

Course / Programme:	BEng Degree in Software Engineering
Module name and code:	SWE6202: Agile Programming
Tutor:	Francis Morrissey
Assignment Number:	2 of 2
Assignment Title:	CleanSMRs API and eCommerce platform
Weighting	80% of overall module grade
Issue Date:	14/11/2024
Word count	Not applicable
Submission Deadline:	10/01/2025@ 2355
	For late submission, see Assessment Regulations for Undergraduate Programmes: <a href="https://www.bolton.ac.uk/student-policy-zone/student-policies-2024-25/academic-misconduct-regulations-and-procedures-2024-25">https://www.bolton.ac.uk/student-policy-zone/student-policies-2024-25/academic-misconduct-regulations-and-procedures-2024-25</a>

**Learning Outcomes assessed:**

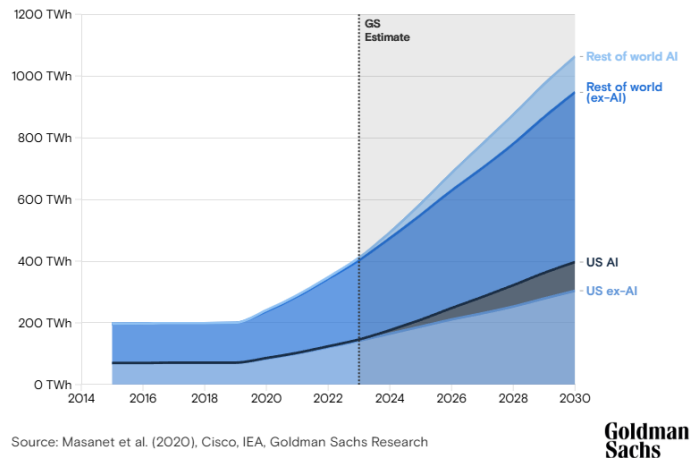
2. Formulate and justify appropriate agile project and risk management strategies for a given project.
3. Formulate and justify appropriate testing strategies based on agile approaches for a given project.
4. Engineer a software artefact for a given project using agile approaches with appropriate documentary evidence.

## Scenario

Artificial Intelligence (AI) is changing the world in profound ways. However, gains from AI come at a steep price; most notably is its insatiable appetite for energy. This consumption is exacerbated by the drive to innovate through the construction of even more powerful generative AI models.

The International Energy Agency (IEA) projects that energy usage in AI-focused data centres

will increase by twofold by 2026 (iea.org, 2024), (as shown in the provided figure).



Environmentalists are understandably concerned that this aggressive consumption of energy to progress AI will accelerate the pace of climate change.

Several tech titans, including Google and Microsoft, are exploring or have already begun projects to integrate Small Modular Reactors (SMRs) for powering their data centres. These efforts reflect the growing interest in using nuclear energy as a sustainable and stable power source for data-intensive operations, especially as the demand for data centers continues to rise with increasing AI workloads (da Silva, 2024).

SMRs offer a promising solution for providing reliable, clean, and carbon-free energy to data centers. Unlike renewable energy sources like wind or solar, which are intermittent, SMRs can deliver constant power 24/7, making them particularly suitable for the high and continuous energy demands of data centers.

For this contrived scenario, CleanSMRs, a firm specialising in engineering SMRs for data centres seeks to develop an eCommerce platform to market their nuclear solutions and to provide data for analyses by the scientists concerned about the impact of SMRs on the environment. The expected deluge of data will be stored in a data lake for mining and predictive analytics by scientific communities and academic institutions. The business model includes subscription access to unstructured data in data lakes and cleaned and processed data in data warehouses.

## References

- da Silva, J. (2024) Future data centres may have built-in nuclear reactors, published 15 October 2024 by BBC News [Online] Available at: <https://www.bbc.co.uk/news/articles/c748gn94k95o>
- IEA (2024) Electricity 2024: Analysis and forecast to 2026 [Online] Available at: <https://www.iea.org/reports/electricity-2024>
- goldmansachs.com (2024) AI is poised to drive 160% increase in data center power demand [Online] Available at: <https://www.goldmansachs.com/insights/articles/AI-poised-to-drive-160-increase-in-power-demand>

## Activity

After reading your report which critically evaluated contemporary software engineering practices in contrast to conventional Software Engineering methodologies, CleanSMRs is convinced that an Agile methodological approach would be most appropriate for Software Engineering in situations where requirements are unclear or are likely to change throughout the development period.

Two artefacts will be delivered:

1. A website which serves as a portal to market and sell items, and to facilitate access to data by the scientific community.
2. An API which collects data from bespoke self-charging IOT devices to transmit measurement data for scientific purposes.

The Scrum Team has written the following User Stories during the Sprint Planning event as follows:

As a Development Team member, I want to use the SQLite3 Database during development of both the API and website for speed of development. Migrations for the MySQL Community Server architecture can be done during deployment. This process is straightforward and well-documented.	As a Product Owner, I want the API and website to be based on Python since many of the staff who will be maintaining this API in the future are familiar with this language.
As a member of the Development Team, I would like to develop UML Class diagrams for both the API and website so that a shared understanding of different types of objects is assured by examining static relationships that exist between them.	As a member of the Development Team, I would like to develop UML Use Case diagrams for both the API and website so that a shared understanding of system behaviour can emerge in order to ensure that all requirements have been captured.
As a member of the Development Team, I would like to develop UML Activity diagrams for both the API and website so that a shared understanding of system behaviour will result from developing a visual depiction of the sequence of actions in a process.	As a member of the Development Team, I would like to develop Entity Relationship diagrams for both the API and website so that a shared understanding of the database model is established by scrutinising a visual representation depicting relationships among objects.
As a member of the Development Team, I want to use the Flask Development framework for API development so that Scrum Team can see valuable increments at Scrum Events very quickly.	As a Product Owner, I want the Flask framework to be used for API development and the Django framework to be used for website development so that current IT staff who already have familiarity

	with Python-based frameworks will have a shorter learning curve during the maintenance phase.
As Product Owner, I want the API to be constructed based on API development best practice (OpenAPI) and documented using Swagger accordingly to ensure interoperability with future systems which may consume this API and evolution and maintenance.	As Product Owner, I want the API to use the JavaScript Object Notation (JSON) since it is currently the de facto data interchange format for APIs.
As Product Owner, I want the API to use standard HTTP methods including POST, GET, PUT, PATCH, and DELETE to ensure interoperability with future system interfaces.	As a Product Owner, I want the API to return appropriate HTTP method status codes for each operation so that systems consuming this API may handle exceptions appropriately.
As Product Owner, I want the API to store details for HTTP GET request methods such as date (ISO 8601 - YYYYMMDD), time (ISO 8601 - hh:mm:ss), time zone offset (ISO 8601 e.g. UTC-10:00), coordinates in decimal degrees, temperature – water (C°), temperature – ambient air (C°), humidity (g/kg), wind speed (km/h), wind direction (decimal degrees), precipitation (mm), haze (%) and becquerel (Bq).	As a Product Owner, I want the API to allow data to be fetched based on specified parameters to reduce the payload for each API operation.
As a Product Owner, I want the API to feature security strategies using a combination of techniques including JWT.	As Product Owner, I want the API to restrict any attempted amendments to observations prior to the current quarter.
As Product Owner, I want the API to facilitate allow bulk operations for operations to improve speed and efficiency.	As Product Owner, I want the API to allow amendments to specific records that have previously been persisted to ensure accuracy of information.
As Product Owner, I would like subscribing institutions to have access to the API by requested a JWT through the website.	As Product Owner, I want the API and website to use the Gunicorn webserver due to speed and capability over alternatives.
As a member of the Development Team, I want to use the SQLAlchemy Object Relational Mapper for API development so that rapid progress can be demonstrated at Sprint Events by leveraging the features of the built-in object-relational mapping layer (ORM).	As a member of the Development Team, I want to use the built-in Flask webserver for the API to support rapid development of increments for demonstrations at Sprint Review events. Gunicorn can be configured during the deployment phase when performance concerns are more crucial due to the number of simultaneous connections. Configuring

	Gunicorn at that point is straightforward and well-documented.
As a member of the Development Team, I want to use the built-in Django webserver for website development which auto-loads when changes are made to support rapid development of increments for demonstration at Sprint Review events. Nginx or Gunicorn can be configured to serve pages during the deployment phase when performance concerns are more crucial due to the number of simultaneous connections. Configuring Nginx or Gunicorn at that point is straightforward and well-documented.	As a member of the Development Team, I want to develop the API and website locally instead of in the Cloud to focus on construction of valuable software increments to demonstrate at Sprint Review events instead of DevOps processes. Migration to the Cloud can be done in the Deployment phase; this process is straightforward and well-documented.
As a Product Owner, I want the Django framework to be used to be used for website development so that current IT staff who already have familiarity with Python-based frameworks will have a shorter learning curve during the maintenance phase.	As a member of the Development Team, I want to ensure responsiveness regardless of resolution and use themes from Bootstrap Front End Framework for website development since it would support rapid development during Sprints. Further tweaking work relating to aesthetics can be done by dedicated Front End designers who specialise in this area during the Deployment phase.
As a member of the Development Team, I want to use the Django Development framework for website development so that Scrum Team can see valuable increments at Scrum Events very quickly.	As a member of the Development Team, I want to use the Django Development framework for website development so that rapid progress can be demonstrated at Sprint Events by leveraging the features of the built-in object-relational mapping layer (ORM).
As a Product Owner, I would like the use of the Django Development framework for website development since it has built-in security features to protect against exploits such as Cross Site Request Forgery (CSRF) and SQL Injection to reduce exposure to security exploits.	As Product Owner, I would like clients to be able to register for accounts on the website with email confirmation so that we can be assured that data held will be accurate and that future emails will be received by the client.
As Product Owner, I would like subscribing institutions to view and amend their details securely through the website.	As Product Owner, I would like subscribers account details to be stored securely so that risk exposure to the firm is minimised.

As Product Owner, I want the API and website to use the Gunicorn webserver due to speed and capability over alternatives.	As a Product Owner, I want the API and the website to be compatible with MySQL Community Server since already employed DBAs already have familiarity with this product so there will be a shorter learning curve during the maintenance phase.
As a member of the Development Team, I want to use SQLite3 Database so that we can demonstrate increments during Sprint Events very rapidly without the overhead of MySQL. The migration from SQLite3 to MySQL is straightforward and well-documented and can be done during the Deployment phase.	As a member of the Development Team, I want to use Github as a source code management system which tracks changes in the source code and enables multiple developers to work together on non-linear development.
As a Product Owner, I want the API and website to be hosted on Amazon Web Services (AWS) so that it can be easily managed by current SysOps personnel who are already managing other deployments on that platform.	As Product Owner, I want the API and website to be served using Gunicorn over Apache so that the firm can benefit from the increased performance due to simpler configuration and faster performance.
As Scrum Master, I would like the Product Owner to use the MoSCow method of prioritisation so that the Development Team has a transparent understanding of the importance of each User Story.	As Scrum Master, I would like the Development Team to use the Planning Poker Agile consensus-based estimating technique so that work requirements are clear to the Scrum Team for each User Story.
As Scrum Master, I would like the Scrum Team to use a collaborative visual tool for tracking project progress so that it is clear which User Stories are being prioritised and how each task is advancing.	As Scrum Master, I would like the Development Team to create a Risk Management Plan so that potential impediments to project success are considered. The appropriate strategy such as Risk acceptance, Risk transference Risk avoidance and Risk reduction should be considered for each.
As a Development Team member, I would like to use an appropriate framework for Test Driven Development features since it is integrated, easy to use and effective. I would like to ensure that the application works as intended and that the requirements meet the Definition of Done.	As a Development Team member, I would like to use the DBeaver Community Edition tool to manage the SQLite Database during development so that members working on different platforms can use the same tools.



## Instructions

- Using the Scrum Framework, you will work in Development Teams of three (3) to nine (9) students. Team members will be assigned by your tutor.
- For the purposes of development, your tutor will act as both Product Owner and Scrum Master.
- During Sprints, each member of the Development Team will practise and document self-organisation strategies, results and reflections. This will be discussed during Sprint Reviews with the tutor acting as both Product Owner and Scrum Master in various segments of the event. These events will be recorded for later review.
- During this module, there will be two (2) Sprints during Product Development - each culminating in a Sprint Review. The duration of each Sprint is a maximum of three (3) weeks.
- The Development Team is expected to demonstrate scalable Cloud-based technologies. Each Development Team member will be provided with AWS credit.
- The Development Team is ultimately expected to use MySQL Community Server database for the persistence layer to allow streamlined maintenance across the client's systems. However, this requirement is flexible for the prototype and a system based on SQLite3 will be adequate since migration to MySQL is not a complicated process. Web Scripting languages and frameworks will be negotiated with the Product Owner during the Sprint Planning Meeting.
- During Sprints, it should be expected that the tutor acting as the Product Owner will request changes as software artefacts evolve. The Development Team should welcome 'changing requirements, even late in development' ([agilemanifesto.org](http://agilemanifesto.org), 2001). It is the responsibility of the Scrum Team to correctly document these requests as User Stories in alignment with the Scrum Framework and determine order and priority. Changes are also expected as a result of testing and refactoring practice; it is important to document these changes.
- Product Increments and associated documentation will be presented to the Product Owner during each Sprint Review event. Sprint Reviews will likely take the form of an Online Zoom meeting which will be recorded for later review.
- It is expected that work towards the Final report be started from the initial Sprint Planning Meeting.

## Task 1 of 3 - Report

Develop a report which includes the following documentation:

- Development Team  
*Overview of the Development Team which includes roles, responsibilities and contributions of each member. This is expected to change for each Sprint.*

- Self-organisation practice including negotiation, results and reflection.
- Sprint Planning documentation
- Product Backlog
- Forecast
- Definition of Done
- Review of Product Backlog refinement
- Risk Management - strategies and justification
- Product Increments

*Screenshots must be included and be of high-quality, neatly cropped, appropriately captioned and discussed within report.*

- Testing - strategies and justification

*Screenshots must be included and be of high-quality, neatly cropped, appropriately captioned and discussed within report.*

- Sprint Retrospective summaries
- Reflections

Submissions should be made to Moodle before the deadline (10/01/2025@ 2355) using the file naming convention: SWE6202\_A2\_IDNumber. For example, if your ID Number is 2400000, then your file name in Turnitin should be SWE6202\_A2\_2400000.

### **Task 2 of 3 – Technical Demonstration**

Prepare and deliver a technical demonstration as a screencast of your artefact to the Product Owner. This should be a maximum of 20 minutes. You should endeavor to discuss salient aspects of the Agile development experience and sections of code which are of special significance.

No demonstration means a mark of zero.

### **Task 3 of 3 – Peer Reviews**

Complete a review of the contribution and performance of each member of the Development Team. This will be done anonymously using online surveys after each Sprint.

### **GenAI Declaration**

At the end of the assessment, you should also include a declaration of any software tools including Generative AI (GAI) applications that you used in developing and completing the assessment.

### **Secondary Research Requirements**

Secondary research support is expected to be correctly cited using Harvard Referencing for both in-text citations and Reference Structure (further details are below). It is expected that the Reference List will contain between **fifteen to twenty sources**. As a MINIMUM the Reference List should include **three refereed academic journals and five academic books**.



## Use of Generative Artificial Intelligence (GAI) Applications in this Assessment

AI Status	Application	Notes
Category B	GAI can be used to assist you with the assessment.	Grammar and/or spell checkers may be used to correct individual words and sentences. GAI can also be used for specific tasks, e.g. to generate synthetic data for API testing, summary information and gen-AI images for e-Commerce platform <u>Any GAI generated content which is presented as your own original work and is not acknowledged will be assessed for academic misconduct.</u>

## Grading

A percentage mark will be provided based on *General Assessment Guidelines for Written Assessments*. Grading is as follows:

A:	70 - 100%
B:	60 - 69%
C:	50 - 59%
D:	40 - 49%

Marks below 40% will be classed as fail.

## Specific Assessment Criteria:

(Please note that the General Assessment Criteria will also apply. Please see section 16)

First class (70% and above):

Students will demonstrate an excellent understanding of the subject content while delivering a systematic review of Software Engineering methodological approaches and associated frameworks; critical analyses results in clear, logical conclusions. Students will demonstrate a comprehensive understanding of the appropriate use of methodologies and situations for which they are best suited. Skilled analyses of related statistical data result in sound conclusions. Extensive research demonstrating the use of a wide range of current secondary research sources will be evident. Academic style and referencing will be of an excellent standard.

Second class (50-69%):

Students will demonstrate a good understanding of Software Engineering methodological approaches and associated frameworks; analyses results in acceptable conclusions. Students will demonstrate a reasonable understanding of the appropriate use of methodologies and situations for which they are best suited. Analyses of related statistical data result in logical conclusions. Research demonstrating the use of current secondary research sources will be evident. Academic style and referencing will be of a good standard.

Third class (40-49%):

Students will demonstrate an acceptable understanding of Software Engineering methodological approaches and associated frameworks; some analyses will be conveyed. Students will demonstrate an adequate understanding of the appropriate use of methodologies and situations in which they are best suited. Research demonstrating some use of current secondary research sources will be evident. Academic style and referencing will be of a fair standard.

Fail (39% and below):

Students who do not meet the requirements of a third-class grade will not successfully complete the assessment activity.

### **Guidelines for the Preparation and Submission of Written Assessments**

1. Written assessments should be word-processed in Arial or Calibri Light font size 12. There should be double-spacing and each page should be numbered.
2. There should be a title page identifying the programme name, module title, assessment title, your student number, your marking tutor and the date of submission.
3. You should include a word-count (excluding reference list/bibliography, figures, tables and appendices).

Where a word limit is specified, the following penalty systems applies:

- Up to 10% over the specified word length = no penalty
  - 10 – 20% over the specified indicative word length = 5 marks subtracted (but if the assessment would normally gain a pass mark, then the final mark to be no lower than the pass mark for the assessment).
  - More than 20% over the indicative word length = if the assessment would normally gain a pass mark or more, then the final mark will be capped at the pass mark for the assessment.
4. **At the end of the assessment, you should include a declaration of any software tools including Generative AI (GAI) applications that you used in developing and completing the assessment. The assessment brief will specify if and how you can use GAI applications in the assessment.**
  5. All written work should be referenced using the standard University of Bolton referencing style—see: <https://libguides.bolton.ac.uk/resources/referencing/>. Harvard referencing format is used for this programme.
  6. Unless otherwise notified by your Module Tutor, electronic copies of assignments should be saved as word documents and uploaded into Turnitin via the Moodle class area. If you experience problems in uploading your work, then you must send an electronic copy of your assessment to your Module Tutor via email BEFORE the due date/time.
  7. Please note that when you submit your work to Moodle, it will automatically be checked for matches against other electronic information, as well as for hidden text characters and GAI generated text. You will be able to see similarity matches but not currently flags for hidden characters and AI-generated text. The outcomes of Turnitin reports may be used as evidence in an academic misconduct investigation (see Section 14).

### **8. Late work**

Late work will be subject to the following penalties:

- Up to 7 calendar days late = 10 marks subtracted but if the assignment would normally gain a pass mark, then the final mark to be no lower than the pass mark for the assignment.
- More than 7 calendar days late = This will be counted as non-submission and no marks will be recorded.
- Late submission of assessments on refer and those which are graded Pass/Fail only, is not permitted unless an extension is approved. See below.

### **9. Extensions**

In the case of exceptional and unforeseen circumstances, an extension of up to 14 days after the assessment deadline may be requested using the standard University Extension Request Form. For approval there would need to be an explanation and evidence of relevant circumstances.

Longer extensions for individual assessments, projects and artefacts may be granted, at the discretion of the Programme Leader.

Requests for extensions which take a submission date past the end of the module (normally week 15) must be made using the Mitigating Circumstances procedure.

Some students with registered disabilities will be eligible for revised submission deadlines. Revised submission deadlines for disability adjustments do not require the completion extension request paperwork. However, students should request these in writing in advance.

Please note that the failure of data storage systems is not considered to be a valid reason for an extension. It is therefore important that you keep multiple copies of your work on different storage devices before submitting it.

### Academic Misconduct

Academic misconduct may be defined as any attempt by a student to gain an unfair advantage in any assessment. This includes plagiarism, collusion, commissioning (contract cheating and unauthorised use of GAI) amongst other offences.

In order to avoid these types of academic misconduct, you should **ensure that all your work is your own and that sources and software applications are attributed**. You can also check originality through Turnitin.

Please note that penalties apply if academic misconduct is proven. See the following link for further details:

<https://www.bolton.ac.uk/student-policy-zone/student-policies-2024-25/academic-misconduct-regulations-and-procedures-2024-25>

## GENERAL ASSESSMENT GUIDELINES – LEVEL HE6

	<b>Relevance</b> Learning outcomes must be met for an overall pass	<b>Knowledge and Understanding</b>	<b>Analysis, Creativity and Problem-Solving</b>	<b>Self-awareness and Reflection</b>	<b>Research/ Referencing</b>	<b>Written English</b>	<b>Presentation and Structure</b>
<b>Class I</b> (Exceptional Quality) <b>85% - 100%</b>	Work is directly relevant and expertly addresses the requirements of the brief.  <b>Learning outcomes are met.</b>	Demonstrates an exceptional breadth and depth of knowledge and understanding of theory and practice beyond the threshold expectation for the level.  Demonstrates mastery in conceptual understanding of a range of specialised areas.	Presents an exceptional synthesis and critical evaluation of findings from a broad range of relevant sources in order to draw clear, systematic, justified and insightful conclusions. Provides a sophisticated critical insight and expertly interprets complex matters and ideas. Demonstrates exceptional creative flair and a high level of originality. Demonstrates exceptional problem- solving skills and initiative.	Provides insightful reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility.	An extensive range of contemporary and relevant reference sources selected and drawn upon.  Sources cited accurately in both the body of text and in the Reference List/ Bibliography.	Writing style is clear, succinct and appropriate to the requirements of the assessment. An exceptionally well-written answer with competent spelling, grammar and punctuation. For example, paragraphs are well structured and include linking and signposting. Sentences are complete and different types are used. A wide range of appropriate vocabulary is used.	The presentational style and layout are correct for the type of assignment. Evidence of planning and logically structured. Where relevant, there is effective inclusion of, and reference to, figures, tables and images.
<b>Class I</b> (Excellent Quality) <b>70% - 84%</b>	Work is relevant and comprehensively addresses the requirements of the brief.  <b>Learning outcomes are met.</b>	Demonstrates an excellent breadth and depth of knowledge and understanding of theory and practice for this level.  Demonstrates an in-depth conceptual understanding of a range of specialised areas.	Presents an excellent synthesis and critical evaluation of findings from a broad range of relevant sources in order to draw clear, systematic, justified and perceptive conclusions. Provides a critical insight and clearly interprets complex matters and ideas. Demonstrates creative flair and a high level of originality. Demonstrates excellent problem-solving skills and initiative.	Provides excellent reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility.	A wide range of contemporary and relevant reference sources selected and drawn upon.  Sources cited accurately in both the body of text and in the Reference List/ Bibliography.	Writing style is clear, succinct and appropriate to the requirements of the assessment. An excellently well written answer with competent, spelling, grammar and punctuation. For example, paragraphs are well structured and include linking and signposting. Sentences are complete and different types are used. A wide range of appropriate vocabulary is used.	The presentational style and layout are correct for the type of assignment. Evidence of planning and logically structured. Where relevant, there is effective inclusion of, and reference to, figures, tables and images.
<b>Class II/I</b> (Very Good Quality) <b>60% - 69%</b>	Work is relevant and addresses most of the requirements of the brief well.  <b>Learning outcomes are met.</b>	Demonstrates a thorough breadth and depth of knowledge and understanding of theory and practice for this level. Demonstrates a sophisticated conceptual understanding of a range of specialised areas.	Presents a perceptive synthesis and critical evaluation of findings from a range of relevant sources in order to draw clear, justified and thoughtful conclusions. Interprets complex matters and ideas well. Demonstrates a good level of creativity and originality. Demonstrates strong problem-solving skills.	Provides very good reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility, as required by the assessment.	A wide range of relevant reference sources were selected and drawn upon.  Sources cited accurately in the main in both the body of text and in the Reference List/ Bibliography.	Writing style is clear, succinct and appropriate to the requirements of the assessment. A very well written answer with competent spelling, grammar and punctuation. For example, paragraphs are well structured and include linking and signposting. Sentences are complete and different types are used. A range of appropriate vocabulary is used.	The presentational style and layout are correct for the type of assignment. Evidence of planning and logically structured in the main. Where relevant, there is effective inclusion of, and reference to, figures, tables and images.

	<b>Relevance</b> Learning outcomes must be met for an overall pass	<b>Knowledge and Understanding</b>	<b>Analysis, Creativity and Problem-Solving</b>	<b>Self-awareness and Reflection</b>	<b>Research/ Referencing</b>	<b>Written English</b>	<b>Presentation and Structure</b>
Class II/i (Good Quality) <b>50% - 59%</b>	Work addresses key requirements of the brief. Some irrelevant content.  <b>Learning outcomes are met.</b>	Demonstrates a sound breadth and depth of knowledge and understanding of theory and practice for this level.  Demonstrates a sound conceptual understanding of specialised areas.	Presents a logical evaluation of findings from a range of relevant sources in order to draw clear and justified conclusions. Interprets some complex matters and ideas. Demonstrates some creativity. Demonstrates effective problem-solving skills and initiative.	Provides good reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility, as required by the assessment.	A range of relevant reference sources selected and drawn upon.  Most sources accurately cited both the body of text and in the Reference List/Bibliography.	Writing style is mostly appropriate to the requirements of the assessment. Grammar, spelling and punctuation are generally competent and minor lapses do not pose difficulty for the reader. Paragraphs are structured and include some linking and signposting. Sentences are complete. A range of appropriate vocabulary is used.	The presentational style and layout are correct for the type of assignment. Logically structured in the most part.  Inclusion of figures, tables and images but not all relevant or referred to.
Class III (Satisfactory Quality) <b>40% - 49%</b>	Work addresses the requirements of the brief, although superficially in places. Some irrelevant content.  <b>Learning outcomes are met.</b>	Demonstrates a sufficient breadth and depth of knowledge and understanding of theory and practice for this level.  Demonstrates a conceptual understanding of some specialised areas.	Presents an evaluation of findings from a range of sources in order to draw some valid conclusions. Interprets some complex matters and ideas but with descriptive passages evident which lack clear purpose. Demonstrates creativity in places. Demonstrates sufficient problem-solving skills and initiative.	Provides some reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility, as required by the assessment.	Some relevant reference sources selected and drawn upon.  Some weaknesses in referencing technique.	Writing style is occasionally not appropriate for the assessment. Grammar, spelling and punctuation are generally competent, but may pose minor difficulties for the reader. Some paragraphs may lack structure, and there is limited linking and signposting. Some appropriate vocabulary is used	The presentational style and layout are largely correct for the type of assignment.  Adequately structured. Inclusion of some figures, tables and images but not all clear, relevant and/or referred to.
Borderline Fail <b>35% - 39%</b>	Work addresses some of the requirements of the brief. Irrelevant and superficial content.  <b>One or more learning outcomes have not been met.</b>	Demonstrates a lack of knowledge and understanding of theory and practice for this level. Demonstrates Insufficient conceptual understanding of specialised areas.	Presents a limited evaluation of findings from set sources. Descriptive or narrative passages evident which lack clear purpose. Demonstrates little creativity. Demonstrates insufficient problem-solving skills and initiative.	Provides limited reflection and critical self-awareness in relation to the outcomes of own work and personal responsibility, when required.	Sources selected are limited and lack validity/relevance.  Poor referencing technique employed.	Writing style is unclear and does not match the requirements of the assessment. Deficiencies in spelling, grammar and punctuation make reading difficult and arguments unclear in places. Paragraphs are poorly structured.	For the type of assignment, the presentational style, layout and/or structure are lacking.  Inclusion of figures, tables and images but not clear, relevant and/or referred to.
Fail <b>&lt;34%</b>	Work does not address the requirements of the brief. Irrelevant and superficial content.  <b>One or more learning outcomes have not been met.</b>	Demonstrates inadequate knowledge and understanding of theory and practice for this level.  Demonstrates Insufficient conceptual understanding of relevant areas.	Analysis is weak and poorly constructed with inadequate sources drawn upon. Demonstrates little or no creativity. Demonstrates a lack of problem-solving skills and initiative.	Provides inadequate reflection and self-awareness in relation to the outcomes of own work and personal responsibility, when required.	An absence of relevant sources selected and drawn upon.  Poor referencing technique employed.	Writing style is unclear and does not match the requirements of the assessment in question. Deficiencies in spelling, grammar and punctuation make reading difficult and arguments unclear. Unstructured paragraphs.	For the type of assignment, the presentational style, layout and/or structure are lacking.  Inclusion of figures, tables and images but not clear, relevant and/or referred to.