1clickBOM

A browser extension to fill your electronic component shopping carts.

better slides available at: 1clickBOM.com/fosdem15
notes available at: 1clickBOM.com/fosdem15/notes.html
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- Electronic design engineer and software developer
- C, C++, Python, Javascript, Haskell
- PCB Layout using KiCad
- Work as consultant
1clickBOM

A browser extension to fill your electronic component shopping carts.
1. What does it do?

2. How does it do it?

3. What might it do in the future?
What does it do?
video available here
You do not have any products in your basket

Could not add 1 out of 1 line to Newark cart:
item: IC3 | 1 | 74C8103
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C1-C6</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>C7,C8,C9</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>C10,C11</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>I/O</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>IC1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>IC2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>IC3</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>J1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>L1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>LED1,LED2,LED2A,LED2,LED3A,LED2,LED4A,LED4A</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>11</td>
<td>R1,R5</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>
Features

- Chrome extension (Firefox is coming)
- Supports
  - Digikey
  - Mouser
  - Farnell/Element14
  - Newark
  - RS
- Over 100 locations
- CPAL license
How does it do it?

- Parsing tab-separated-values
- Mimicking http requests
- Parsing the HTML responses and using quick and dirty indicators to determine success or failure
A little note on HTTP

- GET or POST (or others)
- parameters are sent along with the request
- returns status code (404, 403, 302) and response (usually HTML)
- cookies to persist data
Architecture

- Coffeescript
- Object Oriented
- Automated Functional Tests
- Simple GUI
Coffeescript
Pros

- Terse but clear syntax

Coffeescript:

```coffeescript
add component for component in ['resistor', 'capacitor', 'diode']
```

Javascript:

```javascript
var components = ['resistor', 'capacitor', 'diode'];
for (var i = 0, len = components.length; i < len; i++) {
    component = components[i];
    add(component);
}
```
Classes

class Animal
  constructor: (@name) ->
  move: (meters) ->
    console.log @name + " moved #{meters}m."

class Snake extends Animal
  move: ->
    console.log "Slithering..."
    super 5
Cons

- It's not Javascript
  - Another level of abstraction
  - Need to compile
    - Can be partially solved with continuous compilation
  - Errors in browser report JS line number
    - Can be solved with source-maps
Object Oriented
```javascript
class RetailerInterface
    constructor: (name, @country, data_path) ->
        data = get_local(data_path)
        @site = data.sites[@country]

        ...
        refreshCartTabs: () ->
            ...
        refreshSiteTabs: () ->
            ...
        openCartTab: () ->
            ...

class Farnell extends RetailerInterface
    constructor: (country) ->
        super("Farnell", country, "/data/farnell.json")

        ...
        clearCart: () ->
            ...
        addItem: (items) ->
            ...
```
Works well in some ways

```javascript
class Farnell extends RetailerInterface
    constructor: (country) ->
        ...
    #if there is a "pf_custom_js" element then this site is like
    #Newark's and we get all our methods from Newark
    if dom.getElementById("pf_custom_js")?
        for name, method of Newark::
            this[name] = method
        ...
```
class BomManager
    constructor: () ->
        for retailer in [Digikay, Farnell, Mouser, RS, Newark]
            @interfaces[retailer.name] = new retailer country
... 

bom_manager = new BomManager

a = new Digikay "UK"
b = new Digikay "US"
Automated Functional Tests
Uses QUnit framework

<table>
<thead>
<tr>
<th>Test Case</th>
<th>Details</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. unit: Digikey: Constructs for all countries (0, 109, 109)</td>
<td>Rerun</td>
<td></td>
</tr>
<tr>
<td>2. unit: Farnell: Constructs for all countries (0, 109, 109)</td>
<td>Rerun</td>
<td></td>
</tr>
<tr>
<td>3. unit: Mouser: Constructs for all countries (0, 109, 109)</td>
<td>Rerun</td>
<td></td>
</tr>
<tr>
<td>4. unit: RS: Constructs for all countries (0, 109, 109)</td>
<td>Rerun</td>
<td></td>
</tr>
<tr>
<td>5. unit: Newark: Constructs for all countries (0, 109, 109)</td>
<td>Rerun</td>
<td></td>
</tr>
<tr>
<td>6. unit: InvalidCountryError Exists (0, 1, 1)</td>
<td>Rerun</td>
<td></td>
</tr>
<tr>
<td>7. unit: Digikey: InvalidCountryError Thrown (0, 1, 1)</td>
<td>Rerun</td>
<td></td>
</tr>
<tr>
<td>8. unit: Farnell: InvalidCountryError Thrown (0, 1, 1)</td>
<td>Rerun</td>
<td></td>
</tr>
<tr>
<td>9. unit: Mouser: InvalidCountryError Thrown (0, 1, 1)</td>
<td>Rerun</td>
<td></td>
</tr>
<tr>
<td>10. unit: RS: InvalidCountryError Thrown (0, 1, 1)</td>
<td>Rerun</td>
<td></td>
</tr>
<tr>
<td>11. unit: Newark: InvalidCountryError Thrown (0, 1, 1)</td>
<td>Rerun</td>
<td></td>
</tr>
<tr>
<td>12. unit: Parser: Catches negative quantities (0, 2, 2)</td>
<td>Rerun</td>
<td></td>
</tr>
</tbody>
</table>
Tests are heavily dependent on network

```java
class RetailerInterface

    constructor: (name, @country, data_path) ->
        data = get_local(data_path)
        @site = data.sites[@country]

    refreshCartTabs: () ->
        ...

    refreshSiteTabs: () ->
        ...

    openCartTab: () ->
        ...
```

```
Network Error Occurred
0
Trying to process parts from Farnell
```

```
Network Error Occurred
403
```
Simple GUI

- Just a webpage
- No UI libraries
- Chrome features
What might it do in the future?
Status-Quo

- Chrome only
- About 200 weekly users
Upcoming Features

- Firefox support
- Allow multiple retailers per item & set preferred retailers in extension
  - Essentially allows for order-a-kit button on your site
- Find the same components from different retailer
- Minimize order cost
Questions?

- 1clickBOM.com
- monostable.co.uk
- @kaspar_e on Twitter