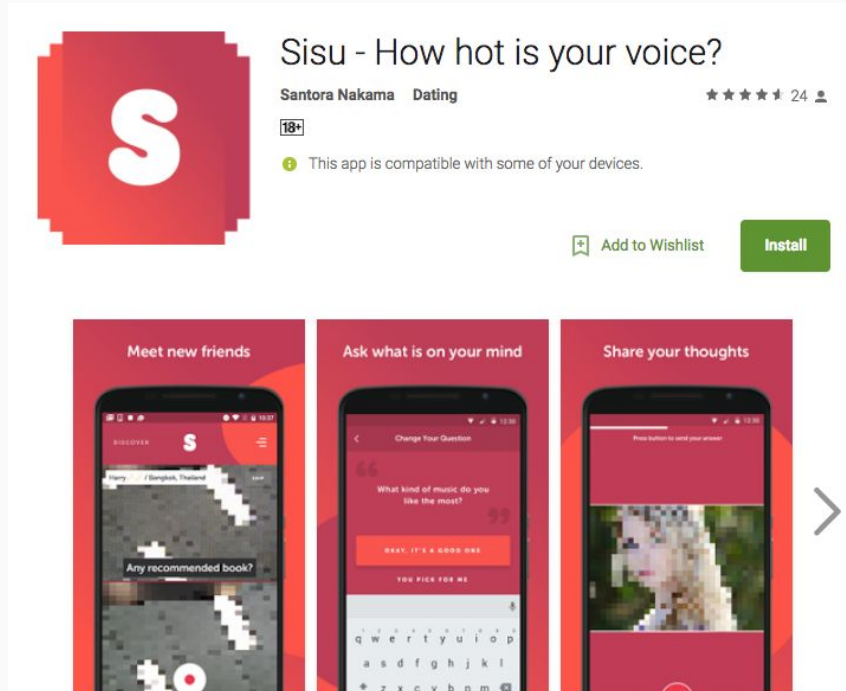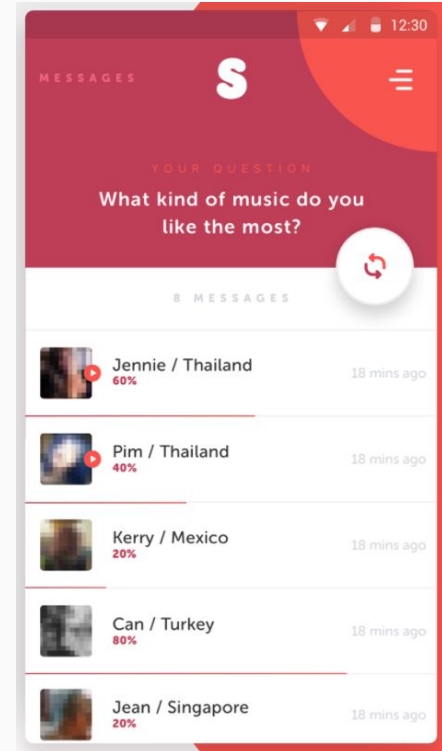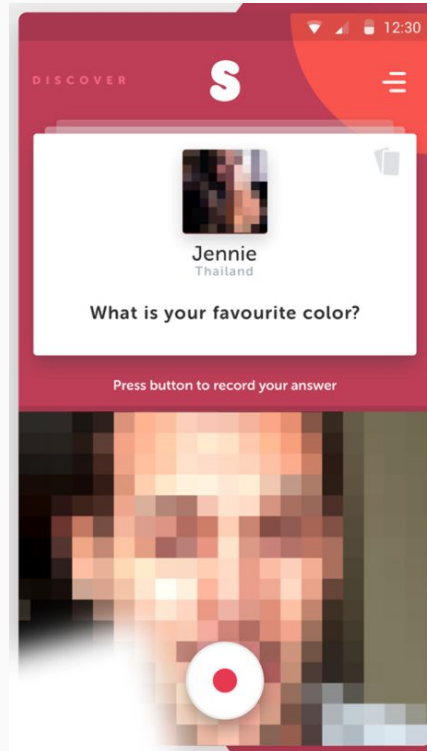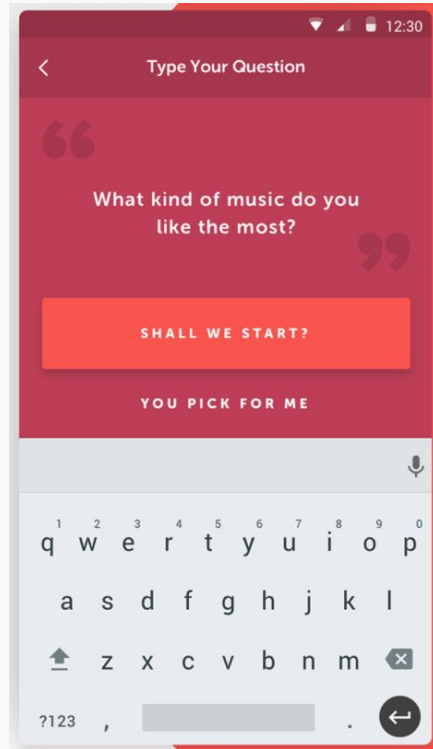# Cloud Firestore

Rossukhon

Growth Session #9 - November 16-17 2017

Migrate the Sisu admin app to Firestore (previously was Firebase)

Sisu

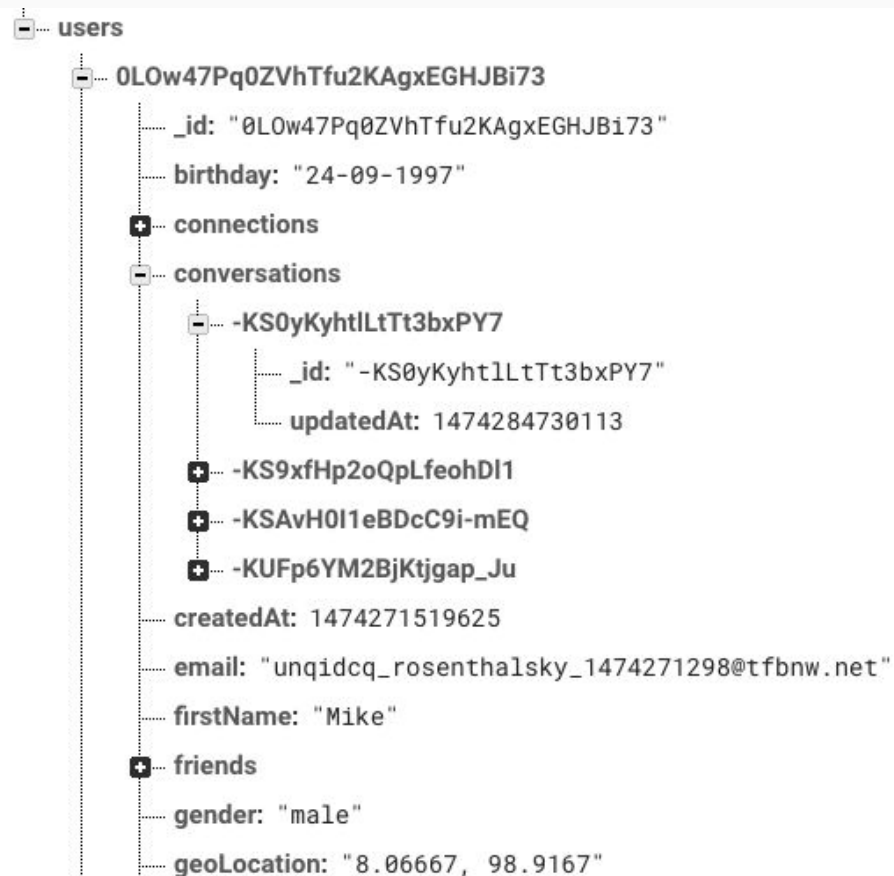# The Database - Firebase Realtime Database

Users

Conversations

```
- users
    - 0LOw47Pq0ZVhTfu2KAgxEGHJBi73
        _id: "0LOw47Pq0ZVhTfu2KAgxEGHJBi73"
        birthday: "24-09-1997"
        + connections
        - conversations
            - -KS0yKyhtlLtTt3bxPY7
                _id: "-KS0yKyhtlLtTt3bxPY7"
                updatedAt: 1474284730113
            + -KS9xfHp2oQpLfeohDl1
            + -KSAvH0I1eBDcC9i-mEQ
            + -KUFp6YM2BjKtjgap_Ju
        createdAt: 1474271519625
        email: "unqidcq_rosenthalsky_1474271298@tfbnw.net"
        firstName: "Mike"
        + friends
        gender: "male"
        geoLocation: "8.06667, 98.9167"
```

The Database - Firebase Realtime Database

Conversations

Messages

Members

```
conversations
    -KQietYPj8HQ1RE0qxoM
        _id: "-KQietYPj8HQ1RE0qxoM"
        askedBy: "7F2VFc90uvNx7oHB8v3bPFDpcIV2"
        createdAt: 1472883039002
        members
            3UHacjpwf4hC5NGHVfxHGsqn1N22: true
            7F2VFc90uvNx7oHB8v3bPFDpcIV2: true
        messageCount: 1
        messages
            -KQietYNk99k3HSwJkyn
                _id: "-KQietYNk99k3HSwJkyn"
                createdAt: 1472883039002
                from: "3UHacjpwf4hC5NGHVfxHGsqn1N22"
                message: "https://firebasestorage.googleapis.com/v0/b/sis..."
        startedQuestion: "Do you prefer dog or cat? Why?"
        updatedAt: 1472883039002
```

Cloud Firestore - Users

sisu-firestore-a242a

+ ADD COLLECTION

conversations

users   >

📖 users   ⋮

+ ADD DOCUMENT

7F2VFc90uvNx7oHB8…   >

SP8CZJirNWbWVh96B…

b03pv4dskTPXRKfqO…

📄 7F2VFc90uvNx7oHB8v…   ⋮

+ ADD COLLECTION

conversations   >

+ ADD FIELD

birthday: "20-01-1990"

createdAt: 147282228187…

email: "rossukhon@nimbl3.…

firstName: "Rossukhon"

gender: "female"

geoLocation: "13.7297297
                100.5672936

lastName: "Leagmongkol"

locale: "en"

📖 conversations   ⋮

+ ADD DOCUMENT

-KRg59RZj_KsWEpsU…   >

-KUuv_EtUxkfbugoZ…

📄 -KRg59RZj_KsWEpsUFin

+ ADD COLLECTION

+ ADD FIELD

conversationRef: firestore.googleapis.c
                 a242a/database/(def
                 KRg59RZj_KsWEpsUF

Cloud Firestore - Conversations

🔸 sisu-firestore-a242a	📖 conversations	⋮	📄 -KRg59RZj_KsWEpsUFin	⋮	📖 messages	⋮	📄 -KRg59RWmtSPb058SDLS

+ ADD COLLECTION | **+ ADD DOCUMENT** | **+ ADD COLLECTION** | **+ ADD DOCUMENT** | **+ ADD COLLECTION**

conversations >

users

-KRg59RZj_KsWEpsU… >

-KUuv_EtUxkfbugoZ…

-KUuv_EtUxkfbugoZ…

messages >

-KRg59RWmtSPb058S… >

-KRhfWXcI2LpwDzMo…

+ ADD FIELD

createdAt: 1473913596100

from: "7F2VFc90uvNx7oHB8v3bPFDpcIV2"

message: "https://firebasestorage.googleap
staging.appspot.com/o/7F2VFc9
alt=media&token=88e27097-eec3

readAt: 1473939615910

+ ADD FIELD

createdAt: 147391359610(

createdBy: "b03pv4dskTPX

▼ members

7F2VFc90uvNx7oHB8v3b

b03pv4dskTPXRKfqOoyA

messageCount: 11

startedQuestion: "จับ
Pokemo
ไปได้กี่ตั
แล้ว?"

Firestore - Shallow query

☰ sisu-firestore-a242a	🔖 conversations ⋮	📄 -KRg59RZj_KsWEpsUFin ⋮
+ ADD COLLECTION	**+ ADD DOCUMENT**	**+ ADD COLLECTION**
conversations →	-KRg59RZj_KsWEpsUFin →	mes❌ges
users	-KUuv_EtUxkfbugoZ4j7	
	-KUuv_EtUxkfbugoZ4j8	

+ ADD FIELD

createdAt: 1473913596100

createdBy: "b03pv4dskTPXRKfqOoyA1ZWpeWD2"

▼ members

   7F2VFc90uvNx7oHB8v3bPFDpcIV2: true

   b03pv4dskTPXRKfqOoyA1ZWpeWD2: true

messageCount: 11

startedQuestion: "จับ Pokemon ไปได้กี่ตัวแล้ว?"

updatedAt: 1478579252554

Firestore - Query

```
/**
 * Get list of conversations
 *
 * @param {Number} [limitSize] — total of conversation items to retrieve
 * @param {String} [keyOffset] — id of a conversation to use in query to offset results
 * @return {Promise} — a promise which will resolve to an object containing conversation objects
 */
static getConversations(limitSize = PAGINATION_SIZE, keyOffset = null) {
  let query = firebase.database().ref('conversations').orderByKey().limitToLast(limitSize);

  if (keyOffset) {
    query = query.endAt(keyOffset);
  }

  return query.once('value').then((snapshot) => {
    return snapshot.val();
  });
}
```

```
/**
 * Get list of conversations
 *
 * @param {Number} [limitSize] — total of conversation items to retrieve
 * @param {String} [lastItem] — last queried conversation snapshot
 * @return {Promise} — a promise which will resolve to an object containing conversation objects
 */
static getConversations(limitSize = PAGINATION_SIZE, lastItem = null) {
  let query = firebase.firestore().collection('conversations').orderBy('updatedAt', 'desc');

  if (lastItem) {
    // TODO: Need to change column for `startAfter` since it is not unique
    query = query.startAfter(lastItem.updatedAt)
  }
  return query.limit(limitSize).get();
}
```

Firestore - Query

```
/**
 * Get user information.
 *
 * @param {String} [uid] — the uid of a user
 * @return {Promise} — a promise which will resolve to a user object
 */
static getUser(uid) {
  return firebase.database().ref(`users/${uid}`).once('value').then((snapshot) => {
    return snapshot.val();
  });
}
```

Firestore - Query

Compound queries

You can also chain multiple `where()` methods to create more specific queries (logical `AND`). However, to combine the equality operator (`==`) with a range comparison (`<`, `<=`, `>`, or `>=`), make sure to create a custom index.

WEB	SWIFT	OBJECTIVE-C	ANDROID	JAVA	PYTHON	NODE.JS	GO

```
citiesRef.where("state", "==", "CO").where("name", "==", "Denver")
citiesRef.where("state", "==", "CA").where("population", "<", 1000000)
```

Additionally, you can only perform range comparisons (`<`, `<=`, `>`, `>=`) on a single field:

👍 **Valid**: Range filters on only one field

WEB	SWIFT	OBJECTIVE-C	ANDROID	JAVA	PYTHON	NODE.JS	GO

```
citiesRef.where("state", ">=", "CA").where("state", "<=", "IN")
citiesRef.where("state", "==", "CA").where("population", ">", 1000000)
```

👎 **Invalid**: Range filters on different fields

WEB	SWIFT	OBJECTIVE-C	ANDROID	JAVA	PYTHON	NODE.JS	GO

```
citiesRef.where("state", ">=", "CA").where("population", ">", 100000)
```

Firestore - Query

```javascript
static getConversations(limitSize = PAGINATION_SIZE, lastItem = null) {
  let query = firebase.firestore()
    .collection('conversations')
    .where('messageCount', '>', 0)
    .orderBy('updatedAt', 'desc');

  if (lastItem) {
    // TODO: Need to change column for `startAfter` since it is not unique
    query = query.startAfter(lastItem.updatedAt);
  }
  return query.limit(limitSize).get();
}
```

```
⊗ ▶ Uncaught Error: Invalid query. You have a where filter with an inequality (<, <=, >, or >=) on field    database.js?63ef:1029
  'messageCount' and so you must also use 'messageCount' as your first Query.orderBy(), but your first Query.orderBy() is on field
  'updatedAt' instead.
      at new FirestoreError (eval at <anonymous> (bundle.js:4285), <anonymous>:151:28)
      at Query.validateOrderByAndInequalityMatch (eval at <anonymous> (bundle.js:4447), <anonymous>:1029:19)
      at Query.validateNewOrderBy (eval at <anonymous> (bundle.js:4447), <anonymous>:1023:22)
      at Query.orderBy (eval at <anonymous> (bundle.js:4447), <anonymous>:776:14)
      at Function.getConversations (eval at <anonymous> (bundle.js:3259), <anonymous>:64:98)
      at eval (eval at <anonymous> (bundle.js:3247), <anonymous>:52:29)
      at eval (eval at <anonymous> (bundle.js:5653), <anonymous>:11:18)
      at eval (eval at <anonymous> (bundle.js:5629), <anonymous>:52:32)
      at eval (eval at <anonymous> (bundle.js:5743), <anonymous>:17:20)
      at Object.eval [as fetchConversations] (eval at <anonymous> (bundle.js:1855), <anonymous>:7:12)
```

Firestore - Query

You can combine `where()` filters with `orderBy()` and `limit()`. In the following example, the queries define a population threshold, sort by population in ascending order, and return only the first few results that exceed the threshold:

WEB	SWIFT	OBJECTIVE-C	ANDROID	JAVA	PYTHON	NODE.JS	GO

```
citiesRef.where("population", ">", 100000).orderBy("population").limit(2)
```

However, if you have a filter with a range comparison (< , <= , > , >=), your first ordering must be on the same field:

👍 **Valid**: Range filter and `orderBy` on the same field

WEB	SWIFT	OBJECTIVE-C	ANDROID	JAVA	PYTHON	NODE.JS	GO

```
citiesRef.where("population", ">", 100000).orderBy("population")
```

👎 **Invalid**: Range filter and first `orderBy` on different fields

WEB	SWIFT	OBJECTIVE-C	ANDROID	JAVA	PYTHON	NODE.JS	GO

```
citiesRef.where("population", ">", 100000).orderBy("country")
```

Thanks!

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