

Dublin Business School Assessment Brief

Assessment Details

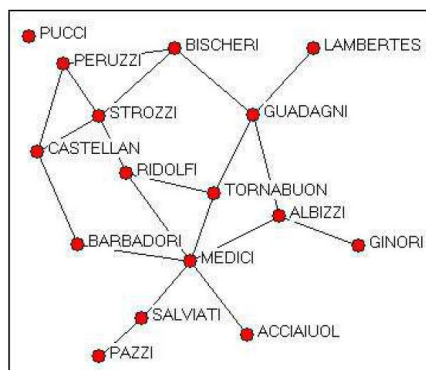
Unit Title	Data Mining
Unit Code	B9AI101
Unit Leader	Terri Hoare
Level:	9
Assessment Title	Graph Algorithm Application
Assessment Number	1
Assessment Type:	Group (2-3) / Individual Reports
Assessment Weighting	50%
Issue Date:	23 January 2023
Hand in Date:	Sunday 23 April 2023 (23:55)
Mode of Submission:	On-line Moodle

Assessment Task

[100 Marks]

Exercise 1 (Individual)

Padgett's data on marriage alliances among leading Florentine families in the latter Renaissance is given in the Figure below. Each node is a family, and each edge denotes a connection by marriage. Load the data as a Neo4j Knowledge Graph.



- For each node, compute and interpret the following measures of centrality: Degree Centrality; Closeness Centrality; Betweenness Centrality; Eigenvector Centrality; PageRank
- Apply Neo4j Bloom or Python NetworkX to visualise your insights

Your quantitative and visual insights should be presented in your CA01 Report.

(25)

Exercise 2 (Group)

Working in groups of 2-3 students, select a data source from the Neo4j recommended developer data sources <https://neo4j.com/developer/example-data/> and apply the steps of the CRISP-DM data mining methodology to analyse the data.

Business Understanding

Explore the domain use case.

Data Understanding

Explore the Neo4j property graph data model that is used as the knowledge graph for your use case.

Data Preparation

Load the data either to Neo4j Sandbox (cloud) or Neo4j Community Edition (laptop).

****Note** that the real-world data that is available in the sandbox may be used / modified as required for your use case.

Complete an exploratory data analysis of your knowledge graph using Python Py2Neo.

Modelling

Apply appropriate graph algorithms to derive insights from the data.

Evaluation

Interpret the insights derived in the context of your domain problem.

Deployment

Explore how the insights could be deployed (operationalised) in an AI context.

Prepare and deliver a 10-15-minute formal presentation of your case study during the final lecture of the module in Week 12.

(50)

Exercise 3 (Individual)

Write-up your findings for exercise 2 under the CRISP-DM headings.

(25)

The grade assessment will be based on the DBS CA grading scheme which has been included at the end of this document. Include a cover page on your report and cite all references. Two files should be loaded to Moodle on or before Sunday 23 April 2023 (23:55).

1. A SINGLE pdf file named CA01_Surname_First Name_Student-ID including answers exercises 1 and 3.
2. A zipped file including your code for exercises 1 and 2.

DBS Grade Assessment Policy (B9AI101)

Module Descriptor	Mark Band	Criteria	Determinator within grade band
A (Outstanding)	80-100	<ul style="list-style-type: none"> Displays a thorough and systematic knowledge of module content through choice of scenario, solution and handover process and documentation. Clear grasp of the issues involved, with evidence of innovative and original use of learning resources. Knowledge beyond module content. Clear evidence of independence of thought and originality Methodological rigour High critical judgement and confident grasp of complex issues 	Originality and depth of insight and analysis.
A (clear)	70-79	<ul style="list-style-type: none"> Methodological rigour Originality Critical judgement Use of additional learning resources 	Methodological rigour, insight
B	60-69	<ul style="list-style-type: none"> Very good knowledge and understanding of the module content. Well-argued answer Some evidence of originality and critical judgement Sound methodology Critical judgement and some grasp of complex issues. 	Extent of use of additional or non-core learning resources
C	50-59	<ul style="list-style-type: none"> Good knowledge and understanding of the module content. Reasonably well-argued answer Largely descriptive or narrative in focus Methodological application is not consistent or thorough 	Displaying an understanding of the main issues, sound approach
D	40-49	<ul style="list-style-type: none"> Lacking methodological application Adequately argued Basic understanding and knowledge Gaps or inaccuracies but not damaging 	Requirements met.
E (Fail)	0-39		Weakness of approach

General Requirements for Students:

PLEASE READ CAREFULLY

1. It is your responsibility to ensure your file is uploaded correctly.
2. Students are required to retain a copy of each assignment.
3. When an assignment is submitted, it is the student's responsibility to ensure that the file is in the correct format and opens correctly.
4. Students should refer to the assessment regulations in their Course Guide.
5. DBS penalises students who engage in academic impropriety (i.e. plagiarism,
6. Collusion and / or copying). Please refer to the referencing guidelines on Moodle for information on correct referencing.
7. All relevant provisions of the Assessment Regulations must be complied with.
8. Penalties for late submission of assignments are as follows:
 - a. 25% penalty for assignments submitted within 5 working days of the deadline.
 - b. No marks for assignments submitted more than 5 working days after the deadline.
9. Extensions to assignment submission deadlines will be granted in exceptional circumstances only. The appropriate "Application for Extension" form must be used and supporting documentation (e.g. medical certificate) must be attached. Applications for extensions should be made directly to the Head of Year or Programme Leader in advance of the deadline date.