App and Database Integration

Almost all good apps need a database

Device and Network Storage

- Two type of Device Storage
  - Local (Temporary Cache)
  - Database

Network Storage

- Database or Static files hosted on a server accessed via the network connection.
- Multiple Technology Solutions

Possible Solutions

- Requires a Scripting Language and Database
- SCRIPTING LANGUAGE
  - PHP
  - Python
  - node.js

Databases

- Relational
  - mySQL
  - postGIS
  - many others
- Document Based
  - mongoDB
  - rethinkDB
  - few others

Another option...

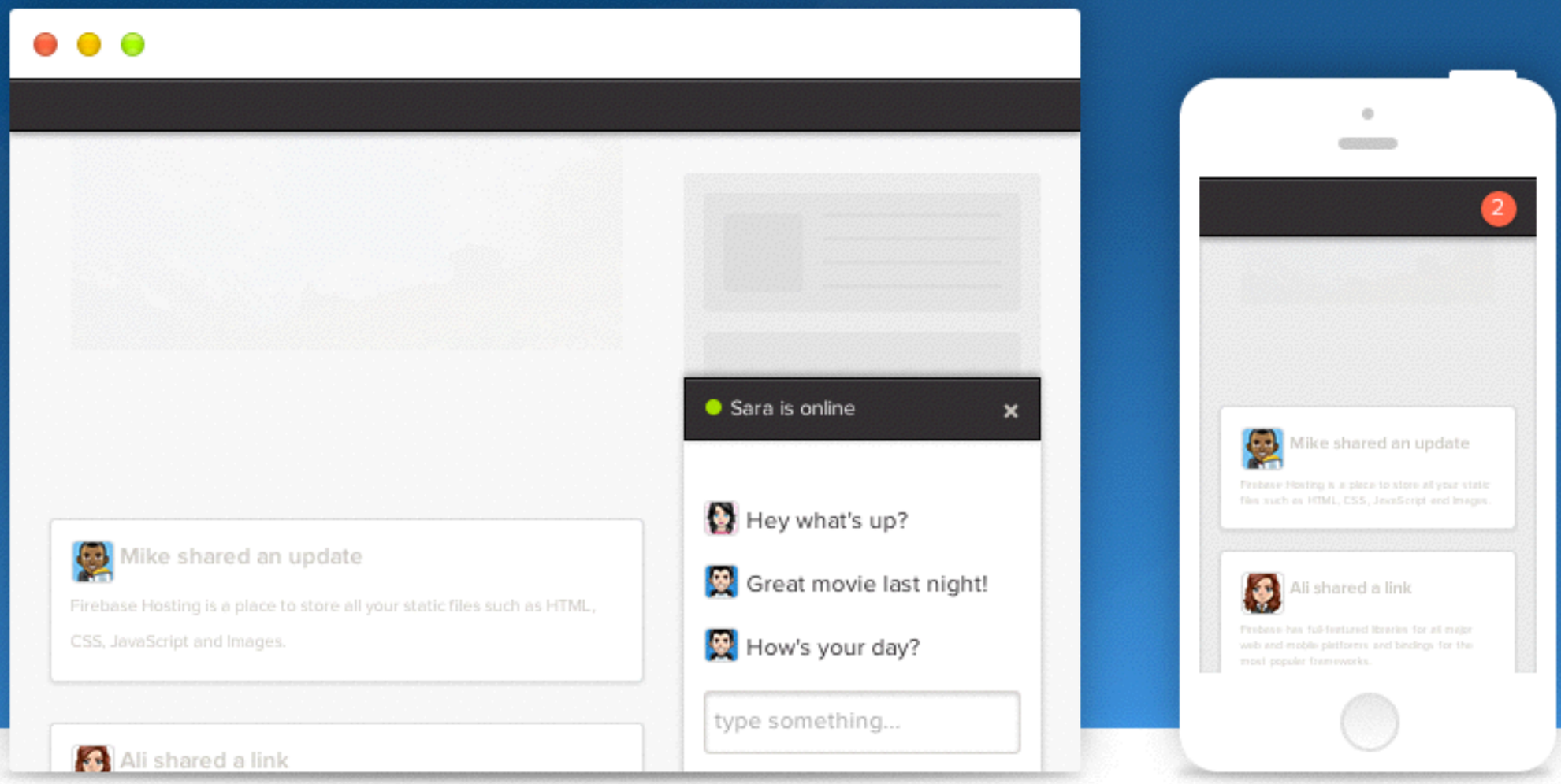
- Data Services
  - a hosted API to a database
  - Firebase

Firebase

OVERVIEW GETTING STARTED PRICING DOCS LOGIN SIGN UP

Build Realtime Apps

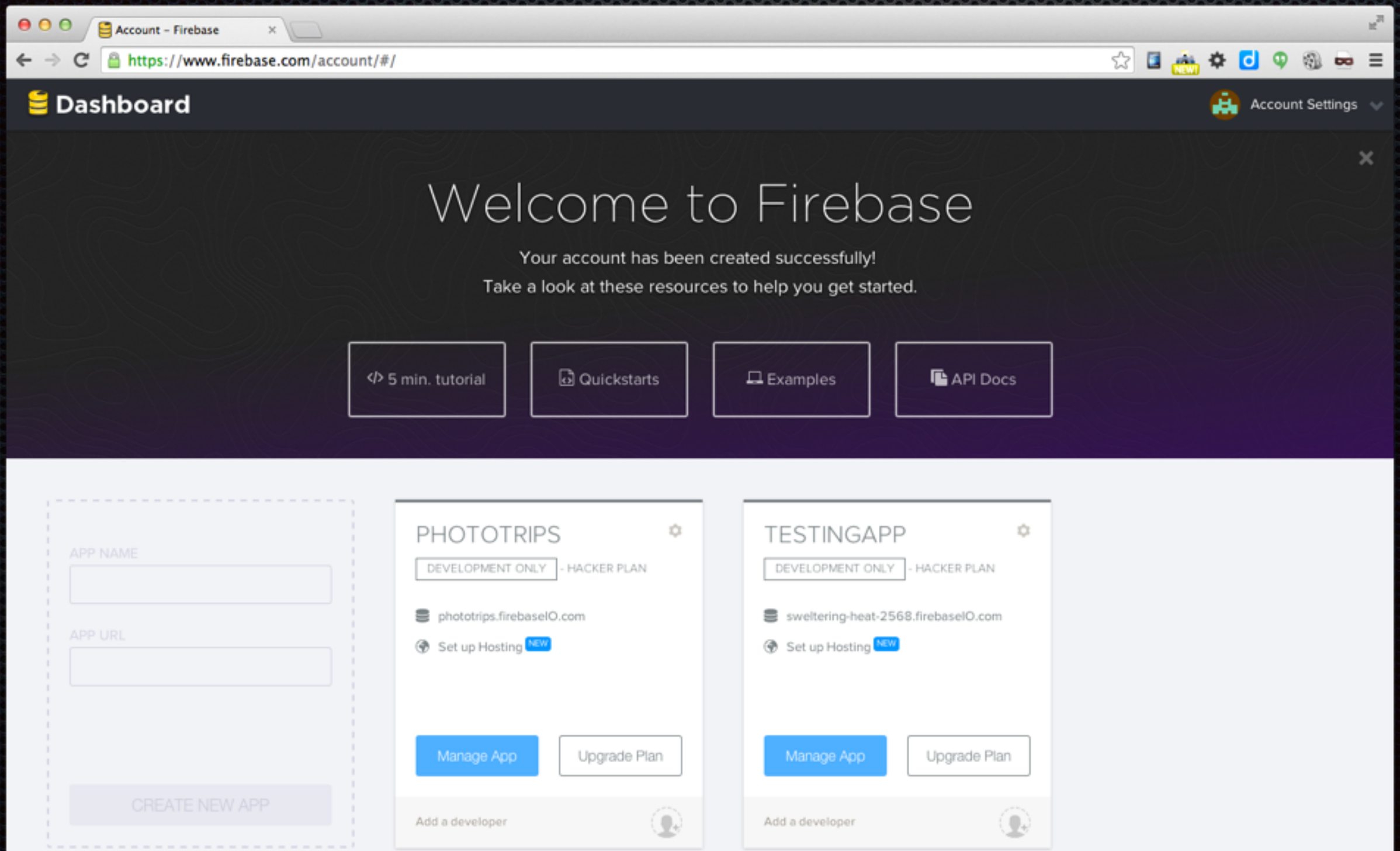
A powerful API to store and sync data in realtime.



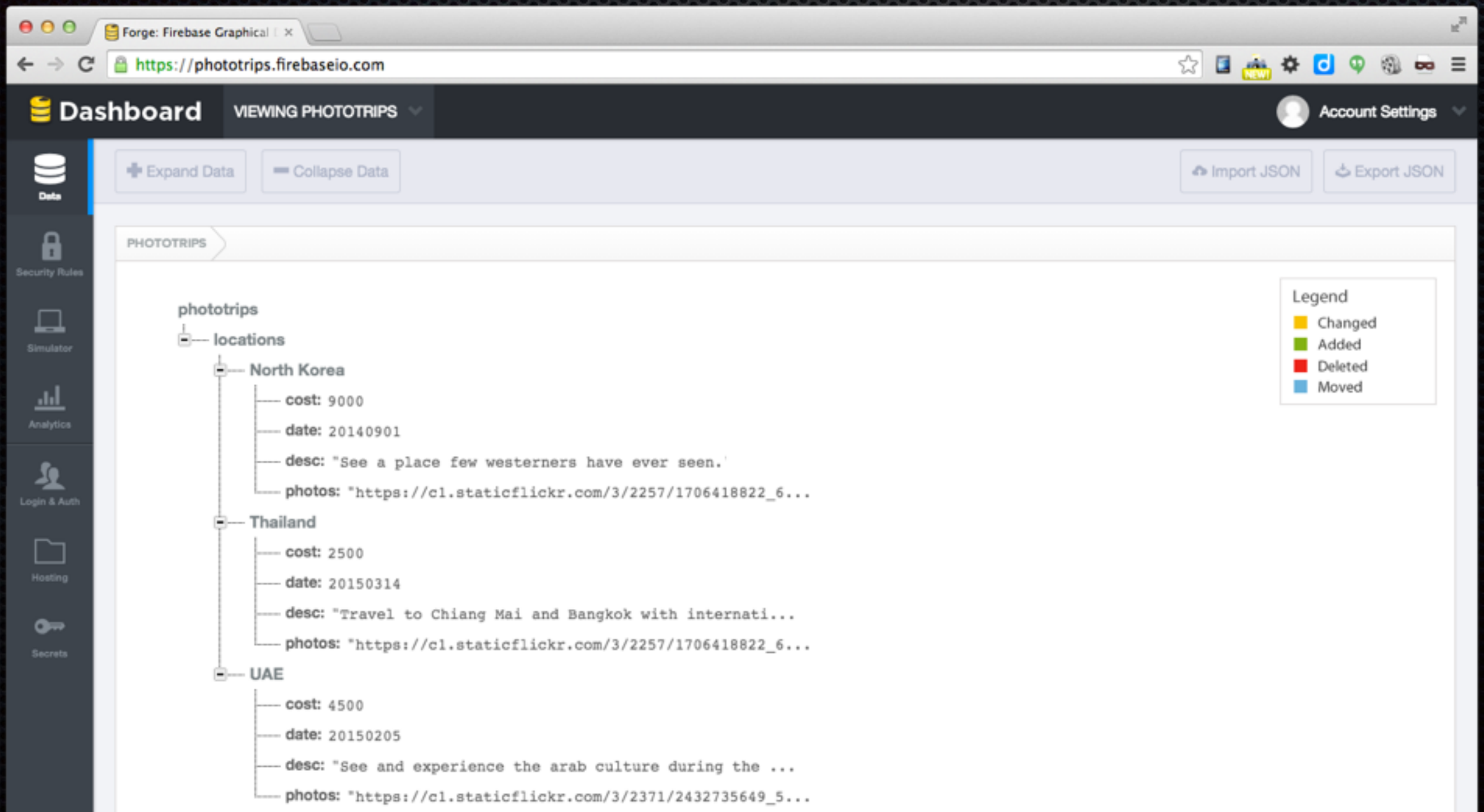
THE REALTIME APP PLATFORM

Store & Sync Data Instantly

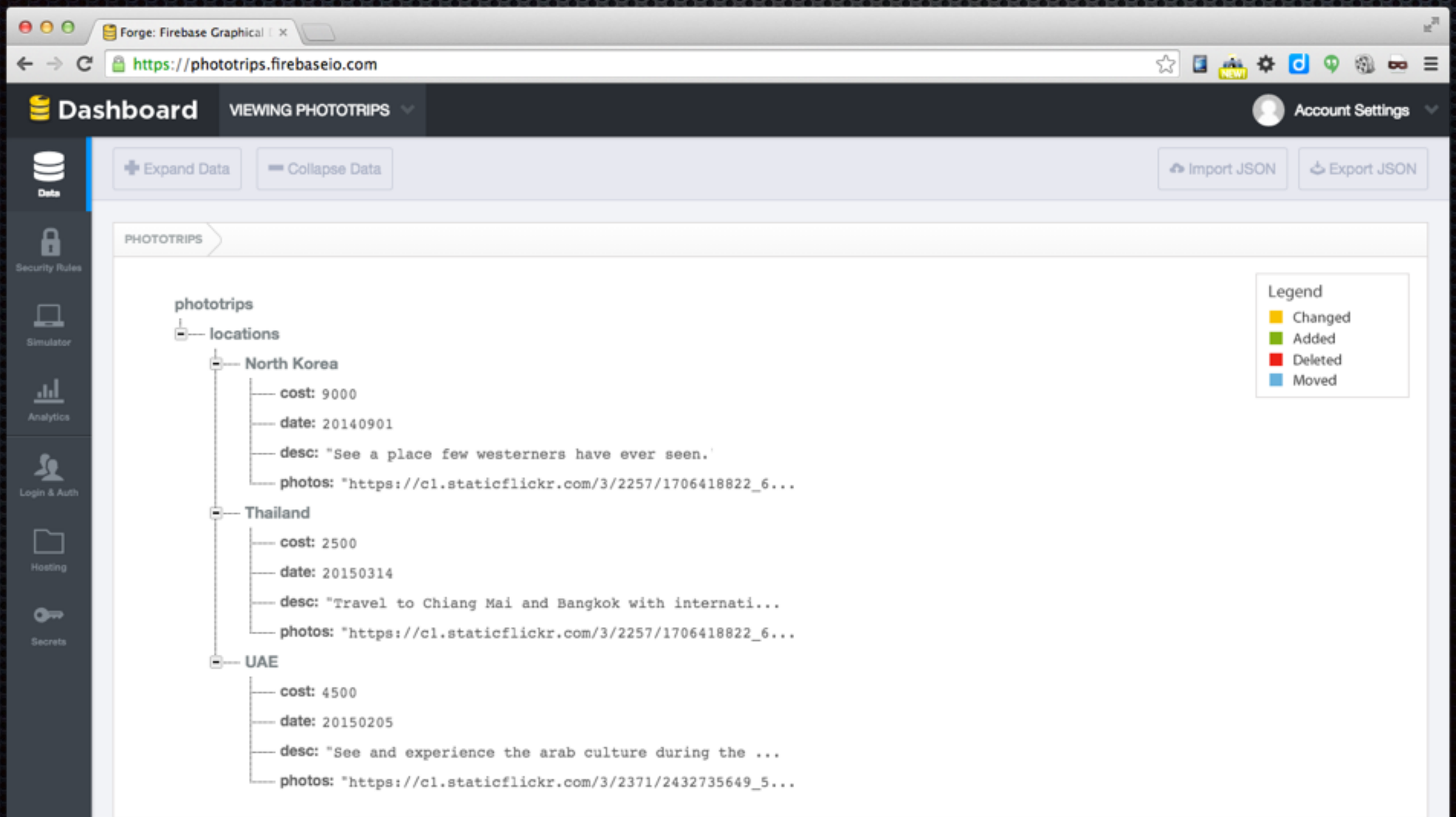
Signup and Create an App



The Data


Forge: Firebase Graphical
https://phototrips.firebaseio.com
Dashboard
VIEWING PHOTOTRIPS
Account Settings
Data
Security Rules
Simulator
Analytics
Login & Auth
Hosting
Secrets
Expand Data
Collapse Data
Import JSON
Export JSON
PHOTOTRIPS
phototrips
locations
North Korea
cost: 9000
date: 20140901
desc: "See a place few westerners have ever seen.
photos: "https://c1.staticflickr.com/3/2257/1706418822_6...
Thailand
cost: 2500
date: 20150314
desc: "Travel to Chiang Mai and Bangkok with internati...
photos: "https://c1.staticflickr.com/3/2257/1706418822_6...
UAE
cost: 4500
date: 20150205
desc: "See and experience the arab culture during the ...
photos: "https://c1.staticflickr.com/3/2371/2432735649_5...
Legend
Changed
Added
Deleted
Moved

The Data (manual and load json)



JavaScript Based.

- open index.html
- open app.js

```
24
25  function loadTrips(){
26          // Create our Firebase reference
27          var tripsToDisplay = 3;
28          var tripListRef = new Firebase('https://phototrips.firebaseio.com//locations');
29          var tripListView = tripListRef.limit(tripsToDisplay);
30
```

Data Connection API

```
25  function loadTrips(){
26          // Create our Firebase reference
27          var tripsToDisplay = 3;
28          var tripListRef = new Firebase('https://phototrips.firebaseio.com//locations');
29          var tripListView = tripListRef.limit(tripsToDisplay);
30
31          tripListRef.once('value', function(dataSnapshot) {
32                  var listItems = "";
33                  // store dataSnapshot for use in below examples.
34                  tripListView = dataSnapshot.val();
35                  console.log(tripListView);
36
```

SnapShot with Loop

```
31          tripListRef.once('value', function(dataSnapshot) {
32                  var listItems = "";
33                  // store dataSnapshot for use in below examples.
34                  tripListView = dataSnapshot.val();
35                  console.log(tripListView);
36
37
38                  $.each(tripListView, function(key, val) {
39                          var location = [];
40
41                          console.log('Key: ' + key + '  Val: ' + val)
42                          location.push(key);
43                          $.each(val, function(key, val) {
44                                  location.push(val);
45
46                          });
47
48
49
50
51
52                  });
53
54                  console.log(listItems);
55
56          });
```

Write some HTML to page

```
37
38          $.each(tripListView, function(key, val) {
39                  var location = [];
40
41                  console.log('Key: ' + key + '  Val: ' + val)
42                  location.push(key);
43                  $.each(val, function(key, val) {
44                          location.push(val);
45
46                  });
47
48
49                          listItems += '<li"><a href="#"><img src="imgs/places/thailand.jpg">'
50                          listItems += '<h2>' + location[0] + "</h2>";
51                          listItems += '<p>' + location[3] + '</p></a>'
52
53
54
55                  });
56
57                  console.log(listItems);
58                  $("#trip-list").html(listItems);
59                  $("#trip-list").listview("refresh");
60          });
61
```

It works! Dynamic App!

Test Query

```
74  function go() {
75    var searchTerm = prompt('Country?', 'Thailand');
76    checkIfUserExists(searchTerm);
77  }
78
```

Test if in data?

```
78  function go() {
79    var searchTerm = prompt('Country?', 'Thailand');
80    checkIfUserExists(searchTerm);
81  }
82
83  var DATA_LOCATION = 'https://phototrips.firebaseio.com//locations';
84
85  function termExistsCallback(searchTerm, exists) {
86    if (exists) {
87      alert('user ' + searchTerm + ' exists!');
88    } else {
89      alert('user ' + searchTerm + ' does not exist!');
90    }
91  }
92
93  // Tests to see if /users/<searchTerm> has any data.
94  function checkIfUserExists(searchTerm) {
95    var termRef = new Firebase(DATA_LOCATION);
96    termRef.child(searchTerm).once('value', function(snapshot) {
97      var exists = (snapshot.val() !== null);
98      console.log(exists);
99      termExistsCallback(searchTerm, exists);
100   });
101 }
102
```

Great job!

Now for your own learning…

Do Firebase Leaderboard tutorial

https://www.firebase.com/tutorial/#session/rtkdkdn77wt

Homework

- Plan and outline your data structure
- Input the starting data for your app into Firebase.
- Write a Firebase query to display all records on an html page just like the example in class.

Ways to Update the Data

4 ways

Ways to Save Data

set( )	Write or replace data to a **defined path**, like `messages/users/<username>`
update( )	Update some of the keys for a defined path without replacing all of the data
push( )	**Add to a list of data** in Firebase. Every time you call `push()` Firebase generates a unique ID, like `messages/users/<unique-user-id>/<username>`
transaction( )	Use our transactions feature when working with complex data that could be corrupted by concurrent updates

Set up Function

```
78  function updateCountry(){
79          var value = prompt('Change the cost to:', '5000');
80
81          var ref = new Firebase("https://phototrips.firebaseio.com//locations");
82          console.log(ref);
83
84  }
```

```
18  $( document ).ready(function() {
19          //for browser use only
20          console.log( "ready!" );
21          //function to populate menu
22          loadTrips();
23
24          updateCountry();
25
26  });
```

update()

update( )	Update some of the keys for a defined path without replacing all of the data

```
78  function updateCountry(){
79          var value = prompt('Change the cost to:', '5000');
80
81          var ref = new Firebase("https://phototrips.firebaseio.com//locations");
82          console.log(ref);
83          var countryRef = ref.child("Thailand");
84
85          countryRef.update({
86                  "cost" : value
87          });
88          console.log("done running updateCountry()")
89  }
90
```

push()

push()	**Add to a list of data** in Firebase. Every time you call `push()` Firebase generates a unique ID, like `messages/users/<unique-user-id>/<username>`

```
92  function postCountry(){
93          ref.push("USA");
94          var countryRef = ref.child("USA");
95          countryRef.push({
96                  cost: "0",
97                  date: "20140401",
98                  desc: "See your homeland!",
99                  photo: "https://c1.staticflickr.com/3/2371/2432735649_518d41a06
100         });
101
102
103 }
104
```

Same by different

```
function postCountry(){
        //ref.push("USA");
        //var countryRef = ref.child("USA");
        ref.push({
                "USA":{
                cost: "0",
                date: "20140401",
                desc: "See your homeland!",
                photo: "https://c1.staticflickr.com/3/2371/2432735649_518d41a0
                }
        });


}
```

Another way...

```
91  function postCountry(){
92          //ref.push("USA");
93          //var countryRef = ref.child("USA");
94          ref.push({
95                  name: "USA",
96                  cost: "0",
97                  date: "20140401",
98                  desc: "See your homeland!",
99                  photo: "https://c1.staticflickr.com/3/2371/2432735649_518d41a06
100
101         });
102
103
104 }
105
```

set()

set( )	Write or replace data to a **defined path**, like `messages/users/<username>`

```
105  function setCountry(){
106
107          ref.set({
108                  "USA":{
109                  cost: "0",
110                  date: "20140401",
111                  desc: "See your homeland!",
112                  photo: "https://c1.staticflickr.com/3/2371/2432735649_518d41a06
113                  }
114
115          });
116
117
118  }
119
```

Homework

- Working on your app project, connect some element to your database.
- After Fall Break you will have the entire app connected to a database.