MK:U Assignment Brief

Module Information	
Module Name	Digital Maths & Programming
Module Code	MK4006
Module Credit Value	30
Module Manager	Dr Artur Szymanski
Assignment Level	
This assignment is for apprentices at the following level only	**4**
Assignment Details	
Assignment number	3
Assignment Type	Presentation
Assignment Format (Group or Individual)	Group (pairs, group of three)
Word Limit/Pages/Duration	5 minutes per member
Contribution [% of module mark]	25%
Hand-in point [canvas? In class?]	Canvas
Due Date	04th May 2023 at 09:00 – presentation 12th May 2023 at 14:00 – slides submission
Marks will be Returned on	Within 20 working days

Please read this assessment brief in its entirety before starting work on it.

The Assignment Task

For this assignment you are asked to work together in groups (pairs) to prepare a presentation with an example of solving a mathematical problem using programming.

The mathematical problem that you are presenting can relate to subjects tackled in remaining assignments – either maths or programming report.

The presentation should describe the mathematical problem, its relevance, explanation of the stages gone through to implement the problem in programming language. Also, it should include relevant results, graphs, pictures, etc.

Your mark will be determined based on the subject-specific content, visual impression, as well as on how the group handled the questions. The marking criteria can be found on the rubric on the final page of this document.

Intended Learning Outcomes

Upon completion of this assignment, you will have covered the following module ILOs:

- ILO 1: Demonstrate core programming concepts to solve given problems.
- ILO 2: Demonstrate mathematical concepts relevant to digital problems.
- ILO 3: Identify data structures / algorithms within the Python programming language.

Please see the rubric for further details of the criteria against which you will be assessed.

Formatting Requirements

- Microsoft PowerPoint file (pptx).

Formative Activities

The formative activities that you have undertaken will assist you in choosing and developing your submission for this assignment.

Assignment Support

You will undertake activities within this module to assist you in preparing for your assignment. Several links to possible topics (not exhaustive) are provided on the course canvas page. The Study Skills pages have relevant links to resources covering material in units 1-4. Also relevant are the study skills resources on Writing as well as Effective Presentations. Additionally, we recommend you look at:

Chapters 1 – 11, 15, 16 of Matthes, E. (2019) Python crash course: a hands-on, project-based introduction to programming. No Starch Press.

Knowledge Skills and Behaviours[1]

Upon completion of this assignment, you will have undertaken work contributing to the following KSBs, you are expected to reflect on these within your apprenticeship portfolio:

DATA SCIENCE DEGREE APPRENTICESHIP		
ID	EPA	KNOWLEDGE COMPETENCIES
K1	PD	The context of Data Science and the Data Science community in relation to computer science, statistics and software engineering. How differing schools of thought in these disciplines have driven new approaches to data systems.
K3	KT&PD	How data can be used systematically, through an awareness of key platforms for data and analysis in an organisation including:
K3.1	KT	Data processing and storage, including on-premise and cloud technologies
K4	KT	How to design, implement and optimise analytical algorithms – as prototypes and at production scale - using:
K4.1	KT	Statistical and mathematical models and methods.

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[1] Where this is an option module for you, please review your apprenticeship's KSBs to identify the appropriate match.

ID	EPA	
K4.2	KT	Advanced and predictive analytics, machine learning and artificial intelligence techniques, simulations, optimisation, and automation
K4.5	KT	Development standards, including programming practice, testing, source control.
K5.1	KT	Sources of data including but not exclusive to files, operational systems, databases, web services, open data, government data, news and social media.
K5.2	KT	Data formats, structures and data delivery methods including "unstructured" data.
K5.3	PD	Common patterns in real-world data.
ID	**EPA**	**SKILLS COMPETENCIES**
S2	WBP	Perform data engineering: create and handle datasets for analysis. Use tools and techniques to source, access, explore, profile, pipeline, combine, transform and store data, and apply governance (quality control, security, privacy) to data.
S3	WBP	Identify and use an appropriate range of programming languages and tools for data manipulation, analysis, visualisation, and system integration. Select appropriate data structures and algorithms for the problem. Develop reproducible analysis and robust code, working in accordance with software development standards, including security, accessibility, code quality and version control
ID	**EPA**	**BEHAVIOURS COMPETENCIES**
B6	PD	A commitment to keeping up to date with current thinking and maintaining personal development. Including collaborating with the data science community

DIGITAL TECHNOLOGY SOLUTIONS APPRENITCESHIP	
ID	**CORE - KNOWLEDGE COMPETENCIES**

CK3	Contemporary techniques for design, developing, testing, correcting, deploying and documenting software systems from specifications, using agreed standards and tools.
ID	**CORE - SKILLS COMPETENCIES**
CS2	Analyses business and technical requirements to select and specify appropriate technology solutions.
CS3	Designs, implements, tests, and debugs software to meet requirements using contemporary methods including agile development
ID	**CORE - BEHAVIOURS COMPETENCIES**
CB14	Logical thinking and creative approach to problem solving.

Late Submissions

Where you fail to submit an assignment by the specified deadline (without prior approval) this will result in the mark being capped at 40% if submitted within one week of the specified deadline, and thereafter a failure to complete the assignment being recorded. For further details, please contact your SAS Lead who will be able to guide you through the extension/deferral request process.

Academic Integrity, Referencing and Plagiarism

It is important that that the work you submit for assessments is your own and adheres to the University's guidance. Please ensure that you have worked through the "Referencing and Plagiarism" section on the Study Skills Hub.

Detailed Rubric

The assignment will be marked against the following rubric:

	%	1st - Excellent 100-70% (1st)	Very Good 69-60% (2:1)	Good 59-50% (2:2)	Satisfactory 49-40% (3rd)	Poor 39-30% (Minor Fail)	Very Poor 29-0% (Major Fail)
Knowledge (%) - Correct use of key terminology and concepts within the topic area	15	Demonstrated a comprehensive knowledge and understanding of the subject and application to the topic. Exercised a high level of original thought.	Demonstrated an extensive knowledge and understanding of the subject and the application to the topic. Exercised a significant level of original thought.	Demonstrated a good knowledge and understanding of the subject with some application to the topic.	Demonstrated a satisfactory knowledge and understanding of the subject with little application to the topic.	Demonstrated an inadequate knowledge and understanding of the subject without reference to the specific application in relation to the topic.	Demonstrated a lack of knowledge and understanding of the subject.
References (%) - All sources referred to in the presentation are consistently referenced.	10	All the sources were well referenced. Referencing was entirely consistent throughout the presentation.:	The sources used in the presentation were well referenced. There were only a few minor inconsistencies.	The sources used in the presentation were referenced. There were a number of minor inconsistencies.	Referencing was present but there were some inconsistencies gaps and/or errors throughout the presentation.	There were a number of notable inconsistencies, gaps and/or errors in referencing throughout the presentation.	Referencing was inexistent.

	%	1st - Excellent 100-70% (1st)	Very Good 69-60% (2:1)	Good 59-50% (2:2)	Satisfactory 49-40% (3rd)	Poor 39-30% (Minor Fail)	Very Poor 29-0% (Major Fail)
Communication (%) - Ability to present to an audience, clarity of language, audible, consistency, and avoidance of jargon.	15	Eye contact well maintained. Clear language and appropriate volume successfully used to express thoughts and ideas. All unnecessary jargon avoided. The audience was engaged, and presenter(s) held the audience's attention.:	Eye contact maintained. Clear language and appropriate volume used to express thoughts and ideas. Most unnecessary jargon avoided. The audience was engaged by the presentation.	Eye contact maintained for the most part. Relatively clear language and appropriate volume used to express thoughts and ideas. Some unnecessary jargon used. The audience was engaged for most of the presentation.	Occasional eye contact. Expression of thoughts and ideas were hindered by the clarity of language and low volume - meaning apparent but not explicit. Unnecessary jargon used. Audience quickly disengaged from the presentation.	Limited eye contact. Expression of thoughts and ideas were drastically hindered by the clarity of language and low volume. A significant amount of unnecessary jargon used. Audience did not engage in the presentation.	No eye contact with audience. Language was unclear and volume low - thoughts and ideas were unclear. A significant amount of unnecessary jargon used. Audience did not engage in the presentation.
Visuals (%) - Use of images, tables, diagrams, multimedia, audience engagement tools etc.	15	Visual aids enhance the presentation. They are exceptionally well integrated and intrinsically linked, aiding the presenter's conveyance of their message.:	Visual aids enhance the presentation. They are well integrated and linked, aiding the presenter's conveyance of their message.	Some visual aids used to add to the presentation. They are reasonably well integrated with some linkage evident, to some extent aiding the presenter's conveyance of their message.	Visual aids are limited but appropriate for the presentation. They are satisfactorily integrated and/or linked to the presenter's message.	Visual aids are limited and detract from the presentation. Integration and linkage to the presenter's message is unclear.	Improper use of visual aids (either none where it would be appropriate or use of incorrect aids for the area).
Questions (%) - Responds well to questions.	15	Questions are answered clearly and articulately.	Questions are answered clearly.	Questions are answered.	Questions are answered without clarity.	Questions are not answered directly in relation to the topic of the question.	Questions are not answered.

	%	1st - Excellent 100-70% (1st)	Very Good 69-60% (2:1)	Good 59-50% (2:2)	Satisfactory 49-40% (3rd)	Poor 39-30% (Minor Fail)	Very Poor 29-0% (Major Fail)
Team work (%) - Group presentations - Consistency of flow between contributions from each presenter.	15	Presenters knew the overall presentation content well and assisted each other with answering questions. Each participated equally. Perfect flow between each presenter's parts.	Presenters knew most of the overall presentation content and attempted to assist each other with answering questions. Participation was almost equal. Good flow between each presenter's parts.	Presenters knew some of the overall presentation content. Slight variation in participation but good flow between most presenter's parts.	Presenters knew little of the overall presentation content. Obvious variation in participation, some contributing more than others. Flow between some presenter's parts.	Presenters were unaware of the overall presentation content. There were one or two dominant presenters causing the overall presentation to be imbalanced. Limited flow between each presenter's parts.	Presenters were unaware of the overall presentation content or there was only one presenter. Each presenter's part was completely stand alone, there was no flow.
Preparation (%) - Time management, delivery preparation and use of notes.	15	Kept within the time allowed for the presentation. Delivery was excellently planned. Presented without notes.	Kept within the time allowed for the presentation. Delivery was very well planned. Presented with basic notes for reference.	Went slightly over the time allowed for the presentation. Delivery was well planned. Presented from basic notes.	Went slightly over the time allowed for the presentation. Some evidence of planning delivery. Presented from notes.	Went over the time allowed for the presentation, had to be cut short. Limited evidence of planning delivery. Presented from comprehensive notes.	Went drastically over the time allowed for the presentation, had to be cut short. No evidence of planning delivery.