MSc Enterprise Systems – Business Intelligence

Semester 1 - 2017

Choice: Answer 2 questions out of 3.

Question 1

(a) Appraise the three most commonly used data warehousing architectures. Include in your answer a discussion on the differences between the top down and bottom up approaches.

15 marks

(b) Web analytics programs can document a marketing campaign or manage the efforts of products and services. Web analytics provides a broad range of metrics, there are four categories of metrics that are generally actionable and can directly impact your business objectives. Evaluate the 4 main categories of metrics with 2 examples given for each category.

20 marks

(c) "Prediction is very difficult, especially if it is about the future" (Nils Bohr, 1885-1962).

Examine the use of prediction in data mining support your answer with examples in the business context.

15 marks

TOTAL: 50 MARKS

Question 2

(a) "Merrill Lynch and Gartner estimated that more than 85% of all potentially useful business information is unstructured data" (McKnight 2005). Assess text mining and natural language processing techniques for knowledge discovery form textual context in documents. Include popular application areas, the text mining process and 4 terminology examples.

20 marks

(b) Data mining involves describing what has happened and predicting the future. Discuss the fundamental differences between clustering and classification.

15 marks

(c) Explore some of the emerging technologies that may impact analytics, business intelligence (BI), and decision support such as Cloud's future use in Analytics, IOT and location data in analytics.

15 marks

TOTAL: 50 MARKS

Question 3

(a) A data warehouse schema is a representation of multidimensional data. Evaluate the use of relational databases for large data warehouses. Your answer should address the characteristics of multidimensional data such as facts, dimensions, granularity and sparsity.

25 marks

(b) Hadoop is an ecosystem of Apache open source projects. This wide range of commercial tools and solutions have fundamentally changed the way of big data storage, processing and analysis. Examine Hadoop and MapReduce and the following most popular open source projects; Hive, Pig, Oozie and Sqoop.

15 marks

(c) "A performance Dashboard is more than just a screen with fancy performance graphics on it: it is a full-fledged business information system that is built on a Business Intelligence and data integration infrastructure" *(Eckerson, 2012).*

Assess performance Dashboards features with an emphasis on the features of the "three threes".

10 marks

TOTAL: 50 MARKS

MSc Enterprise Systems – Business Intelligence

Semester 1 - Repeat 2017

Choice: Answer 2 questions out of 3.

Question 1

(a) Association rule mining is a very popular method of analysing data. Asses its use, application, and purpose. Support your answer with examples.

20 marks

(b) The term Web Mining was coined by Etzioni (1996) to denote the use of Data Mining techniques to automatically discover Web documents and services, extract information from Web resources and uncover general patterns on the Web.

Evaluate this definition by differentiating between the 3 classifications of web mining.

15 marks

15 marks

(c) Businesses expect and need access to data at the right time in order to make operational decisions. Argue for the use of active or right time data warehousing to support operational decisions. Include examples in your answer.

15 marks

TOTAL: 50 MARKS

Question 2

(a) Differentiate between cluster analysis and classification. Give examples of situations in which classification and clustering are appropriate data mining techniques.

15 marks

(b) "Big data refers to datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze" (McKinsey, 2011). Explore this definition of how big a dataset needs to be in order to be considered as big data. Include consumer and business examples in your answer.

15 marks

(c) “Information visualization has become a centrepiece in business intelligence and analytics”. Differentiate between Data Visualization and Visual Analytics in supporting different activities in business intelligence and analytics.

20 marks

TOTAL: 50 MARKS

Question 3

(a) “Integrating databases and information assets allows organizations to integrate all their data in a single repository such as an enterprise data warehouse.”

Critically assess the need for integrated data, include in your answer the architecture choices for a data warehouse that can support that integration.

20 marks

(b) “There is more to performance measurement than simply keeping score”. Distinguish between performance management and performance measurement. Assess an effective performance measurement system and 2 widely used approaches/methodologies that support the basic processes underlying BPM.

15 marks

(c) “Location-based technologies and analytics solutions can help deliver a better customer experience”. Examine how geospatial and location-based analytics are assisting organizations.

15 marks

TOTAL: 50 MARKS

MSc Enterprise Systems – Business Intelligence

Semester 1 2016

Choice: Answer 2 questions out of 3.

Question 1

(a) "Data mining has the potential to yield valuable predictions for business today". Examine the data mining process supported by examples of how data mining is applied in the business context.

15 marks

(b) "Unstructured data is more like human language". Examine Text Analytics and the process of converting unstructured text data into meaningful data for analysis. Include applications of text analytics in your answer.

15 marks

(c) " Business Intelligence tools have evolved over the years from simply delivering reports to leveraging advanced visualization techniques". Assess Business Intelligence tools and how they have evolved. Include an emphasis on reporting, analysis, planning and monitoring capabilities.

20 marks

TOTAL: 50 marks

Question 2

(a) Big Data Analytics is the term associated with the new type of information extracted from a complex dataset using new technical approaches such as *MapReduce and Hadoop*. Examine the fundamentals and technical components of Hadoop. Include a brief explanation of Hadoop's ecosystem.

15 marks

(b) There are two approaches (Inmon vs Kimball) to the design of a data warehouse. Evaluate the use of one of those approaches. Support your answer with a diagram of your chosen architecture.

10 marks

(c) "Not everything that can be counted counts, and not everything that counts can be counted" Albert Einstein.

Summarise the three most common data mining methods, clustering, classification and association. Use relevant examples to support your answer.

25 marks

TOTAL: 50 marks

Question 3

(a) For over a decade the Data Warehouse has been the architectural foundation of most BI and analytic activity. However current trends make us ask whether it is still needed. Argue for the use of the Data Warehouse architecture to support organisational memory.

20 marks

(b) "Businesses and organisations of every size need to be ready to answer questions on their own security measures. Data governance has always been a challenging issue in IT, and it is getting even more puzzling with the advent of Big Data." Assess the challenges companies face and the needs of combining governance requirements with business intelligence.

15 marks

(c) Companies have spent decades building all kinds of IT infrastructure with millions of end of point application systems, data formats, databases. Now we have the explosion of connectivity with the web and API's. Examine Data Integration Techniques and Technologies. Include a mention of challenges facing data integration and big data.

15 marks

TOTAL: 50 marks

MSc Enterprise Systems – Business Intelligence

Semester 1 - Repeat 2016

Choice: Answer 2 questions out of 3.

Question 1

(a) "Data mining has the potential to yield valuable predictions for business today". Outline the steps in the data mining process and argue the importance in detail of the data preparation step.

20 marks

(b) "One of the most interesting applications of web mining is the hunt for relevant web pages in the vast collection of text on the Internet."

Examine the methods of web content mining and web structure mining for document classification and clustering.

15 marks

(c) Big data and data warehouses are complementary (not competing) analytics technologies. Critique this statement.

15 marks

Total 50 Marks

Question 2

(a) Association rule mining is a very popular method of analysing data. Asses its use, application, and purpose. Support your answer with examples.

20 marks

(b) Businesses expect and need access to data at the right time in order to make operational decisions. Argue for the use of active or right time data warehousing to support operational decisions. Include examples in your answer.

15 marks

(c) Dashboards contain high-level, aggregated strategic company data, inclusive comparable presentations, and consolidated performance indicators. Analyze some of the basic interactions of Online Analytical Processing (OLAP) such as drill down, slice-and-dice operations to play with the data for presentation.

15 marks

Total 50 marks

Question 3

(a) "Integrating databases and information assets allows organizations to integrate all their data in a single repository such as an enterprise data warehouse."

Critically assess the need for integrated data, include in your answer the characteristics and the architecture choices for a data warehouse that can support that integration.

25 marks

(b) Argue the hugely valuable activities of ongoing monitoring and reviewing within the Business Performance Management closed loop cycle.

15 marks

(c) The ethics and legality of collecting data on individuals and analysing it is of great concern. Argue the need to protect privacy, support your answer with examples.

10 marks

Total 50 marks