

Mobile Application Programming

Server Interaction

Server Interaction

- ✦ **Request** a resource using HTTP and a URL
- ✦ **Wait** for response data to come back from the server
- ✦ **Scrub** the data
 - ✦ Remove superfluous parts
 - ✦ Validate the data
- ✦ **Present** the data to the user



Request and Wait

NSString (NSData, NSArray, NSDictionary)

```
var s: NSString = NSString(contentsOfURL: url,  
    encoding: NSUTF8StringEncoding,  
    error: nil)
```

NSURLConnection

```
var data: NSData =  
    NSURLConnection.sendSynchronousRequest(request,  
        returningResponse: nil,  
        error: nil)
```


Scrub

Flat Data

HTML



IMG_0274.PNG - Data		
Len: 00011939	Type/Creator: /	Sel: 00000000:00000000 / 00000000
00000000:	89 50 4E 47 00 0A 1A 0A 00 00 00 0D 49 48 44 52	.PNG.....IHDR
00000010:	00 00 01 40 00 00 01 E0 08 06 00 00 00 04 8C B4	...@.....
00000020:	44 00 00 20 00 49 44 41 54 78 01 EC 7D 05 7C 1D	0...IDATx..}.
00000030:	55 FA F6 93 E4 C6 DD DD 9A B4 A9 2B 35 DA 42 A1	U.....+5.B.
00000040:	B4 40 A1 B8 B3 8B 2C 0B 7F 58 64 B1 0F 5F 16 59	.@.....Xd....Y
00000050:	6C F1 C5 DD A1 C5 4B A1 D4 A8 50 4A DD 3D A9 C5	l.....K...PJ.=.
00000060:	DD 5D EF F7 3E E7 66 6E 26 C9 8D B5 97 36 29 F3	.]...}.fn.....6).
00000070:	E6 77 33 76 F4 9D 99 E7 BC 36 E7 38 FC E3 96 5B	.w3v.....6.8...[
00000080:	CD 37 DD 72 1B 22 A3 A3 E1 E0 E0 00 83 0C 0E 18	.7.r.....zJ..."
00000090:	1C 30 38 70 BC 73 20 23 2D 0D 6F BC FA 3F 38 EC	.08p.s #-..o..?8.
000000A0:	DC 8B DF 1C 16 15 01 B3 D9 6C 00 E0 F1 7E D7 8D	l.....
000000B0:	FE 19 1C 30 38 60 E5 40 4E 46 16 1C F2 CB AB CC	...08`.BNF.....
000000C0:	3C 63 00 A0 95 2F C6 8E C1 01 83 03 7F 10 07 E6	<C.../.....
000000D0:	CF FD 1E 33 66 9E 05 93 B3 F3 1F 54 43 CF 8A 35	...3f.....TC..5
000000E0:	35 35 36 9A 1C 06 00 F6 8C 71 46 EA 3F 9E 03 25	556.....qF.?.%
000000F0:	25 25 30 37 59 9E 4F 06 E6 E2 EA 0A 4F 4F CF 56	%07Y.0.....00.Y
00000100:	15 57 56 56 A2 AE B6 56 9D F3 F0 F0 80 AB 9B 9B	.WWW...V.....
00000110:	F5 7A 49 71 B1 1A D8 79 C2 D7 CF 0F 8E 8E 8E D6	.z1q...y.....
00000120:	6B C6 CE B1 E1 C0 DE DD 38 51 90 97 8B F3 2F B9	k.....;Q...../.
00000130:	1C 9E 5E 5E C7 A6 11 BA 5A 40 4D 4D 8D EA D0 5E	..^.....ZMMM..^
00000140:	00 18 73 FD 5E A0 51 84 4A 79 70 D3 3E 1C AC AB	..s.^..Q.Jyp>...
00000150:	AA 6F EC EE 4C 2F C2 8A 6D 05 D8 B3 BF 06 59 F9	.o..L/.m.....Y.
00000160:	0E 48 CF B3 B4 3B 3A 0A 88 94 5F 52 3F 57 9C 3C	.H...;....R?W.<
00000170:	3C 08 43 A2 03 50 DF D8 08 67 27 A7 BE D1 B1 C3	<.C..P...g'.....
00000180:	6C E5 07 EF BE 83 17 9E 70 06 AF BE F5 9E 4E 9E	l.....;.....N.
00000190:	00 DD B4 63 C7 A2 7D D5 E1 F1 47 1E C6 8A 65 CB 50	zJ.....G...e.P.
000001A0:	56 5A 8A 11 A3 46 E1 FE 7F 3D 8C A4 81 83 54 9E	VZ...F.....T.
000001B0:	03 BF F7 E1 D1 7F 3D 84 6D 5B B6 C0 43 40 EC F4	=m[...C0..
000001C0:	33 67 E2 AE 7B EF 68 07 68 FA 0A 4E 99 34 1E 59	3g...{.k.h..N.4.Y
000001D0:	99 99 D6 53 04 B0 71 13 26 E2 AC 59 E7 E0 DA BF	...S..q.&..Y.....
000001E0:	5F 0F 27 E1 FD 3D 77 DC 86 AF BF 9C A3 D2 DC 70	...!...=w.....p
000001F0:	D3 3F F0 E8 13 4F A9 7D B6 61 50 42 9C 3C 86 16	.?...0..}.qPB.<..
00000200:	00 DD B4 63 C7 A2 7D D5 E1 F1 47 1E C6 8A 65 CB 50	..c7.#".e.;.....
00000210:	E2 67 C8 CA CC C0 C7 EF BE 85 73 2E BA 58 EE 49	.g.....s...X.l
00000220:	64 A7 0D 79 F4 B1 97 B0 7D 87 60 CA 11 D2 B0 A1	d..y.....}.<..
00000230:	49 F8 F7 C3 B7 B7 2B C5 D4 28 2F 31 C9 5E 00 18	l.....+<./1..^.

```
288">Volvo</option><option value="290">MG</option><option value="291">Rolls-Royce</option><
at class="gabrieIsImageButton" alt="Go" type="image" src="http://graphics8.nytimes.com/imag
/h6><form method="post" action="http://autos.nytimes.com/search.aspx" id="searchUsedCompact
value="0">Select Make </option><option value="227">Acura</option><option value="231">Aston
235">BMW</option><option value="236">Buick</option><option value="237">Cadillac</option><op
value="244">Ferrari</option><option value="245">Ford</option><option value="247">GMC</opti
250">Hyundai</option><option value="251">Infiniti</option><option value="252">Isuzu</option
value="256">Lamborghini</option><option value="257">Land Rover</option><option value="258"
262">Maybach</option><option value="263">Mazda</option><option value="264">Mercedes-Benz</o
268">Mitsubishi</option><option value="269">Nissan</option><option value="270">Oldsmobile</
276">Pontiac</option><option value="277">Porsche</option><option value="280">Saab</option><
value="285">Suzuki</option><option value="286">Toyota</option><option value="287">Volkswag
option><option value="999">Other</option></select><br>
type="hidden" name="makeNames" id="makeNamesUsed" value="" />
type="text" name="zipCode" id="zipCode" value="Enter ZIP code"
as="if(this.value=='Enter ZIP code') { this.value=''; }"
e="if(this.value==null || this.value=='') { this.value='Enter ZIP code'; }"> <input class="
p://graphics8.nytimes.com/images/global/buttons/go.gif"></form></div><h6 class="kicker">Mo
http://www.nytimes.com/pages/automobiles/reviews/index.html">New Car Reviews</a></li><li><a
http://www.nytimes.com/pages/automobiles/collectiblecars/index.html">Collectible Cars</a></li>

KINFO classification="Home_Page_Markets_Module_Tile" campaign="HPModule-Stonehenge-1918400"
ass="story advertisement">
ass="callout">
="http://www.nytimes.com/adx/bin/adx_click.html?type=goto&opzn&page=homepage.nytimes.com/in
ad=Stonehenge_12-40-48_PM&goto=http%3A%2F%2Fwww%2Estonehengenyc%2Ecom%2Fnyrentals%2Fritz%2
c="http://graphics8.nytimes.com/adx/images/ADS/35/72/ad.357296/sh3.jpg" width="173" height=

="http://www.nytimes.com/adx/bin/adx_click.html?type=goto&opzn&page=homepage.nytimes.com/in
ad=Stonehenge_12-40-48_PM&goto=http%3A%2F%2Fwww%2Estonehengenyc%2Ecom%2Fnyrentals%2Fritz%2

s="summary"><a href="http://www.nytimes.com/adx/bin/adx_click.html?type=goto&opzn&page=home
nge-1918400&ad=Stonehenge_12-40-48_PM&goto=http%3A%2F%2Fwww%2Estonehengenyc%2Ecom%2Fnyrenta
```

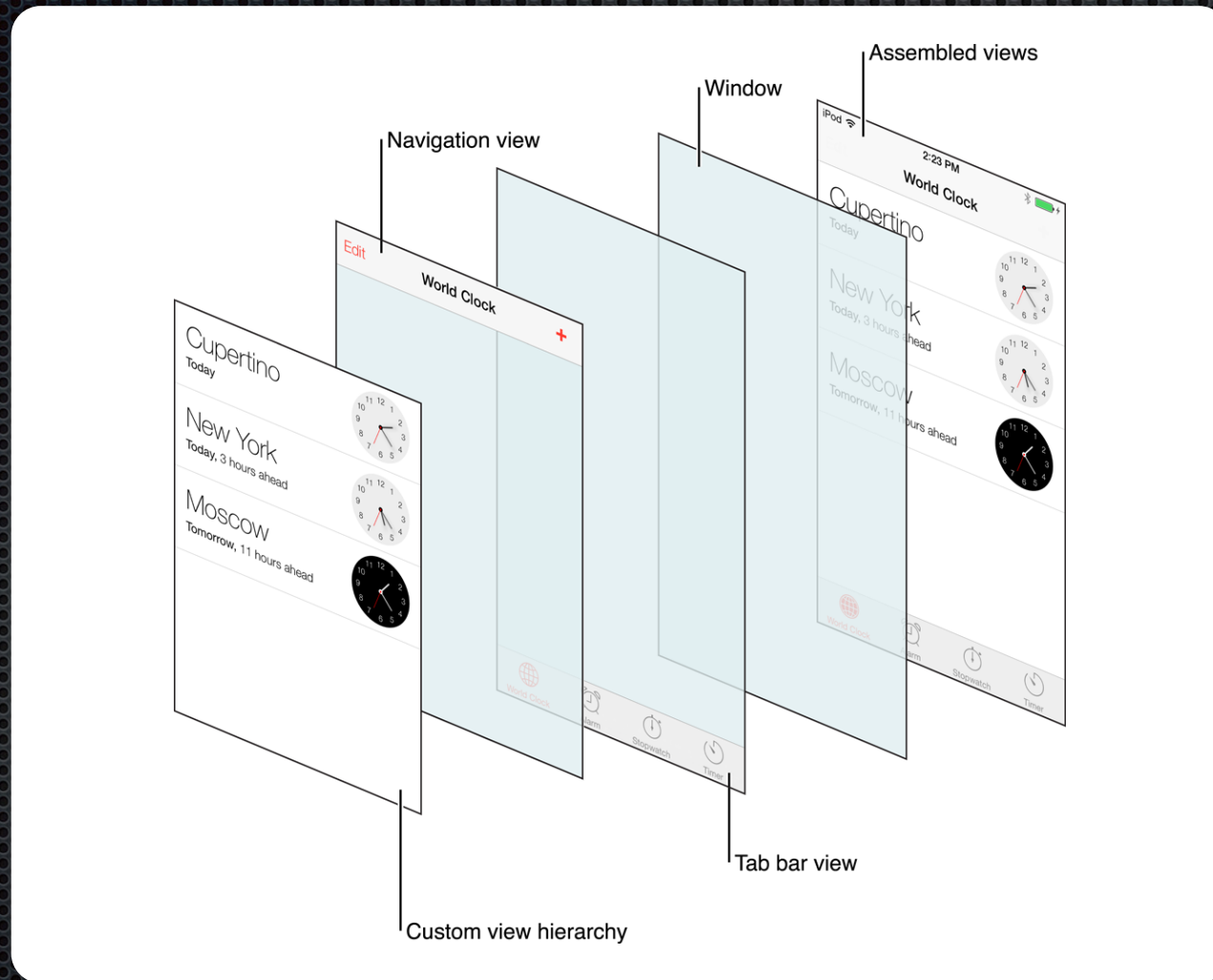

Scrub

NSString

```
func rangeOfString(aString: NSString) -> NSRange  
func rangeOfCharacterFromSet(aSet: NSCharacterSet) -> NSRange  
func substringToIndex(anIndex: Int) -> NSString  
func substringFromIndex:(anIndex: Int) -> NSString
```

Also see Regular Expressions and NSPredicate

Present



Cleaner Way?

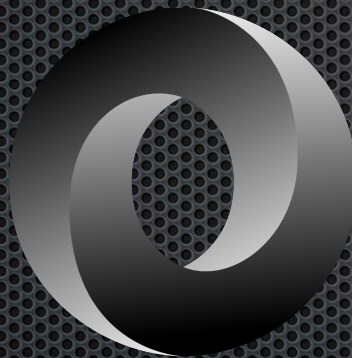


<?xml?>

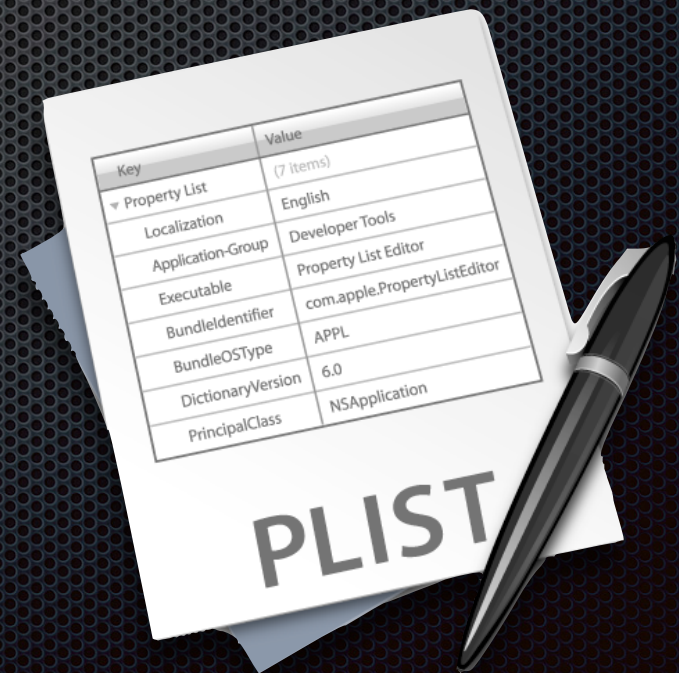


```
// Somewhere in a class declared as an NSXMLParserDelegate
let parser = NSXMLParser(contentsOfURL: NSURL(string: "http://www.someplace.com"))
parser?.delegate = self
parser?.parse()

// Include these methods, which are called as parsing progresses
func parserDidStartDocument(parser: NSXMLParser!) { /* ... */ }
func parserDidEndDocument(parser: NSXMLParser!) { /* ... */ }
func parser(parser: NSXMLParser!, didStartElement elementName: String!,
            namespaceURI: String!, qualifiedName qName: String!,
            attributes attributeDict: [NSObject : AnyObject]!) { /* ... */ }
func parser(parser: NSXMLParser!, foundCharacters string: String!) { /* ... */ }
func parser(parser: NSXMLParser!, didEndElement elementName: String!,
            namespaceURI: String!, qualifiedName qName: String!) { /* ... */ }
```



JSON



Next Time: REST



- ✦ Representational State Transfer (REST)
- ✦ Software architectural style used in protocols like HTTP

Resource	GET	PUT	POST	DELETE
Collection URI, such as <code>http://example.com/resources/</code>	List the members of the collection, complete with their member URIs for further navigation. For example, list all the cars for sale.	Meaning defined as "replace the entire collection with another collection".	Create a new entry in the collection where the ID is assigned automatically by the collection. The ID created is usually included as part of the data returned by this operation.	Meaning defined as "delete the entire collection".
Element URI, such as <code>http://example.com/resources/7H0U57Y</code>	Retrieve a representation of the addressed member of the collection expressed in an appropriate MIME type	Update the addressed member of the collection or create it with the specified ID.	Treats the addressed member as a collection in its own right and creates a new subordinate of it.	Delete the addressed member of the collection.

See chapter 5 of Roy T. Fielding's doctoral dissertation and REST article on Wikipedia