MobileFirst Platform {dev}

Java HTTP Adapter

Relevant to:

Native iOS Native Android Native Windows Phone 8 Native Windows 8 Universal
Hybrid

Overview

This tutorial is a continuation of Java Adapter and assumes previous knowledge of the concepts described there.

Java adapters provide free reign over connectivity to your backend. It is therefore your responsibility to ensure best practices regarding performance and other implementation details.

In this tutorial, we will cover an example of a Java adapter that connects to an RSS feed using a Java `HttpClient`.

RSSAdapterApplication

`RSSAdapterApplication` extends `MFPJAXRSApplication` and is a good place to trigger any initialization required by your application.

```
@Override
protected void init() throws Exception {
    RSSAdapterResource.init();
    logger.info("Adapter initialized!");
}
```

RSSAdapterResource

```
@Path("/")
public class RSSAdapterResource {
}
```

`RSSAdapterResource` is where we handle the requests to your adapter.

`@Path("/")` means that the resources will be available at the URL `http(s)://host:port/ProjectName/adapters/AdapterName/`.

HTTP Client

```
RSSAdapterResource

private static CloseableHttpClient client;
private static HttpHost host;

public static void init() {
    client = HttpClients.createDefault();
    host = new HttpHost("rss.cnn.com");
}
```

Because every request to your resource will create a new instance of `RSSAdapterResource`, it is important to reuse objects that may impact performance. In this example we made the Http client a `static` object and initialized it in a static `init()` method, which gets called by the `init()` of `RSSAdapterApplication` as described above.

Procedure resource

RSSAdapterResource

```
@GET
@Produces("application/json")
public void get(@Context HttpServletResponse response, @QueryParam("topic")
String topic)
        throws ClientProtocolException, IOException, IllegalStateException,
SAXException {
    if(topic!=null && !topic.isEmpty()){
        execute(new HttpGet("/rss/edition_"+ topic+".rss"), response);
    }
    else{
        execute(new HttpGet("/rss/edition.rss"), response);
    }

}
```

Our adapter exposes just one resource URL which allows to retrieve the RSS feed from the backend service.

- `@GET` means that this procedure only responds to `HTTP GET` requests.
- `@Produces("application/json")` specifies the Content Type of the response to send back. We chose to send the response as a `JSON` object to make it easier on the client-side.
- `@Context HttpServletResponse response` will be used to write to the response output stream. This enables us more granularity than returning a simple string.
- `@QueryParam("topic")` String topic enables the procedure to receive a parameter. The choice of `QueryParam` means the parameter is to be passed in the query (`/RSSAdapter/?topic=technology`). Other options include `@PathParam`, `@HeaderParam`, `@CookieParam`, `@FormParam`, etc.
- `throws ClientProtocolException, ...` means we are forwarding any exception back to the client. The client code is responsible for handling potential exceptions which will be received as `HTTP 500` errors. Another solution (more likely in production code) is to handle exceptions in your server Java code and decide what to send to the client based on the exact error.
- `execute(new HttpGet("/rss/edition.rss"), response)`. The actual HTTP request to the backend service is handled by another method defined later.

Depending if you pass a topic `parameter`, `execute` will retrieve a different build a different path and retrieve a different RSS file.

execute()

RSSAdapterResource

```
public void execute(HttpUriRequest req, HttpServletResponse resultResponse)
        throws ClientProtocolException, IOException,
        IllegalStateException, SAXException {
    HttpResponse RSSResponse = client.execute(host, req);
    ServletOutputStream os = resultResponse.getOutputStream();
    if (RSSResponse.getStatusLine().getStatusCode() == HttpStatus.SC_OK){
        resultResponse.addHeader("Content-Type", "application/json");
        String json = XML.toJson(RSSResponse.getEntity().getContent());
        os.write(json.getBytes(Charset.forName("UTF-8")));
    }else{
        resultResponse.setStatus(RSSResponse.getStatusLine().getStatusCode());
        RSSResponse.getEntity().getContent().close();
        os.write(RSSResponse.getStatusLine().getReasonPhrase().getBytes());
    }
    os.flush();
    os.close();
}
```

- `HttpResponse RSSResponse = client.execute(host, req)`. We use our static HTTP client to execute the HTTP request and store the response.
- `ServletOutputStream os = resultResponse.getOutputStream()`. This is the output stream to write a response to the client.
- `resultResponse.addHeader("Content-Type", "application/json")`. As mentioned before, we chose to send the response as JSON.
- `String json = XML.toJson(RSSResponse.getEntity().getContent())`. We used `org.apache.wink.json4j.utils.XML` to convert the XML RSS to a JSON string.
- `os.write(json.getBytes(Charset.forName("UTF-8")))` the resulting JSON string is written to the output stream.

The output stream is then `flush`ed and `close`d.

If `RSSResponse` is not `200 OK`, we write the status code and reason in the response instead.

Results

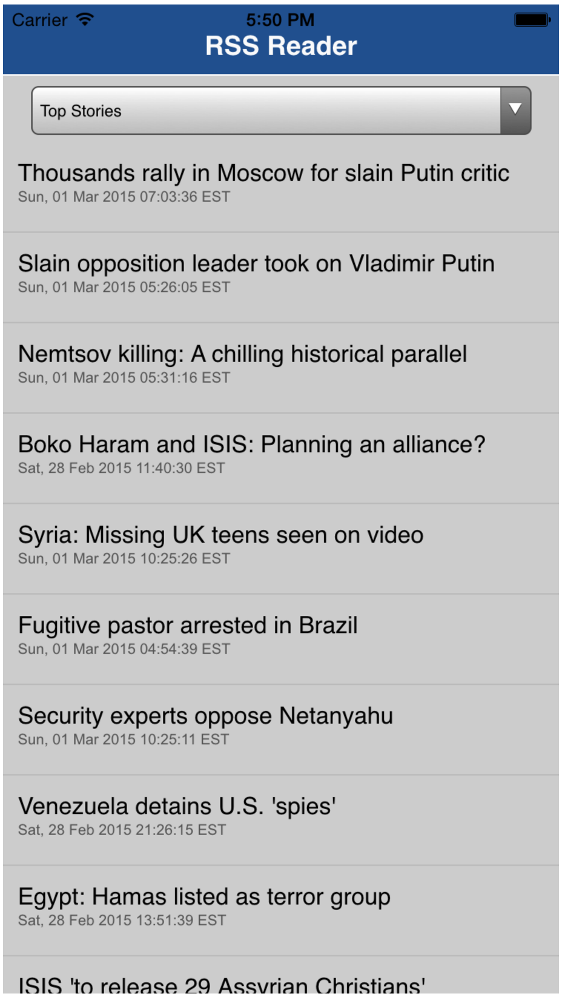
Use the testing techniques described in Java Adapter to test your work.

The adapter should return the RSS feed converted to JSON.

```
{
   "rss": {
      "channel": {
         "copyright": "Copyright 2015 Cable News Network LP, LLLP.",
         "description": "CNN.com delivers up-to-the-minute news and
information on the latest top stories, weather, entertainment, politics and
more.",
         "image": {
            "description": "CNN.com delivers up-to-the-minute news and
information on the latest top stories, weather, entertainment, politics and
more.",
            "height": "33",
            "link": "http:\/\/edition.cnn.com\/index.html?eref=edition",
            "title": "CNN.com - Top Stories",
            "url":
"http:\/\/i.cdn.turner.com\/cnn\/.e\/img\/1.0\/logo\/cnn.logo.rss.gif",
            "width": "144"
         },
         "info": {
            "uri": "rss\/edition"
         },
         "item": [
            {
               "content": {
                  "height": "51",
                  "medium": "image",
                  "type": "image\/jpeg",
                  "url":
"http:\/\/i2.cdn.turner.com\/cnn\/dam\/assets\/150301114729-russia-nemtsov-
protest-top-tease.jpg",
                  "width": "90"
               },
               "description": "It was supposed to be an opposition rally
against Russia's policies in Ukraine, but following the slaying of Boris
Nemtsov, the march has taken on a different theme.",
               "guid":
"http:\/\/edition.cnn.com\/2015\/03\/01\/europe\/russia-opposition-leader-
killed\/index.html",
               "link":
"http:\/\/edition.cnn.com\/2015\/03\/01\/europe\/russia-opposition-leader-
killed\/index.html?eref=edition",
               "pubDate": "Sun, 01 Mar 2015 07:03:36 EST",
               "thumbnail": {
                  "height": "51",
                  "url":
"http:\/\/i2.cdn.turner.com\/cnn\/dam\/assets\/150301114729-russia-nemtsov-
protest-top-tease.jpg",
                  "width": "90"
               },
               "title": "Thousands rally in Moscow for slain Putin critic"
            },
            {
               "content": {
                  "height": "51",
                  "medium": "image",
                  "type": "image\/jpeg",
                  "url":
"http:\/\/i2.cdn.turner.com\/cnn\/dam\/assets\/150115214405-hunter-fight-
boko-haram-top-tease.jpg",
                  "width": "90"
               },
               "description": "They share an apocalyptic \"end-of-days\"
vision and now there are signs that Boko Haram may be edging towards a pledge
of allegiance to IS leader Abu Bakr al-Baghdadi.",
               "guid": "http:\/\/edition.cnn.com\/2015\/02\/25\/world\/boko-
haram-lister-analysis\/index.html",
               "link": "http:\/\/edition.cnn.com\/2015\/02\/25\/world\/boko-
haram-lister-analysis\/index.html?eref=edition",
               "pubDate": "Sat, 28 Feb 2015 11:40:30 EST",
               "thumbnail": {
                  "height": "51",
                  "url":
"http:\/\/i2.cdn.turner.com\/cnn\/dam\/assets\/150115214405-hunter-fight-
boko-haram-top-tease.jpg",
                  "width": "90"
               },
               "title": "Boko Haram and ISIS: Planning an alliance?"
            },
            {
               "content": {
                  "height": "51",
                  "medium": "image",
                  "type": "image\/jpeg",
                  "url":
"http:\/\/i2.cdn.turner.com\/cnn\/dam\/assets\/150223154312-wolf-intv-
havlicek-isis-teen-girls-00020908-top-tease.jpg",
                  "width": "90"
               },
               "description": "Three teen British girls suspected of
traveling to Syria appeared on surveillance video in Turkey before they went
to their destination.",
               "guid":
"http:\/\/edition.cnn.com\/2015\/03\/01\/europe\/turkey-uk-missing-
girls\/index.html",
               "link":
"http:\/\/edition.cnn.com\/2015\/03\/01\/europe\/turkey-uk-missing-
girls\/index.html?eref=edition",
               "pubDate": "Sun, 01 Mar 2015 09:45:52 EST",
               "thumbnail": {
                  "height": "51",
                  "url":
"http:\/\/i2.cdn.turner.com\/cnn\/dam\/assets\/150223154312-wolf-intv-
havlicek-isis-teen-girls-00020908-top-tease.jpg",
                  "width": "90"
               },
               "title": "Syria: Missing UK teens caught on video"
            }
         ],
         "language": "en-US",
         "link": [
            "http:\/\/edition.cnn.com\/index.html?eref=edition",
            {
               "href": "http:\/\/rss.cnn.com\/rss\/edition",
               "rel": "self",
               "type": "application\/rss+xml"
            },
            {
               "href": "http:\/\/pubsubhubbub.appspot.com\/",
               "rel": "hub"
            }
         ],
         "pubDate": "Sun, 01 Mar 2015 10:14:59 EST",
         "title": "CNN.com - Top Stories",
         "ttl": "10"
      },
      "version": "2.0"
   }
}
```

Sample

The attached sample includes an adapter called `RSSAdapter` and a hybrid application called `RSSReader` to test the adapter inside an application.



Thousands rally in Moscow for slain Putin critic
Sun, 01 Mar 2015 07:03:36 EST

Slain opposition leader took on Vladimir Putin
Sun, 01 Mar 2015 05:26:05 EST

Nemtsov killing: A chilling historical parallel
Sun, 01 Mar 2015 05:31:16 EST

Boko Haram and ISIS: Planning an alliance?
Sat, 28 Feb 2015 11:40:30 EST

Syria: Missing UK teens seen on video
Sun, 01 Mar 2015 10:25:26 EST

Fugitive pastor arrested in Brazil
Sun, 01 Mar 2015 04:54:39 EST

Security experts oppose Netanyahu
Sun, 01 Mar 2015 10:25:11 EST

Venezuela detains U.S. 'spies'
Sat, 28 Feb 2015 21:26:15 EST

Egypt: Hamas listed as terror group
Sat, 28 Feb 2015 13:51:39 EST

ISIS 'to release 29 Assyrian Christians'