS requests. Your code is stored in Google's cloud and runs in a managed environment. There's no need to manage and scale your own servers.

Already using Cloud Functions on Google Cloud Platform? [Learn more](#) about how Firebase fits into the picture.



Triggers

- When an entry in the database is...
 - Added
 - Deleted
 - Modified
- Updates the database when triggered
- Happens in backend as opposed to frontend

Back to request by time..

- When a user selects/deselects a time
 - Use cloud functions to update the user's friends on the user's availability

The screenshot shows the Firebase console interface for a user's freetime availability. The breadcrumb navigation at the top is: Home > users > 1893368474007... > Freetime > Friday. The interface is divided into three main sections:

- Left Panel (User Profile):** Shows the user ID 1893368474007587. Under the 'Freetime' collection, there are sub-collections: FreeFriends, Freetime (selected), Friends, and hasFreeFriends. Below this, there is an 'ADD FIELD' button and two fields: 'Name: "Chi Yu"' and 'Token: "ExponentPushToken[Sjc2DzGfWZ3kd...]'.
- Middle Panel (Freetime Documents):** Shows a list of documents for the 'Freetime' collection: Monday, Saturday, Sunday, Thursday, Tuesday, and Wednesday. The 'Friday' document is selected and highlighted.
- Right Panel (Friday Document):** Shows the details of the 'Friday' document. It has a collection 'Freetime' with a list of 8 fields, each with a value of 0. An arrow points to the first '0' with the text '0 means not free'.

Field	Value
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0

🏠 > users > 1893368474007... > Freetime > Friday

1893368474007587	Freetime	Friday																
<p>+ ADD COLLECTION</p> <p>FreeFriends</p> <p>Freetime</p> <p>Friends</p> <p>hasFreeFriends</p> <p>+ ADD FIELD</p> <p>Name: "Chi Yu"</p> <p>Token: "ExponentPushToken[Sjc2DzGfWZ3kd"</p>	<p>+ ADD DOCUMENT</p> <p>Friday</p> <p>Monday</p> <p>Saturday</p> <p>Sunday</p> <p>Thursday</p> <p>Tuesday</p> <p>Wednesday</p>	<p>+ ADD COLLECTION</p> <p>+ ADD FIELD</p> <p>▼ Freetime</p> <table><tbody><tr><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td></tr><tr><td>2</td><td>0</td></tr><tr><td>3</td><td>0</td></tr><tr><td>4</td><td>0</td></tr><tr><td>5</td><td>0</td></tr><tr><td>6</td><td>0</td></tr><tr><td>7</td><td>0</td></tr></tbody></table>	0	1	1	0	2	0	3	0	4	0	5	0	6	0	7	0
0	1																	
1	0																	
2	0																	
3	0																	
4	0																	
5	0																	
6	0																	
7	0																	

now changed to 1 (free)



Cloud Functions
for Firebase

🏠 > users > 1021088968678... > FreeFriends > Friday

☰ 10210889686788547

+ ADD COLLECTION

FreeFriends >

Freetime

Friends

Groups

hasFreeFriends

+ ADD FIELD

▼ Calendar

▶ AzQtCdbvTEqd0iPIglQj: {calendarID:
"32",
eventID...}

Name: "Andrew Zeng"

📄 FreeFriends

+ ADD DOCUMENT

Friday >

Monday

Saturday

Sunday

Thursday

Tuesday

Wednesday

☰ Friday

+ ADD COLLECTION

+ ADD FIELD

▼ Freefriends

▼ 0

1852690164775994: true

1893368474007587: false

1965652200171493: true

2042768522715597: true

847228102145618: true

▼ 1

1852690164775994: true

← This is Chi

🏠 > users > 1021088968678... > FreeFriends > Friday

☰ 10210889686788547



+ ADD COLLECTION

FreeFriends >

Freetime

Friends

Groups

hasFreeFriends

+ ADD FIELD

▼ Calendar

▶ AzQtCdbvTEqd0iPIg1Qj: {calendarID:
"32",
eventID...}

Name: "Andrew Zeng"

📄 FreeFriends



+ ADD DOCUMENT

Friday >

Monday

Saturday

Sunday

Thursday

Tuesday

Wednesday

☰ Friday



+ ADD COLLECTION

+ ADD FIELD

▼ Freefriends

▼ 0

1852690164775994: true

1893368474007587: true

1965652200171493: true

2042768522715597: true

847228102145618: true

▼ 1

1852690164775994: true

← Chi is now free!

Future Features

- Accessing user's calendar to block their times automatically
- Show the dining hall menus in the app
- Login without Facebook



Thank you!