

An Introduction to JavaScript to Future Web Developers

Yixuan ‘Emily’ Hu

2023 ESRI USER CONFERENCE

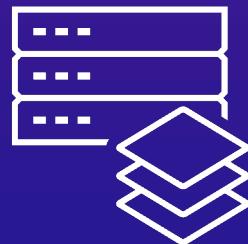


Overview



Audience

- New to JavaScript
- Solo developer
- Web AppBuilder / Experience Builder developers

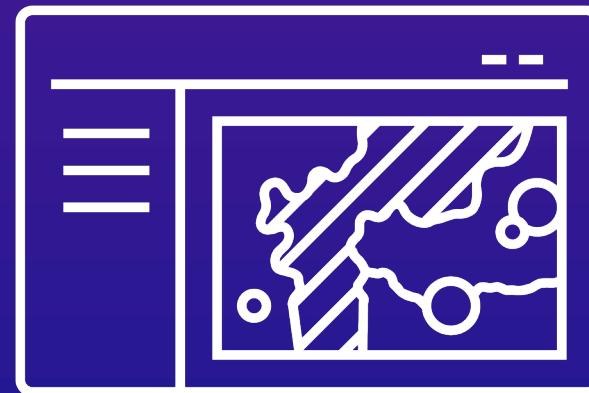


Web Application Architecture



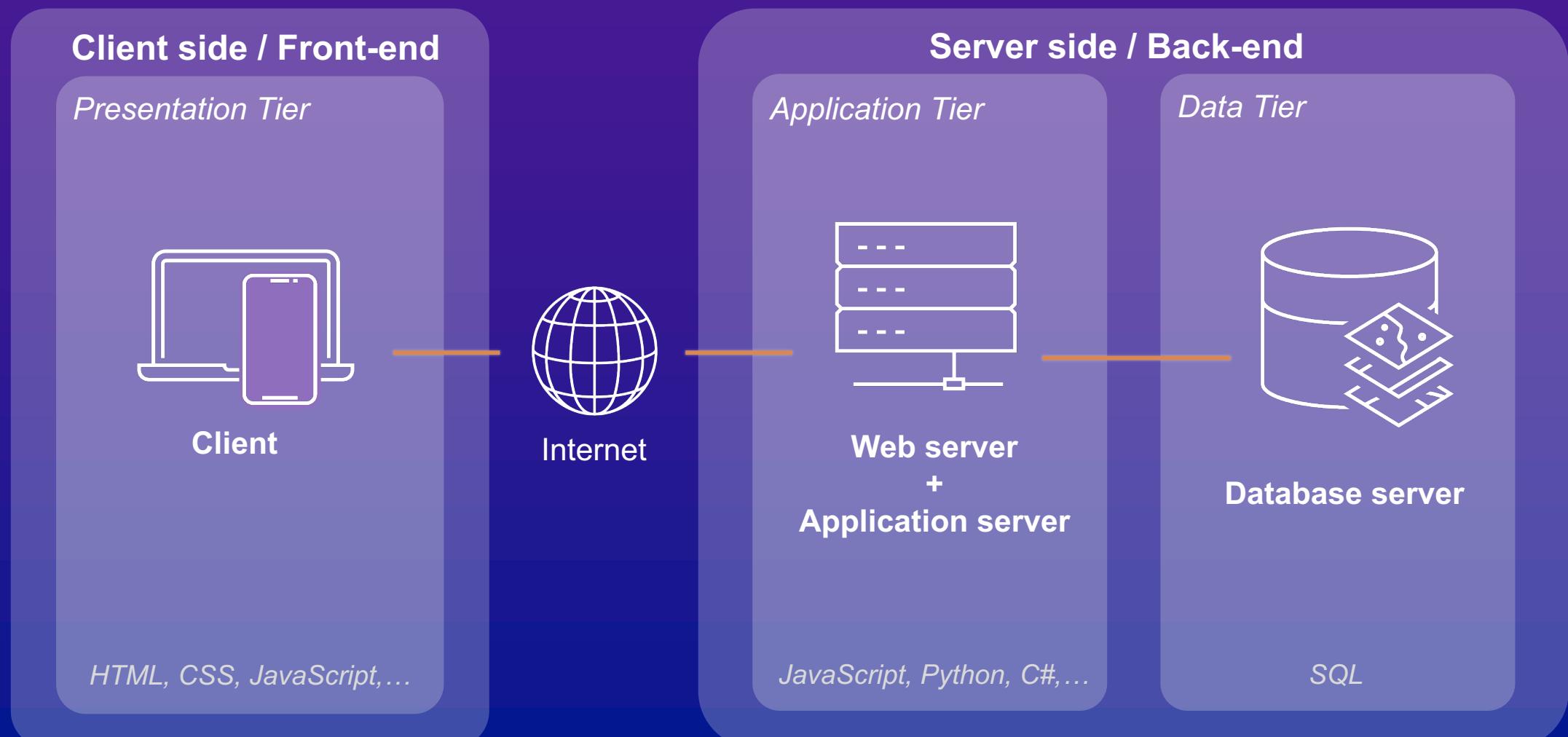
Building the Presentation

- Consuming JavaScript



Let's build an App together!

Common Web Application Architecture



*This is a very rough explanation

Building the Presentation

Vanilla JS



Pro:

- Easier to learn
- Better for simple projects
- Better performance for simple applications
- Lighter code base

Con:

- Not that scalable
- Harder for interactive applications
- Not as performative for complicated projects

Frameworks



Pro:

- Scalable
- Better for complicated / interactive projects
- Better performance for complex applications
- Easier to setup for developers

Con:

- Harder to learn
- Heavier code base
- Not as performative for simple projects

Building the Presentation

Front-end resources

- Endless libraries / packages / APIs
 - data engineering, animation, charts, ..., and maps!
- Design systems



Bootstrap



Carbon



Material Design



Calcite

- AMD vs ES modules

`require()`

`import`

Let's build an App!

San Diego Walk Guide

The map displays a central area of San Diego, California, with a large cyan polygon indicating the 5-minute walking radius from a central point. Numerous colored dots represent various points of interest (POIs) across the city grid. A legend titled "San Diego Places" provides a key for these symbols.

San Diego Walk Guide

Click somewhere in the map to query POIs within 5-min walking distance.

STAR BAR
423 E ST, San Diego - Liquor

PATRICKS GASLAMP PUB
428 F ST, San Diego - Liquor

BELL MARKER THE
602 BROADWAY, San Diego - Liquor

Christian Science Reading Room
522 C St, San Diego - Religious Structure - Christian

Aspen Leaf Preschool & Nursery
880 Front St, San Diego - Child Day Care Center / Preschool

ONYX ROOM
852 5TH AVE, San Diego - Liquor

CALLAWAY VINEYARD & WINERY
517 4TH AVE, San Diego - Liquor

DOUBLE DEUCE
528-530 F ST, San Diego - Liquor

TIPSY CROW THE
770 5TH AVE, San Diego - Liquor

RESIDENT BREWING COMPANY
411 C ST, San Diego - Liquor

267.75 MP
null, San Diego - Road Mile Marker

LOFTS APTS
null, San Diego - Residential Structure

LOFT WEST APTS
null, San Diego - Residential Structure

G St Mini Park
302 G ST, San Diego - Park

Horton Plaza Park
325 Broadway Ave, San Diego - Park

King-Chavez Community High
1010 2nd Ave, San Diego - School

San Diego Places

- Residential Structure
- Road Mile Marker
- Religious Structure - Christian
- School
- Liquor
- Child Day Care Center / Preschool
- Park
- TopographicFeature
- Gas
- Canal

Esri Community Maps Contributors: San Diego Unified Port District, SanGIS, California State Parks. ©OpenStreetMap: Microsoft, Esri, HERE, Garmin, Foursquare, SafeGraph, GeoTechnologies, Inc., METI/

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ArcGIS Maps SDK for JavaScript
Calcite Design System
ArcGIS Online



HTML

CSS

JavaScript

Asynchronous programming

Or simply “async”

- Start a potentially long-running task and still be responsive to other events
 - vs having to wait until the task is finished
 - common when loading data or doing complicated calculations (e.g. network service, querying, ...)
- Promise
 - a promise is a representation of a future value returned from an asynchronous task
- Async / await
 - promises can be used within an `async`, or `asynchronous`, function that allows expressions to run synchronously without blocking the execution of other code
 - placing the `async` keyword before a function definition, and then setting the `await` keyword on an expression that returns a promise

Asynchronous programming

Or simply “a”

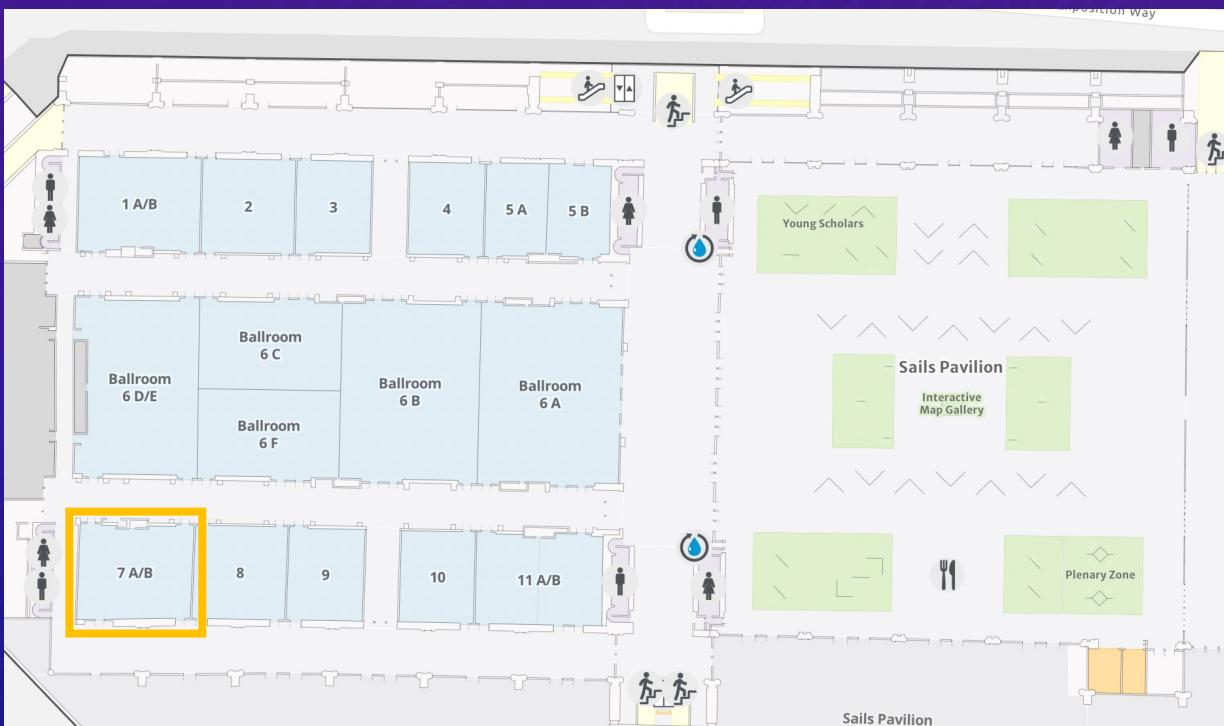
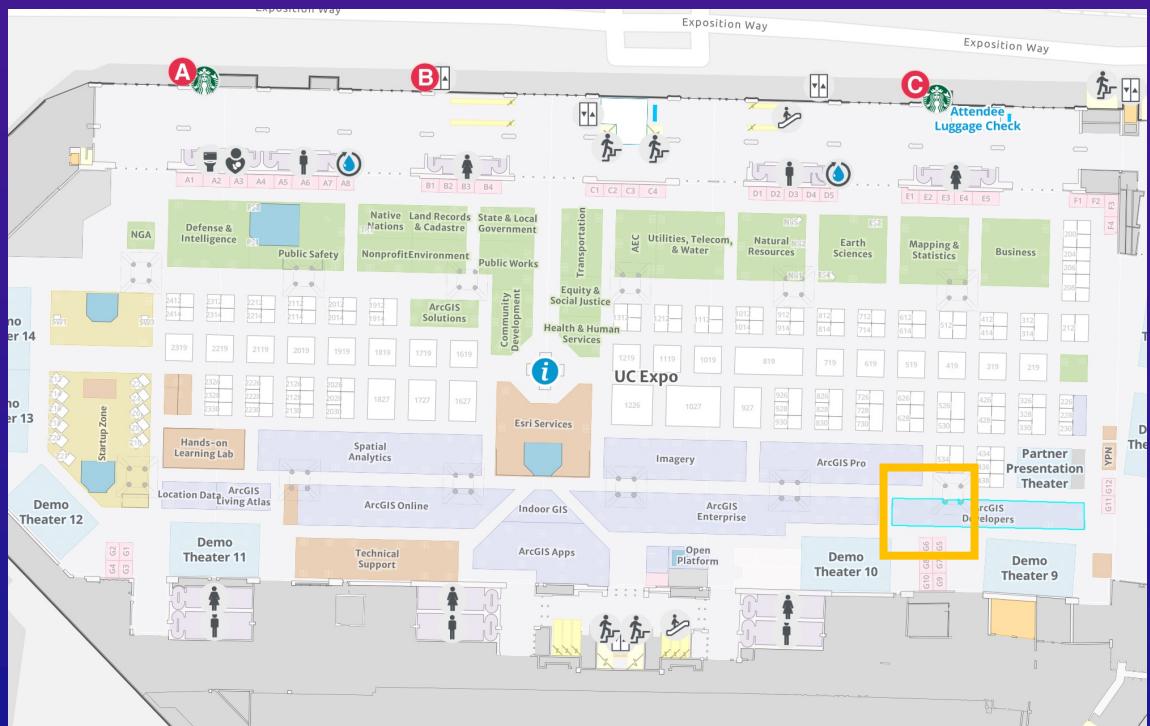
- Start a promise
 - vs having a function
 - common pattern
- Promise
 - a promise
- Async / await
 - promises
 - synchronous
 - placing expressions



```
async function findServiceArea(location, cutoff, url) {  
  
    const taskParameters = new ServiceAreaParams({  
        // ...  
    });  
  
    const { serviceAreaPolygons } = await serviceArea.solve(url, taskParameters);  
  
    serviceAreaPolygons.features.map((serviceAreaFeature) => {  
        const query = {  
            // ...  
        };  
  
        placesLayer.queryFeatures(query).then((response) => {  
            const attributes = response.features.map(f => f.attributes);  
        });  
    })  
}
```

Expo / Developer Day

Developer Day – Starting Wed 8:30AM



Other JavaScript Presentations

Session	Day/Time	Location
An Introduction to JavaScript for Future Web Developers	Tuesday, 1:00PM – 1:45PM	Expo Demo Theater 2
Web Editing: What's New and The Road Ahead	Wednesday, 8:30AM – 9:30AM Friday, 9:00AM – 10:00AM	Room 8 (Wednesday) Room 1 AB (Friday)
Web Development Strategies	Wednesday, 1:00PM – 2:00PM	Room 7 AB
ArcGIS Maps SDK for JavaScript: An Introduction	Wednesday, 4:00PM - 5:00PM	Room 7 AB
ArcGIS Maps SDK for JavaScript: Programming Patterns and API Fundamentals	Thursday, 8:30AM – 9:30AM	Room 14 B
ArcGIS Maps SDK for JavaScript: Data Visualization	Thursday, 10:00AM – 11:00AM	Room 2
ArcGIS Maps SDK for JavaScript: Building 3D Web Apps	Thursday, 11:30AM – 12:15PM	Expo Demo Theater 13
Building Web Apps with Calcite Design System	Thursday, 1:00PM – 2:00PM	Room 14 B
ArcGIS Maps SDK for JavaScript: What's New and the Road Ahead	Thursday, 2:30PM – 3:30PM	Room 1 AB

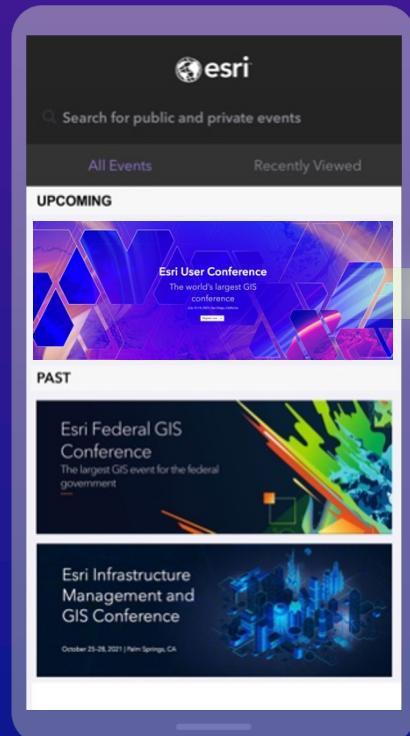
References

And if you want to learn more...

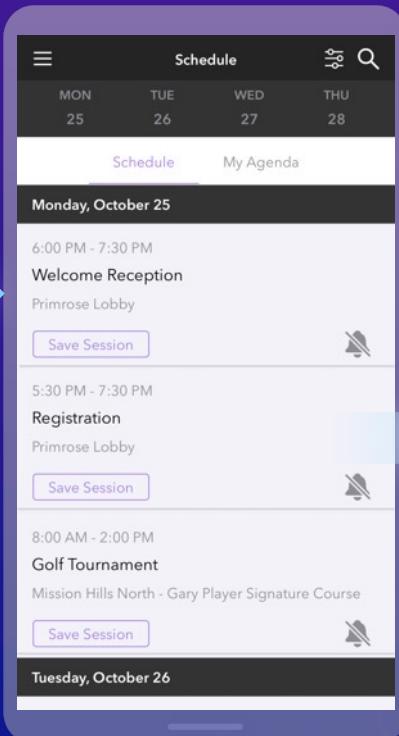
- [Web Application Architecture in 2023: Moving in the Right Direction](#) - *Yuriii Luchaninov; mobidev*
- [Understanding client-side JavaScript frameworks](#) - *Mozilla*
- [What is JavaScript Framework?](#) - *Rory Toal; Code Institute*
- [Vanilla JavaScript Vs. JavaScript Frameworks: Ten Top Differences](#) - *Nwakor Chidinma Favour; Open Replay*
- [Introducing asynchronous JavaScript](#) - *Mozilla*
- [async function](#) - *Mozilla*
- [await](#) - *Mozilla*

Please Share Your Feedback in the App

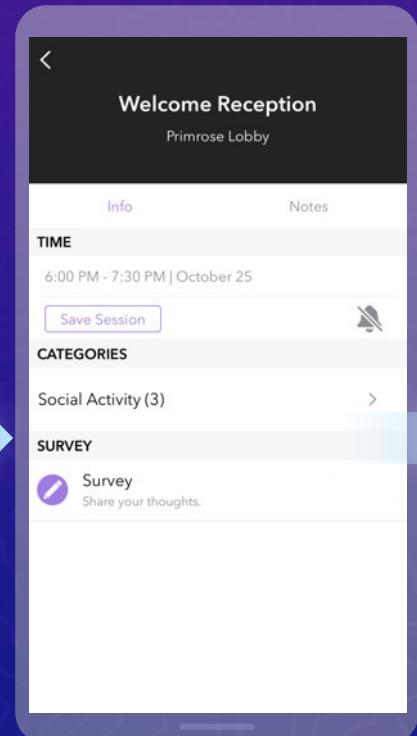
Download the Esri Events app and find your event



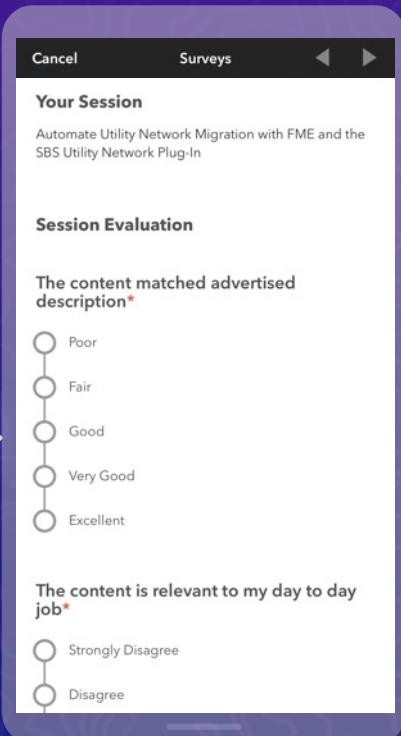
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