Massey University

159.251 Software Design and Construction

Tutorial 5 - JAXB

Prerequisites (what you are expected to know before you come to the tutorial)

1. create a Java project in Eclipse
2. create a Java package within this project
3. create and execute a class with a main method in Eclipse
4. open the command line shell on your computer, and navigate to a folder (directory)

Objectives

1. use a code generator to generate classes (instead of manually replicating a given structure) and an XML parser
2. import external resources into an Eclipse project
3. discover the functionality of an API, package or library by using any of the following:
    a. console output
    b. the debugger
    c. java documentation
    d. browsing API classes

Description

Follow the example in the lecture notes to create Java classes from an XML schema. The schema used is the schema definition for RSS 2.0, a format used for web notifications (RSS feeds). The schema file will be provided on stream.

1. create an Eclipse project
2. generate the parser into the src folder of this project
3. the generated classes should be in the package **nz.ac.massey.cs.sdc.parserss**
4. create a sample file by saving this document to your harddrive[1]: http://rss.nzherald.co.nz/rss/xml/nzhrsscid_000000005.xml
5. write a script (a Java class with a main method) to read this xml file, and lists link, title and description of each item in the feed. The console output should look somehow like this:

[1] you can generate feed URLs by going to the NZ Herald web site, and then using the RSS feature at the bottom of the page

```
title: Mayer's 73 million reasons to shout 'Yahoo'
link: http://www.nzherald.co.nz/technology/news/article.cfm?c_id=5&objectid=10821031&ref=rss
description: Marissa Mayer Yahoo chief executive Marissa Mayer stands to receive as much as US$59 million ($73.58 million) in compensation in coming years after agreeing to leave Google to run the troubled web portal.The total includes US$3...

title: PREMIERE: Kim Dotcom's 'Mr President' music video
link: http://www.nzherald.co.nz/technology/news/article.cfm?c_id=5&objectid=10821013&ref=rss
description: The man accused of ripping off recording artists has now become one with the release of his first single.Internet mogul Kim Dotcom tonight debuted on YouTube  Mr President , the first track recorded while on bail awaiting an extradition...

title: Online ads help Google post $3.4b profit
link: http://www.nzherald.co.nz/technology/news/article.cfm?c_id=5&objectid=10820962&ref=rss
description: Google is getting even better at showing online ads to the right people at the right time. That enabled the internet search leader to hit analysts' earnings target for the second quarter and reassure investors about the company's...
```

Hints

1. you must first locate the **xjc** (windows: **xjc.exe**) executable on your computer. Open a console window (Windows: cmd), and try to execute it. If it is in the PATH, this will just work. Otherwise you will find xjc in the bin folder of the Java Developer Kit (JDK) (note: xjc is not part of the Java Runtime Environment (JRE)!).
2. if you copy or generate new files into an Eclipse project, Eclipse must be refreshed to display them! The refresh command is in the context menu (or press F5) - you can also set Eclipse to auto-refresh (in preferences).
3. note that the generated API is not very readable - it is not “self-documenting”. For instance:
    a. getItem() does not return an item, but a list of items!
    b. methods such as getTitleOrDescriptionOrLink() return lists with multiple entry types - but you can cast them to JAXBElement
    c. in JAXBElement you will encounter names - however, names are not just strings but qnames - qnames have a method getLocalPart() - this is what you are looking for
4. the best way to explore the API is to **use the debugger** and inspect what kind of objects you find in those lists

Challenge for good students

1. instead of reading RSS from a file, read it directly from the network
    a. the generated parser unmarshal method is overloaded, it can also read from any (network or file) input stream
    b. to get a stream from a network source, use java.net.URL
    c. if you are behind a proxy, you may need to configure java using runtime parameters, instructions can be found here , settings to be used are -Dhttp.proxyHost=tur-cache.massey.ac.nz -Dhttp.proxyPort=8080
2. also print out the enclosures (this are media attachments, such as images or videos)