Advanced Techniques in JavaScript and jQuery

Using jQuery Deferred Objects

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jQuery Deferred Object

- **jQuery provides an alternate to callbacks for asynchronous processing – Deferred**

- **Deferreds allow for**

  - Grouping multiple asynchronous processes

  - Attaching multiple success and failure handlers

  - Postpone logic flow until all asynchronous processes complete – in any order

  - Integration of AJAX and custom functions into asynchronous processing

jQuery Deferred Processing

- **Implements the JavaScript promise**
- **AJAX calls**
  - Open a connection to an external resource
  - Begin transfer of the resource
  - Upon completion, execute success or failure callbacks
  - Resolve or reject a promise
- **Many developers just pass success or failure callback functions**
- **The returned promise is mostly ignored**

Dynamic Content – Using Deferred

- **jQuery Deferred**
    - Use "get" method instead of "load"
    - "get" uses Deferred, "load" does not

- **When / Then pattern**
    - Can include as many gets as desired
    - Then processing only occurs once all When methods complete
    - Extensible, but readability could be improved

Dynamic Content – loadSection()

- **Create a function to load content**
  - Load specified URL into specified element
  - Return the results of a "get" method
  - Needs two parameters – for now

Dynamic Content – Negative Testing

- **Negative testing**
  - Check bad URL
  - Check bad section element
  - Alternate syntax for When / Then

Deferred Methods

- **Some methods available on deferred objects**
  - Return deferred object for a process flow
    - when
    - promise
  - Attach handler functions to deferred object
    - then
    - done
    - fail
    - progress
    - always
  - Change state of deferred object
    - resolve
    - reject

Static Content vs Dynamic Content

- **Dynamic pages vs static pages**
    - Scripts execute on loaded page
    - Loaded page also loads embedded elements
    - Loaded page may wait for user interaction

Creating a Deferred Object

- **A self-managed deferred object is useful when**
  - Writing long-running processes
  - Loading content that contains embedded content
  - Wrapping a process flow into a single process

- **Current state of affairs**
  - Proceed button enabled before dynamic content is loaded
  - Meaningful error messages
  - Only one error message per process flow

Using Deferred Objects

- Use a Deferred object in a function we create

- Notify when dynamic content is loaded

- Resolve or Reject deferred object as appropriate

- Combining deferred objects with custom events give maximum flexibility in process control

- Functions that don't return a deferred object are resolved immediately – when embedded in a WHEN block

- An embedded deferred object that is rejected will cause the containing deferred object to be rejected, also

- Negative testing is very important

Summary

- Deferred objects enclose asynchronous processes into a single process flow
- Order of completion is not important
- Deferred objects can be used in our own functions
- Return a "promise" instead of a full deferred object
- Attach handlers with "done", "fail", and "always"
- "then" is a shortcut method for attaching handlers
- Functions that don't return a Deferred object are considered resolved immediately

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