f Faculty *of* Engineering & Technology

Department *of* Computer Science

Coursework Title: **Coursework Three**

Module Name: **Innovations** *in* **Software Development**

Module Code: **6048COMP**

Level: **6**

Credit Rating: **24**

Weighting: **35%**

Maximum Mark Available: **100**

Lecturer: **Mr. Glyn Hughes**

Contact: *If you have any issues with this coursework you may contact your lecturer whose contact details are:*

eMail: **g.d.hughes@ljmu.ac.uk**

Room: **604B**

Hand-Out Date: **31st Jan 2018**

Hand-In Date: **21st Mar 2018**

Hand-In Method: **Canvas**

FeedBack Date: **11th Apr 2018**

FeedBack Method: **eMail**

Programme(s): **MC**, **CSc, CS**

Introduction:

There are various **BI** (**B**usiness **I**ntelligence) Control Panels available commercially which have been produced using a myriad *of* reporting tools. Many use a client side application that fetches corporate data from a server side application (a web service).

In the simplest form, BI Control Panels support one or more query parameters which users specify along with the retrieved data, displayed in both tables & charts (see **Appendix A**).

In groups *of* 2 or 3, develop a BI Control Panel using JavaFX along with **WCF** (**W**indows **C**ommunication **F**oundation) that will display sample corporate data in an appropriate graphical way.

Your group is also required to produce a short report that documents your development activity in terms *of* the technologies you have employed and the resulting functionality you have achieved.

Learning Outcome(s) Being Assessed:

1. *<not assessed in this coursework>*
2. *<not assessed in this coursework>*
3. *<not assessed in this coursework>*
4. Specify and develop RIAs across clients and servers.
5. Employ OO design and programming when producing applications for typical APIs.

Details *of* Task:

An OperationContract method (called SalesGetSales) has been produced using WCF. This method requests and returns **JSON** (**J**ava**S**cript **O**bject **N**otation) data through **REST** (**RE**presentational **S**tate **T**ransfer). The data describes vehicle sales across models, regions, quarters & years.

The root URL for the web service is . .

*http://glynserver.cms.livjm.ac.uk/dashservice/*

. . the schema *of* the SalesGetSales method can be viewed here . .

*http://glynserver.cms.livjm.ac.uk/dashservice/help*

You are required to develop the client side application (using JavaFX) that will use this method to fetch vehicle sales then display that data in an appropriate graphical way (e.g. tables & charts etc).

Specific components to be developed include:

* Networking & Concurrency
  + The web service may not always process your requests in a timely fashion and the client application should not freeze or otherwise be unresponsive whilst waiting to retrieve data.
* Data Querying Filters
  + Users should have control over the data that is currently being displayed. This is achieved by allowing filters to be specified using suitable GUI controls.
* Collections & Bindings
  + Once vehicle sales have been retrieved, they should be de-serialized from JSON and organised into appropriate collections suitable for GUI data binding.
* Data Presentation
  + Organised vehicle sales (i.e. sales data that has gone through filters) should be displayed using suitable GUI controls (e.g. tables & charts etc).

*Tips . . The vehicle sales form a star schema with models, regions & time dimensions (composed of years & quarters). Thusly, the time dimension also forms a simplistic snow flake schema. Try to use Java SE 8’s lambda expressions & streams to elegantly filter & aggregate the data.*

What you should hand in:

* The working prototype in a ZIP file. Specifically, a single NetBeans 8.x project directory, complete with all Java & FXML source code.
* A word processed report not exceeding 10 pages.

Include on your cover sheet, a statement *of* group membership and the relative contribution (out *of* 100%) *of* each group member to the coursework. This statement must be signed by each student.

Marking Scheme/Assessment Criteria:

|  |  |  |
| --- | --- | --- |
| **Assessment** | **Assessment Criteria** | **% weighting *for* part** |
| 1 | Networking & Concurrency. | 10 |
| 2 | Data Querying Filters. | 10 |
| 3 | Collections & Bindings. | 30 |
| 4 | Data Presentation. | 30 |
| 5 | Development Report. | 20 |

Guidelines:

* Correctly reference resources that you use.
* You should annotate your source code with suitable / descriptive comments that describe functionality and any assumptions.

Resources Required:

You may use the computing labs on the 6th & 7th floors *of* the Byrom Street Campus as well as the 1st floor *of* the Henry Cotton Campus.

Note that *glynserver.cms.livjm.ac.uk* is internet visible.

You should make use *of* these specific tools & resources:

* NetBeans 8.x
* SceneBuilder 8.x
* JavaFX API Documents.
  + http://docs.oracle.com/javase/8/javafx/api/
* Lecture Materials
* The Internet.

Extenuating Circumstances:

If something serious happens that means that you will not be able to complete this assignment, you need to contact the module leader as soon as possible. There are a number *of* things that can be done to help, such as extensions, waivers and alternative assessments, but we can only arrange this if you tell us. To ensure that the system is not abused, you will need to provide some evidence *of* the problem.

More guidance is available at:

[*https://www.ljmu.ac.uk/about-us/public-information/student-regulations/guidance-policy-and-process*](https://www.ljmu.ac.uk/about-us/public-information/student-regulations/guidance-policy-and-process)

Any coursework submitted late without the prior agreement *of* the module leader will receive 0 marks.

Academic Misconduct:

The University defines Academic Misconduct as ‘any case *of* deliberate, premeditated cheating, collusion, plagiarism or falsification *of* information, in an attempt to deceive and gain an unfair advantage in assessment’.

This includes attempting to gain marks as part *of* a team without making a contribution. The Faculty takes Academic Misconduct very seriously and any suspected cases will be investigated through the University’s standard policy (*https://www.ljmu.ac.uk/about-us/public-information/student-regulations/appeals-and-complaints*).

If you are found guilty, you may be expelled from the University with no award.

It is your responsibility to ensure that you understand what constitutes Academic Misconduct and to ensure that you do not break the rules. If you are unclear about what is required, please ask.

For more information you are directed to following the University web pages:

* Information regarding academic misconduct:

*https://www.ljmu.ac.uk/about-us/public-information/student-regulations/appeals-and-complaints*

* Information on study skills:

[*https://www2.ljmu.ac.uk/studysupport/*](https://www2.ljmu.ac.uk/studysupport/)

* Information regarding referencing:

[*https://www2.ljmu.ac.uk/studysupport/69049.htm*](https://www2.ljmu.ac.uk/studysupport/69049.htm)

Appendix A

