

# Coursework Assignment Brief

Assessment - Undergraduate

*Academic Year 2024-25*

<b>Module Title:</b> Data Management and Machine Learning Operations			
<b>Module Code:</b> CMP6230			
<b>Assessment Type</b> Coursework	<b>Level</b> 6	<b>Weighting</b> 100%	<b>Word Count/Workload</b> 4000 / Average 70 hrs
<b>Submission Date</b> 15th November 2024/ 13th December 2024/ 10th January 2025	<b>Submission Time</b> 15:00 (for all submissions)	<b>Module Leader</b>  Sima Iranmanesh	<b>Time Limit</b>

Assessment Information	
Assessment Summary (with type)	<p>In this coursework assessment you will investigate and demonstrate modern techniques to structure and manage access to data as well as deploy and monitor Machine Learning models to generate Data-driven insights. You will use a range of modern Data Science and Data Engineering techniques to enable data-driven decision-making with modern software tooling. You will also investigate the ethical and legal dimensions that arise when storing and utilising data in Data-driven systems. You will also explore the ethical and legal dimensions of storing and utilising data within modern Machine Learning systems.</p> <p>The assessment is divided into <b>3</b> deliverables to allow your progress with the module content to be better guided throughout the semester.</p>
Assessment Title:	Data Management and MLOps Activities log report
Things to include:	<p><b><u>Summative Draft Plan (20%):</u></b></p> <ul style="list-style-type: none"> <li>• <b>Deadline: 15:00 on 15th November 2024</b></li> <li>• Dataset(s) choice, Data Storage Modelling, Pipeline outline</li> </ul> <p>Submit this on or before the above deadline to ensure the opportunity for feedback turnaround. Summative draft submissions grant you marks, it will be used as a basis to identify key points of improvement that you will be expected to integrate into your formative draft for further feedback ahead of your final submission, should you wish to achieve higher grades.</p> <p><b><u>Formative Draft submission:</u></b></p> <ul style="list-style-type: none"> <li>• <b>Deadline: 15:00 on 13th December 2024</b></li> <li>• Final Individual report draft</li> </ul> <p>Submit this on or before the above deadline to ensure the opportunity for timely feedback turnaround. While the formative submission itself does not grant you marks, it will be used as a basis to identify key points of improvement that you will</p>

	be expected to make in your final submission, should you wish to achieve higher grades.
	<b>Final Individual report submission (80%):</b> <ul style="list-style-type: none"> <li>• <b>Deadline: 15:00 on 10th January 2025</b></li> </ul> <p>This is the final submission point which you will receive the majority of marks for (we call this a summative submission). Make sure you have effectively leveraged all feedback provided.</p>

<b>Completion of this assessment will address the following learning outcomes:</b>	
1	Model and effectively communicate data management requirements for analytical operations.
2	Implement an appropriate structure for the storage, retrieval and analytical processing of data using appropriate software.
3	Generate insight based on organisational needs by applying appropriate tools to process and analyse stored data.
4	Evaluate and communicate the ethical and legal issues which underpin concerns related to the security and privacy of data.

### **Submission Information**

Present any written aspects of the assessment using font size 11 and using 1.5 spacing to allow for comments and annotations to be added by the markers.

Complete the appropriate cover sheet for this assessment and append your work.

This assessment will be marked anonymously and should show your student number only.

Submit this coursework assessment task via Moodle.

### **Late Submission**

Assessments must be submitted in the format specified in the assessment task, by the deadline and to the submission point published on Moodle. Failure to submit by the published deadline will result in penalties which are set out in Section 6 of the Academic Regulations, available at:

<https://icity.bcu.ac.uk/Quality-Enhancement-and-Inclusion/Quality-Assurance-and-Enhancement/Academic-Regulations>

### **Word Count**

**Summative Draft Plan [Dataset(s) choice, Data Storage Modelling, Pipeline outline] (20%):**

The total assessment report is suggested to be around 1000 words (excluding title page, abstract, tables, figures, and appendices).

### **Formative Draft submission [Final Individual report]:**

The formative draft submission is intended to allow feedback to be provided which will allow you to improve upon your final assessment report is equivalent to around 4000 words (excluding title page, abstract, tables, figures, and appendices).

The average student is expected to spend 70 hours to complete this assignment.

### **Final Individual report submission (80%):**

The assessment report is suggested to be around 4000 words (excluding title page, abstract, tables, figures, and appendices). The average student is expected to spend 70 hours to complete this assignment.

The maximum word count for this module assessment is shown on Page 1. A +10% margin of tolerance is applied, beyond which nothing further will be marked. Marks cannot be awarded for any learning outcomes addressed outside the word count.

The word count refers to everything in the main body of the text (including headings, tables, citations, quotes, lists etc.). Everything before (i.e. abstract, acknowledgements, contents, executive summaries etc.) and after (i.e. references, bibliographies, appendices etc) is **not** included in the word count limit.

### **Referencing Style**

- ✓ BCU Harvard

More information on referencing is available here: <https://www.bcu.ac.uk/library/services-and-support/referencing>

### **Use of Artificial Intelligence**

Whilst AI tools can be helpful in assisting learning, when it comes to assessment, the Academic Misconduct Procedure is clear that this should be a student's own original work and not the work of other people or AI tools.

The [Use of AI Tools – Student Guidelines](#) document follows the same guidelines your lecturers use. If you are unsure of whether AI is appropriate within your work, please read the guidelines or ask your lecturer. For advice and guidance around academic writing, please visit the [Centre for Academic Success](#).

### **Academic Integrity Guidance**

Academic integrity is the attitude of approaching your academic work honestly, by completing and submitting your own original work, attributing and acknowledging your sources when necessary. Understanding good academic practice in written and oral work is a key element of academic integrity. It is a positive aspect of joining an academic community, showing familiarity with and acknowledging sources of evidence. The skills you require at higher education may differ from those learned elsewhere such as school or college.

You will be required to follow specific academic conventions which include acknowledging the work of others through appropriate referencing and citation as explicitly as possible. If you include ideas or quotations that have not been appropriately acknowledged, this may be seen as plagiarism

which is a form of academic misconduct. If you require support around referencing, please contact the [Centre for Academic Success](#)

It is important to recognise that seeking out learning around academic integrity will help reduce the risk of misconduct in your work. Skills such as paraphrasing, referencing and citation are integral to acting with integrity and you can develop and advance these key academic skills through the [Centre for Academic Success \(CAS\)](#).

To learn more about academic integrity and its importance at university, you can access CAS resources on Moodle. Furthermore, you can book on to workshops and request 1-2-1 support around key academic skills.

### **Academic Misconduct**

Academic misconduct is conduct that has or may have the effect of providing you with an unfair advantage by relying on dishonest means to gain advantage and which therefore compromises your academic integrity.

The Academic Misconduct procedure sets out the process we will follow, and the penalties we may apply, in cases where we believe you may have compromised your academic integrity by committing academic misconduct. The Academic Misconduct Procedure and information about academic support is available at: <https://icity.bcu.ac.uk/Student-Affairs/Appeals-and-Resolutions/Academic-Misconduct-Procedure>

**Task:** Prepare a report of Data Management and MLOps Activities log

**Style:** Report includes two stages:

- 1) Log report of planning an MLOps / Data Engineering pipeline (20%)**  
Individual task sections collated together into a report, accompanied by reflective comments submitted to Moodle in the form of a logbook / activity report.
- 2) Log report of planning and developing an MLOps / Data Engineering pipeline (80%)**  
Individual task sections collated together into a report, accompanied by reflective comments submitted to Moodle in the form of a logbook / activity report.

**Rationale:**

Businesses can utilise Data Science techniques to make data-driven decisions. Data Scientists must not only understand the requirements of the organisation before collecting suitable data but must also consider how the data is effectively processed and structured before it can be used effectively. Once the data has been appropriately structured and situated within a modern data-sourcing system intelligent models can be built, deployed and monitored that make use of this data to augment the decision-making capabilities of the organisation.

This assessment will give you the opportunity to gain experience in analysing and applying Data Management and Machine Learning techniques to build solutions to common problems in modern data driven organisations: how to effectively deploy and manage data-driven machine learning solutions to offer effective decision support. Progress on tasks can be regularly reviewed in-class with verbal feedback provided by module tutors to help guide your learning.

**Description:**

Throughout the module you will be provided with a set of four “Task sheets”, each representing a topic of interest based on the learning outcomes of the module. The learning outcomes are as follows:

- ✓ Model and effectively communicate data management requirements for analytical operations.
- ✓ Implement an appropriate structure for the storage, retrieval and analytical processing of data using appropriate software.
- ✓ Generate insight based on organisational needs by applying appropriate tools to process and analyse stored data.
- ✓ Evaluate and communicate the ethical and legal issues which underpin concerns related to the security and privacy of data.

These task sheets will provide exercises focused on the main topic groups covered in this module and will be directly linked to the work you are doing in CMP6202 Artificial Intelligence and Machine Learning.

Each of these task sheets will contain one or more “exercises” for you to perform and document for that stage of the assessment.

Details of the exercises for each task sheet, along with specific instructions on what is expected from each exercise, will be available on Moodle.

You will be expected to attempt the exercises from **each** task sheet and to **document your efforts** in a logbook report.

Try to ensure that you have covered the following key areas within your discussion:

**Evidence:** Provide appropriate evidence to support the case that the task has been attempted and completed successfully.

**Discussion and reflection:** The discussion should attempt to detail **what**, **why** and **how** of the task.

✓ **What**

- What task is being undertaken?
- What are the key components, systems or concepts under scrutiny?

✓ **Why**

- Why would the task be undertaken?
- Why do we have these key components or systems? Or why is the concept being explored important to understand / relevant to the topic area?

✓ **How**

- How was the task attempted?
- How do the components, systems or concepts under discussion relate to each other to form a more coherent ‘whole’?

\*This should be accompanied by reflective comments.

**Justification:** All relevant major decisions, actions taken, or arguments put forth should be justified in a clear and rational manner where the reader is able to understand the reasoning behind your thoughts.

**Referencing:** The discussion should be supported by appropriate use of referencing and citations, this can be used to provide further external evidence for your justification.

**Structure:** The report should be structured in a clean, clear, and coherent style in a manner that makes it easy for the reader to follow.

### **Additional information:**

#### **Summative Draft Plan**

#### **[Dataset(s) choice, Initial Exploratory Data Analysis & Research Question(s)] (20%, 1/2 of 40%)**

1. Cover page with the title of your project; module code, title, coordinator name; your name and student number; date.
2. Abstract
3. Introduction, background, and identification of Machine Learning problem to be addressed based on your dataset (justified and supported with references to literature)
4. Dataset(s) description and initial data storage plan
5. Initial MLOps / Data Engineering pipeline plan
6. Reflection on your approach so far
7. Further plans for next submission
8. References.

#### **Formative Draft submission [Final Individual report]**

1. Cover page with the title of your project; module code, title, coordinator name; your name and student number; date.
2. Abstract
3. Table of Contents/Figures/Tables
4. Introduction, background, and identification of Machine Learning problem to be addressed based on your dataset (justified and supported with references to literature)
5. Dataset(s) description and initial data storage plan
6. Final MLOps / Data Engineering pipeline plan
7. Initial attempt at Pipeline implementation
8. Reflection on your approach so far
9. Further plans for next submission
10. References.

#### **Final Individual report submission (80%)**

1. Cover page with the title of your project; module code, title, coordinator name; your name and student number; date.
2. Abstract
3. Table of Contents/Figures/Tables
4. Introduction, background, and identification of Machine Learning problem to be addressed based on your dataset (justified and supported with references to literature)
5. Dataset(s) description and initial data storage plan
6. Final MLOps / Data Engineering pipeline plan
7. Final Pipeline implementation and Model deployment
8. Data analysis and insight generation / reporting
9. Pipeline evaluation and monitoring
10. Conclusion, recommendations, and future work
11. References.

For advice on writing style, referencing and academic skills, please make use of the Centre for Academic Success: [Centre for Academic Success - student support | Birmingham City University \(bcu.ac.uk\)](https://www.bcu.ac.uk/academic-success)

**Transferable skills:**

- ✓ Problem solving
- ✓ Quantitative skills
- ✓ Technical literacy
- ✓ Data Modelling
- ✓ Research
- ✓ Academic writing
- ✓ Working digitally
- ✓ Time Management
- ✓ Preparing for the corporate world



**Marking Criteria:**

**Table of Assessment Criteria and Associated Grading Criteria**

<b>Learning Outcomes</b>	1 Model and effectively communicate data management requirements for analytical operations.	2 Implement an appropriate structure for the storage, retrieval and analytical processing of data using appropriate software.	3 Generate insight based on organisational needs by applying appropriate tools to process and analyse stored data.	4 Evaluate and communicate the ethical and legal issues which underpin concerns related to the security and privacy of data.
<b>Assessment Criteria</b> →	<b><u>Summative Draft Plan (20%)</u></b> [Dataset(s) choice, Data Storage Modelling, Pipeline outline]  <b><u>Final Individual report Plan (20%)</u></b>	<b><u>Final Individual report</u></b> Implementation and Deployment	<b><u>Final Individual report</u></b> Application and Analysis	<b><u>Final Individual report</u></b> Evaluation and communication of wider issues
<b>Weighting</b>	<b>40%</b>	<b>20%</b>	<b>20%</b>	<b>20%</b>
<b>Grading Criteria</b>  <b>0 – 29% F</b>	The evidence provided is highly unsatisfactory based on what would be expected at your level of study and has many major issues.  No discussion present.  The discussion makes no attempt at citation or referencing of appropriate sources.  The discussion has no apparent consistent structure	The evidence provided is highly unsatisfactory based on what would be expected at your level of study and has many major issues.  No discussion present.  The discussion makes no attempt at citation or referencing of appropriate sources.  The discussion has no apparent consistent structure	The evidence provided is highly unsatisfactory based on what would be expected at your level of study and has many major issues.  No discussion present.  The discussion makes no attempt at citation or referencing of appropriate sources.  The discussion has no apparent consistent structure	The evidence provided is highly unsatisfactory based on what would be expected at your level of study and has many major issues.  No discussion present.  The discussion makes no attempt at citation or referencing of appropriate sources.  The discussion has no apparent consistent structure
<b>30 – 39% E</b>	The evidence provided is not yet to a satisfactory level of quality and major issues are present.  Very little to no discussion present.  The discussion makes no attempt at citation or referencing of appropriate sources.  The report has no apparent consistent structure	The evidence provided is not yet to a satisfactory level of quality and major issues are present.  Very little to no discussion present.  The discussion makes no attempt at citation or referencing of appropriate sources.  The report has no apparent consistent structure	The evidence provided is not yet to a satisfactory level of quality and major issues are present.  Very little to no discussion present.  The discussion makes no attempt at citation or referencing of appropriate sources.  The report has no apparent consistent structure	The evidence provided is not yet to a satisfactory level of quality and major issues are present.  Very little to no discussion present.  The discussion makes no attempt at citation or referencing of appropriate sources.  The report has no apparent consistent structure
<b>40 – 49% D</b>	The evidence presented is to an emergent/satisfactory level of quality based on	The evidence presented is to an emergent/satisfactory level of quality based on	The evidence presented is to an emergent/satisfactory level of quality based on	The evidence presented is to an emergent/satisfactory level of quality based on

	<p>what would be expected at your level of study, though various issues may still be present, and improvements made.</p> <p>Some surface level discussion may be present which suggests some basic, emergent understanding of topic content but this could be greatly expanded in terms of the depth/breadth of knowledge presented. Little to no reflection is present.</p> <p>Very few points are justified in appropriate detail, and they could be expanded upon further.</p> <p>Very little to no use of appropriate citations and referencing is evidenced.</p> <p>The discussion has some aspects of consistent structure, but this could be greatly improved.</p>	<p>what would be expected at your level of study, though various issues may still be present, and improvements made.</p> <p>Some surface level discussion may be present which suggests some basic, emergent understanding of topic content but this could be greatly expanded in terms of the depth/breadth of knowledge presented. Little to no reflection is present.</p> <p>Very few points are justified in appropriate detail, and they could be expanded upon further.</p> <p>Very little to no use of appropriate citations and referencing is evidenced.</p> <p>The discussion has some aspects of consistent structure, but this could be greatly improved.</p>	<p>what would be expected at your level of study, though various issues may still be present, and improvements made.</p> <p>Some surface level discussion may be present which suggests some basic, emergent understanding of topic content but this could be greatly expanded in terms of the depth/breadth of knowledge presented. Little to no reflection is present.</p> <p>Very few points are justified in appropriate detail, and they could be expanded upon further.</p> <p>Very little to no use of appropriate citations and referencing is evidenced.</p> <p>The discussion has some aspects of consistent structure, but this could be greatly improved.</p>	<p>what would be expected at your level of study, though various issues may still be present, and improvements made.</p> <p>Some surface level discussion may be present which suggests some basic, emergent understanding of topic content but this could be greatly expanded in terms of the depth/breadth of knowledge presented. Little to no reflection is present.</p> <p>Very few points are justified in appropriate detail, and they could be expanded upon further.</p> <p>Very little to no use of appropriate citations and referencing is evidenced.</p> <p>The discussion has some aspects of consistent structure, but this could be greatly improved.</p>
<b>50 – 59% C</b>	<p>The evidence presented is to a reasonable level of quality based on what would be expected at your level of study, though some issues may still be present, and improvements made.</p> <p>A reasonable level of discussion is presented which suggests a decent grasp of some of the core concepts, but this could be expanded further in terms of the depth / breadth of knowledge presented. Some very minor examples of reflection are present.</p> <p>Some major points are justified</p>	<p>The evidence presented is to a reasonable level of quality based on what would be expected at your level of study, though some issues may still be present, and improvements made.</p> <p>A reasonable level of discussion is presented which suggests a decent grasp of some of the core concepts, but this could be expanded further in terms of the depth / breadth of knowledge presented. Some very minor examples of reflection are present.</p> <p>Some major points are justified</p>	<p>The evidence presented is to a reasonable level of quality based on what would be expected at your level of study, though some issues may still be present, and improvements made.</p> <p>A reasonable level of discussion is presented which suggests a decent grasp of some of the core concepts, but this could be expanded further in terms of the depth / breadth of knowledge presented. Some very minor examples of reflection are present.</p> <p>Some major points are justified</p>	<p>The evidence presented is to a reasonable level of quality based on what would be expected at your level of study, though some issues may still be present, and improvements made.</p> <p>A reasonable level of discussion is presented which suggests a decent grasp of some of the core concepts, but this could be expanded further in terms of the depth / breadth of knowledge presented. Some very minor examples of reflection are present.</p> <p>Some major points are justified</p>

	<p>in appropriate detail, but this could be expanded upon further.</p> <p>The discussion includes some attempt at citing and referencing external sources, though this could be greatly improved. There may be various issues with citations and reference formatting, along with how the few sources presented are leveraged.</p> <p>The discussion has a reasonably consistent structure, but this could be somewhat improved, as some issues may still be present, or improvements made.</p>	<p>in appropriate detail, but this could be expanded upon further.</p> <p>The discussion includes some attempt at citing and referencing external sources, though this could be greatly improved. There may be various issues with citations and reference formatting, along with how the few sources presented are leveraged.</p> <p>The discussion has a reasonably consistent structure, but this could be somewhat improved, as some issues may still be present, or improvements made.</p>	<p>in appropriate detail, but this could be expanded upon further.</p> <p>The discussion includes some attempt at citing and referencing external sources, though this could be greatly improved. There may be various issues with citations and reference formatting, along with how the few sources presented are leveraged.</p> <p>The discussion has a reasonably consistent structure, but this could be somewhat improved, as some issues may still be present, or improvements made.</p>	<p>in appropriate detail, but this could be expanded upon further.</p> <p>The discussion includes some attempt at citing and referencing external sources, though this could be greatly improved. There may be various issues with citations and reference formatting, along with how the few sources presented are leveraged.</p> <p>The discussion has a reasonably consistent structure, but this could be somewhat improved, as some issues may still be present, or improvements made.</p>
<b>60 – 69% B</b>	<p>A formative draft attempt was submitted. You have integrated some of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a good level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present, and improvements made.</p> <p>A good level of discussion is presented which suggests a grasp of many of the core concepts, but this could be expanded upon further in terms of the depth / breadth of knowledge presented.</p> <p>The discussion is accompanied by some examples of reflective comments regarding how you have approached enhancing your</p>	<p>A formative draft attempt was submitted. You have integrated some of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a good level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present, and improvements made.</p> <p>A good level of discussion is presented which suggests a grasp of many of the core concepts, but this could be expanded upon further in terms of the depth / breadth of knowledge presented.</p> <p>The discussion is accompanied by some examples of reflective comments regarding how you have approached enhancing your</p>	<p>A formative draft attempt was submitted. You have integrated some of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a good level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present, and improvements made.</p> <p>A good level of discussion is presented which suggests a grasp of many of the core concepts, but this could be expanded upon further in terms of the depth / breadth of knowledge presented.</p> <p>The discussion is accompanied by some examples of reflective comments regarding how you have approached enhancing your</p>	<p>A formative draft attempt was submitted. You have integrated some of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a good level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present, and improvements made.</p> <p>A good level of discussion is presented which suggests a grasp of many of the core concepts, but this could be expanded upon further in terms of the depth / breadth of knowledge presented.</p> <p>The discussion is accompanied by some examples of reflective comments regarding how you have approached enhancing your</p>

	<p>understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>Attempts are made to justify points in a reasonably logical manner, supported by evidence. Though this could be improved further.</p> <p>The discussion is supported by some appropriate references and citations of external sources. There may be some issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, some minor issues may still be present, or improvements made.</p>	<p>understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>Attempts are made to justify points in a reasonably logical manner, supported by evidence. Though this could be improved further.</p> <p>The discussion is supported by some appropriate references and citations of external sources. There may be some issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, some minor issues may still be present, or improvements made.</p>	<p>understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>Attempts are made to justify points in a reasonably logical manner, supported by evidence. Though this could be improved further.</p> <p>The discussion is supported by some appropriate references and citations of external sources. There may be some issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, some minor issues may still be present, or improvements made.</p>	<p>understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>Attempts are made to justify points in a reasonably logical manner, supported by evidence. Though this could be improved further.</p> <p>The discussion is supported by some appropriate references and citations of external sources. There may be some issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, some minor issues may still be present, or improvements made.</p>
<p><b>70 – 79%</b> <b>A</b></p>	<p>A formative draft attempt was submitted. You have integrated most of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a very good level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present, and improvements made.</p> <p>A very good level of discussion is present which suggests a grasp of almost all the core concepts, however the</p>	<p>A formative draft attempt was submitted. You have integrated most of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a very good level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present, and improvements made.</p> <p>A very good level of discussion is present which suggests a grasp of almost all the core concepts, however the</p>	<p>A formative draft attempt was submitted. You have integrated most of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a very good level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present, and improvements made.</p> <p>A very good level of discussion is present which suggests a grasp of almost all the core concepts, however the</p>	<p>A formative draft attempt was submitted. You have integrated most of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a very good level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present, and improvements made.</p> <p>A very good level of discussion is present which suggests a grasp of almost all the core concepts, however the</p>

	<p>depth of knowledge presented could be enhanced further.</p> <p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>Most major points are justified in appropriate detail.</p> <p>Much of the discussion is supported by appropriate references and citations of external sources. There may be some very minor issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, a few minor issues may still be present, or improvements made.</p>	<p>depth of knowledge presented could be enhanced further.</p> <p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>Most major points are justified in appropriate detail.</p> <p>Much of the discussion is supported by appropriate references and citations of external sources. There may be some very minor issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, a few minor issues may still be present, or improvements made.</p>	<p>depth of knowledge presented could be enhanced further.</p> <p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>Most major points are justified in appropriate detail.</p> <p>Much of the discussion is supported by appropriate references and citations of external sources. There may be some very minor issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, a few minor issues may still be present, or improvements made.</p>	<p>depth of knowledge presented could be enhanced further.</p> <p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>Most major points are justified in appropriate detail.</p> <p>Much of the discussion is supported by appropriate references and citations of external sources. There may be some very minor issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, a few minor issues may still be present, or improvements made.</p>
<p><b>80 – 89%</b></p> <p><b>A+</b></p>	<p>A formative draft attempt was submitted. You have integrated most of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a very high level of quality based on what would be expected at your level of study,</p>	<p>A formative draft attempt was submitted. You have integrated most of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a very high level of quality based on what would be expected at your level of study,</p>	<p>A formative draft attempt was submitted. You have integrated most of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a very high level of quality based on what would be expected at your level of study,</p>	<p>A formative draft attempt was submitted. You have integrated most of the key improvements identified within the formative draft feedback and from discussions with your tutor.</p> <p>The evidence presented is to a very high level of quality based on what would be expected at your level of study,</p>



	<p>though some very minor issues may still be present, and improvements made.</p> <p>An excellent level of discussion is present which suggests a grasp of all the core concepts, however the depth of knowledge presented could be enhanced further.</p> <p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>All major points are justified in appropriate detail.</p> <p>Most of the discussion is supported by appropriate references and citations of external sources. There may be a few very minor issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, very few minor issues may still be present, or improvements made.</p>	<p>though some very minor issues may still be present, and improvements made.</p> <p>An excellent level of discussion is present which suggests a grasp of all the core concepts, however the depth of knowledge presented could be enhanced further.</p> <p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>All major points are justified in appropriate detail.</p> <p>Most of the discussion is supported by appropriate references and citations of external sources. There may be a few very minor issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, very few minor issues may still be present, or improvements made.</p>	<p>though some very minor issues may still be present, and improvements made.</p> <p>An excellent level of discussion is present which suggests a grasp of all the core concepts, however the depth of knowledge presented could be enhanced further.</p> <p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>All major points are justified in appropriate detail.</p> <p>Most of the discussion is supported by appropriate references and citations of external sources. There may be a few very minor issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, very few minor issues may still be present, or improvements made.</p>	<p>though some very minor issues may still be present, and improvements made.</p> <p>An excellent level of discussion is present which suggests a grasp of all the core concepts, however the depth of knowledge presented could be enhanced further.</p> <p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p> <p>All major points are justified in appropriate detail.</p> <p>Most of the discussion is supported by appropriate references and citations of external sources. There may be a few very minor issues with the way that your discussion leverages these sources as well as the citation and referencing style presented.</p> <p>The discussion has a consistent structure which makes it easy for the reader to follow, very few minor issues may still be present, or improvements made.</p>
<b>90 – 100% A*</b>	<p>A formative draft attempt was submitted. You have integrated all the key improvements identified within the formative draft feedback and from</p>	<p>A formative draft attempt was submitted. You have integrated all the key improvements identified within the formative draft feedback and from</p>	<p>A formative draft attempt was submitted. You have integrated all the key improvements identified within the formative draft feedback and from</p>	<p>A formative draft attempt was submitted. You have integrated all the key improvements identified within the formative draft feedback and from</p>

discussions with your tutor.	discussions with your tutor.	discussions with your tutor.	discussions with your tutor.	discussions with your tutor.
<p>The evidence presented is to an excellent level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present.</p> <p>An outstanding level of discussion is present, which suggests a grasp of all the core concepts, however the depth of knowledge presented could be enhanced further.</p>	<p>The evidence presented is to an excellent level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present.</p> <p>An outstanding level of discussion is present, which suggests a grasp of all the core concepts, however the depth of knowledge presented could be enhanced further.</p>	<p>The evidence presented is to an excellent level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present.</p> <p>An outstanding level of discussion is present, which suggests a grasp of all the core concepts, however the depth of knowledge presented could be enhanced further.</p>	<p>The evidence presented is to an excellent level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present.</p> <p>An outstanding level of discussion is present, which suggests a grasp of all the core concepts, however the depth of knowledge presented could be enhanced further.</p>	<p>The evidence presented is to an excellent level of quality based on what would be expected at your level of study, though some reasonably minor issues may still be present.</p> <p>An outstanding level of discussion is present, which suggests a grasp of all the core concepts, however the depth of knowledge presented could be enhanced further.</p>
<p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p>	<p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p>	<p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p>	<p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p>	<p>The discussion is accompanied by high-quality reflective comments regarding how you have approached enhancing your understanding of the topic and how you might further work on enhancing your skills and knowledge in the future.</p>
<p>All major points are justified in appropriate detail.</p>	<p>All major points are justified in appropriate detail.</p>	<p>All major points are justified in appropriate detail.</p>	<p>All major points are justified in appropriate detail.</p>	<p>All major points are justified in appropriate detail.</p>
<p>All of the discussion is supported by appropriate references and citations of external sources. There are little to no issues with the way that your discussion leverages these sources, as well as the citation and referencing style presented.</p>	<p>All of the discussion is supported by appropriate references and citations of external sources. There are little to no issues with the way that your discussion leverages these sources, as well as the citation and referencing style presented.</p>	<p>All of the discussion is supported by appropriate references and citations of external sources. There are little to no issues with the way that your discussion leverages these sources, as well as the citation and referencing style presented.</p>	<p>All of the discussion is supported by appropriate references and citations of external sources. There are little to no issues with the way that your discussion leverages these sources, as well as the citation and referencing style presented.</p>	<p>All of the discussion is supported by appropriate references and citations of external sources. There are little to no issues with the way that your discussion leverages these sources, as well as the citation and referencing style presented.</p>
<p>The discussion has a consistent structure which makes it easy for the reader to follow, negligible issues may still be present, or improvements made.</p>	<p>The discussion has a consistent structure which makes it easy for the reader to follow, negligible issues may still be present, or improvements made.</p>	<p>The discussion has a consistent structure which makes it easy for the reader to follow, negligible issues may still be present, or improvements made.</p>	<p>The discussion has a consistent structure which makes it easy for the reader to follow, negligible issues may still be present, or improvements made.</p>	<p>The discussion has a consistent structure which makes it easy for the reader to follow, negligible issues may still be present, or improvements made.</p>

## Submission Details:

### Format:

#### 1. Summative Draft Plan:

- Submit Written assignment to Moodle via electronic upload.
  - Written submissions should be provided in Microsoft word (.docx) or (text-based) PDF format.
- Submit chosen dataset(s) via a ZIP archive on Moodle.

#### 2. Formative Draft submission:

- Submit Written assignment to Moodle via electronic upload
  - Written submissions should be provided in Microsoft word (.docx) or (text-based) PDF format.
- Submit pipeline source code and dataset(s) used via a ZIP archive on Moodle.
  - Source code formats (where relevant)
    - ✓ Python scripts – as .PY and or .IPYNB files.
    - ✓ Bash, BAT or PowerShell system scripts – as .sh, .bat or .ps1 files.
    - ✓ R scripts – as .R and or .IPYNB files.
    - ✓ Custom config files for pipeline / web service settings in .cfg, XML, JSON or ini files as appropriate based on the framework used.
    - ✓ Any other relevant file types for the setup / implementation of the system should be clearly discussed with the tutoring team well before the submission.
  - These should be packaged as one zip-file for submission and submitted to the correct assessment point on Moodle (based on whether it is the formative submission or the final submission)

#### 3. Final Individual report submission

- Submit Written assignment to Moodle via electronic upload.
  - Written submissions should be provided in Microsoft word (.docx) or (textbased) PDF format.
- Submit pipeline source code and dataset(s) used via a ZIP archive on Moodle
  - Source code formats (where relevant)
    - ✓ Python scripts – as .PY and or .IPYNB files.
    - ✓ Bash, BAT or PowerShell system scripts – as .sh, .bat or .ps1 files. ■ R scripts – as .R and or .IPYNB files.
    - ✓ Custom config files for pipeline / web service settings in .cfg, XML, JSON or ini files as appropriate based on the framework used
    - ✓ Any other relevant file types for the setup / implementation of the system should be clearly discussed with the tutoring team well before the submission



- These should be packaged as one zip-file for submission and submitted to the correct assessment point on Moodle (based on whether it is the formative submission or the final submission)

### Regulations:

- The minimum pass mark for a module is 40%
- Re-sit marks are capped at 40%

*Full academic regulations are available for download using the link provided above in the IMPORTANT STATEMENTS section*

### Late Penalties

If you submit an assessment late at the first attempt, then you will be subject to one of the following penalties:

- if the submission is made **between 1 and 24 hours** after the published deadline the original mark awarded will be reduced by **5%**. For example, a mark of 60% will be reduced by 3% so that the mark that the student will receive is 57%.
- if the submission is made between **24 hours** and **one week (5 working days)** after the published deadline the original mark awarded will be reduced by 10%. For example, a mark of 60% will be reduced by 6% so that the mark the student will receive is 54%.
- **if the submission is made after 5 days following the deadline, your work will be deemed as a fail and returned to you unmarked.**

The reduction in the mark will not be applied in the following two cases:

- the mark is below the pass mark for the assessment. In this case the mark achieved by the student will stand
- where a deduction will reduce the mark from a pass to a fail. In this case the mark awarded will be the threshold (i.e., 40%)

Please note:

- **If you submit a re-assessment late then it will be deemed as a fail and returned to you unmarked.**

### Feedback:

There will be opportunities for formative verbal feedback on your work within the labs throughout the teaching period.

Written feedback will be provided on the formative draft report, points raised in this feedback should be actioned and fed into your final assessment submission.

Marks and Feedback on your work will normally be provided within 20 working days of its submission deadline via Moodle.

## ***Assignment Checklist***

**Run through this simple tick list before submitting your work!**

### **Report**

Well prepared materials make your work look more professional and easier to understand.

Item	Action	Done?
1	I have used the spellchecker and proofread the work correcting errors several times.	Yes
2	I have checked that all material is directly related to the assignment tasks.	Yes
3	I have checked that all the required information has been included in the work.	Yes
4	The work is professionally presented using consistent headings, fonts and layout.	Yes
5	All tables and images are numbered and captioned.	Yes
6	I have used the structure specified in the assignment.	Yes

### **Referencing and Originality**

Your work will be subjected to checks to ensure it is not copied. Derivative work may leave you subject to penalties, including in extreme cases, expulsion from the University.

Item	Action	Done?
1	All images and tables are fully referenced.	Yes
2	I have not copied any material from anywhere else. All sentences have been paraphrased into my own words.	Yes
3	All references appear in the references section at the end of the presentation.	Yes
4	All references are cited in the text in the form of (author, year). See <a href="https://www.bcu.ac.uk/library/services-and-support/referencing">https://www.bcu.ac.uk/library/services-and-support/referencing</a> for more details.	Yes
5	If I have used quotes, these are fully referenced, appear in quotation marks and form only a small part of my work.	Yes

### **Content**

Is your work complete? Have you included all the required elements?

Item	Action	Done?
1	I have given an analysis of problem.	Yes
2	I have explained why I chose the strategic tools that I have used and used references to support my decisions.	Yes
3	I have completed all practical and theoretical elements of the task and documented each of these within my report document.	Yes
4	I have checked that diagrams are readable (using 10pt font or higher).	Yes
5	I have made changes to my work following the feedback given to me in class and within any further discussion with the module teaching team.	Yes

6	I have used examples provided on Moodle for guidance on how to structure my discussion.	Yes
7	In addition to the set readings, I have used additional appropriate references in my work.	Yes
8	The current prototype data serving, and machine learning system architecture is evaluated effectively.	Yes
9	References are used as appropriate to support the discussion.	Yes
10	Well-reasoned justification is evidenced and discussed for any decisions made, this is also supported by appropriate references.	Yes