## Massey University

## 159.251 Software Design and Construction

## Tutorial 4 - 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:
   1. console output
   2. the debugger
   3. java documentation
   4. browsing API classes

### Description

Follow the example in the [lecture notes](https://docs.google.com/presentation/d/1-4vPvcupG70k1PYBTQyDwtdHmR9Kk1D9xF38SkieA-E/edit) to create Java classes from an XML schema. The schema used is the schema definition for [RSS 2.0](http://en.wikipedia.org/wiki/RSS), 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将解析器生成到此项目的 src 文件夹中
3. the generated classes should be in the package **nz.ac.massey.cs.sdc.parserss生成的类应在包 nz. ac. massey. cs. sdc. parsers 中**
4. create a sample file by saving this document to your harddrive[[1]](#footnote-1):

<http://rss.nzherald.co.nz/rss/xml/nzhrsscid_000000005.xml>

1. 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: 编写一个脚本（具有主方法的 Java 类）来读取此 xml 文件，并列出源中每个项目的链接、标题和说明。控制台输出应以某种方式看起来像：

title、link、description

|  |
| --- |
| 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](http://en.wikipedia.org/wiki/PATH_(variable)), 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)!).

您必须首先在您的计算机上定位xjc (windows: xjc.exe)可执行文件。打开一个控制台窗口(Windows: cmd)，并尝试执行它。如果它在路径上，这就行了。否则你会在Java Developer Kit (JDK)的bin文件夹中找到xjc(注意:xjc不是Java运行时环境(JRE)的一部分!)

1. 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).

如果将新文件复制或生成到Eclipse项目中，则必须刷新Eclipse以显示这些文件!刷新命令在上下文菜单中(或按F5)—您还可以将Eclipse设置为自动刷新(在首选项中)。

1. note that the generated API is not very readable - it is not “self-documenting”. For instance:
   1. getItem() does not return an item, but a list of items!
   2. methods such as getTitleOrDescriptionOrLink() return lists with multiple entry types - but you can cast them to JAXBElement
   3. 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
2. 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
   1. the generated parser unmarshal method is overloaded, it can also read from any (network or file) input stream
   2. to get a stream from a network source, use [java.net.URL](http://docs.oracle.com/javase/6/docs/api/java/net/URL.html)
   3. if you are behind a proxy, you may need to configure java using runtime parameters, instructions can be found [here](http://docs.oracle.com/javase/6/docs/technotes/guides/net/proxies.html) , 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)

### What to Submit

A zipped Eclipse project folder. In Eclipse, use the following function to export:

**Export > General > Archive File > check project** (incl all files, incl. .project,.classpath). After exporting, check this file by unzipping its content, and verifying that all source code files and libraries are included.

1. you can generate feed URLs by going to the [NZ Herald web site](http://www.nzherald.co.nz/), and then using the [RSS feature](http://www.nzherald.co.nz/rss/) at the bottom of the page [↑](#footnote-ref-1)