ArcGIS API for JavaScript
Tips and Tricks for Debugging Apps

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Agenda

Tools

Patterns

Examples
Problem? First place to look...

Browser developer console
Tools For Finding Problems

• Browser debugger tools – Chrome Dev tools rock!
• Debugging Proxies – Charles, Fiddler
• Unit tests
• Web server log files
Minimize Code Problems

- Consider migrating to ES6 or ES7 (transpile)
- Or, consider TypeScript
- Code quality tools – Eslint, jslint, jshint
- Unit test driven development (never too late!)
But the console doesn’t show any errors??
Key Areas for problems

• Your own code
• ArcGIS JavaScript API
• REST API
• Third party libraries
• User Interface (HTML, CSS, click events)
Locating the break

• Reading the error message (if there is one)
• Last known location where code worked
• Setting break points
• Walking thru break points (a.k.a bracketing)
Code quality tools

- Use a linter
  - **ESLint**
  - JSLint

- Available:
  - As a plugin in your IDE
  - Or inside continuous integration
Additional tools

• Continuous Integration
  – Automate tasks using Grunt, Gulp, etc.
  – Run linter, beautify, minify your code
  – And of course, unit test your code

• Esri TypeScript

[Image of Grunt and Gulp logos]
ReferenceError: require is not defined
TypeError: ___ is not a constructor
Missing module and/or alias
Failed to load layer

```
Failed to load layer (title: 'undefined', id: 'undefined')

`d`
```
```json
  details: undefined
  message: "CSV is empty"
  name: "CSVSource"
```
```
_d_.consoleWriter @ init.js:308
_d_.log @ init.js:306
d_.error @ init.js:306
```
FeatureLayer results undefined

Marriage in NY by Zip

undefined (undefined)
undefined (undefined)
undefined (undefined)
undefined (undefined)
undefined (undefined)
undefined (undefined)
undefined (undefined)
undefined (undefined)
Android debugging - Chrome

<table>
<thead>
<tr>
<th>Devices</th>
<th>Chrome</th>
<th>chrome://inspect/#devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discover USB devices</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Discover network targets</td>
<td>✔</td>
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<tr>
<td>Open dedicated DevTools</td>
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<tr>
<td>for Node</td>
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Chrome

- cordova-plugin-advanced-geolocation/README.md at https://github.com/indygup/cordova-plugin-advanced
- Vector tiles 4.2 http://output.jsbin.com/mekeqiv
iOS debugging - Safari
Disable cache while debugging

Example using Chrome:
Set code breakpoints

- Manually via the browser
- In-line via `debugger` statement
- Make good use of `console.log()`
Developer Tools – Network Tab

HTTP Request Headers
HTTP Response data
Statistics (times and size of data payload)
HTTP status codes

- **200** – Okay
- **302** – Redirect
- **403** – Forbidden
- **404** – Not Found
- **500** – Internal Server Error
ArcGIS REST API Documentation

Attribute/Value pairs
JSON Output examples

REST API Web Site
Cross domain requests: CORS and proxy page

• Cross-Origin Resource Sharing (CORS)
  – Implemented on both server side and client side

• **Proxy page**
  – Allow cross domain request
  – Manage security (tokens)
  – Go over the GET URL limit length
Localhost OAuth 400 error

Error: Invalid redirect_uri

Error: 400
Localhost OAuth 400 error
Localhost OAuth 400 error

Redirect URI – valid patterns...

http://localhost/myDirectory/

http://127.0.0.1/myDirectory/
How to get help

• Forums (search or ask a question)
• Internet – GIS Stack Exchange, StackOverflow, etc
• Esri Tech support
How to get help

• Expected behavior
• Actual behavior
• Console logs are essential
• Steps to reproduce problem
• Browser version and Operating System
• Code snippets, JSBin, etc
Wrap-up!

Develop strong troubleshooting patterns
Little bit of sleuthing == productivity boost
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