**AC41004
Industrial
Team Project**

2020

**Discipline of Computing
University of Dundee**

Description of Team Project Portfolio and Marking Scheme

About

This document describes what you are required to submit for the AC41004 Industrial Team Project and includes details of the final report and presentation, the deadline for submitting, the intended learning outcomes of the module, the marking criteria, and other useful information and resources.

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Team Project Portfolio

The final portfolio for the Team Project comprises the following main components: (i) a final report + appendices; (ii) a presentation / demo of your end product; (iii) a completed feedback form; (iv) a completed peer review by each member of your team. These are described in more detail below.

Deadline

The deadline for submitting your portfolio is 23:59 (11:59pm) on Monday 26th October, 202020; that's Monday of Week 4 in Semester 1.

Percentage

The assignment is worth 100% of your total mark for the module.

Late penalties

As per the University policy, the penalty for submitting your assignment late is one grade point per day late (meaning if a submission is one day late and marked as a C2 it will receive a C3 grade). A day is defined as each 24 hour period following the submission deadline including weekends and holidays. Assignments submitted more than 5 days after the agreed deadline will receive a zero mark (AB).

Learning outcomes

The team project addresses the following learning outcomes:

- To demonstrate understanding of the full software development lifecycle: problem definition, client interaction, selection of appropriate tools and technologies, approaches to project management, software engineering practices, software design and evaluation, documentation, reporting and communication.
- To design and deliver a software solution using current technologies in line with a given specification.

- To work together effectively as part of a self-organizing software development team in order to complete a time-limited, client-focused project.
- To apply key technical skills in relation to software design and development.
- To develop an awareness of and to apply ethical considerations when conducting software evaluations.
- To develop skills in client interaction and client management as part of a software project.
- To manage project requirements throughout the development lifecycle.
- To fulfil reporting requirements as part of a software project.
- To present a software solution for appraisal.
- To develop and apply problem-solving, team working, project management, communication, time-management and reporting skills in line with professional software engineering considerations and ethical considerations for software evaluation.

What you need to submit

You should submit the following:

A ZIP file should be uploaded to My Dundee which contains an electronic copy of your report as a PDF, your project presentation, a feedback form and also relevant appendices as below:

- your software and source code;
- a user manual or technical manual for how to use your product;
- the minutes of your meetings with the management team and client;
- your project presentation / demonstration material;
- any other appropriate appendices that provide evidence of the work that you have done, e.g. specifications, designs, plans, evaluation materials.

NOTE: Please name your ZIP as follows: *Team <number>.zip* (e.g. *Team 1.zip*).

NOTE: If you include any evaluation materials in your report or appendices then please do not include anything identifiable about your users / participants such as names or other personal details; they should remain anonymous.

The Final Report

The aims of the report are (i) to present the work to the client and examiners, (ii) to provide a written record for future reference by users of your software and further developers of your work, and (iii) to demonstrate your skills in writing and structuring a report.

The report should give a clear description of the lifecycle stages undertaken and must describe the use of appropriate tools to support the development process. It should give a full and accurate description of the work done and achievements made, together with software documentation and a user manual. Every effort should be made to provide a professional, quality description of the work.

Format of report

The report should be formatted as a justified, double-column, single-spaced document and written in 10pt Times New Roman font. A Microsoft Word template has been provided to you on My Dundee which is already in this format and provides you with suggested sections for your report along with suggested content for these sections. The report should not exceed 15,000 words or 15 pages in length (excluding appendices) but ask if you have any questions about this. When printing the hard copy of your report it should be printed single-sided.

Example report

As noted, there is a sample / template document on My Dundee which describes and illustrates the format which must be adopted for the report; please consult this for more detail.

Report style and content

The report should be written in a formal style: it is neither a diary nor a magazine article. All pages should be numbered. All references used should be cited in the main body of the report. The report should be written in third person. The main body of the report should address the following sections:

- **Introduction**: An explanation of the problem and the objectives of the project. It is very important to give a clear description of what the project is actually intended to do, preferably in non-technical terms.
- **Background**: A brief review of relevant background literature and any similar products. Try to place the project in a wider context and this could include the scientific, technical, commercial, social and ethical context.
- **Specification**: A specification of the problem and an explanation of how the team arrived at this specification. An initial work schedule including an overall project plan with time-scales and deliverables.
- **Design**: Design decisions and trade-offs should be described including consideration of alternatives and justification for choices made, e.g. when selecting algorithms, tools, data structures and implementation environments or when designing for usability.
- **Implementation and Testing**: A description of the main / important aspects of production, testing and debugging including any key challenges overcome or examples of code you are particularly pleased with.
- **Evaluation**: Describe how you evaluated your system including any aspects of usability and user-centred design. Where a user evaluation is conducted the process of evaluation should be described (including ethical considerations) along with a presentation of the results obtained and discussion of the results, their implications and any conclusions drawn.

- **Description of the final product**: A clear description of what the final product looks like and what it does.
- **Appraisal**: A critical appraisal of the project where you reflect on any lessons learnt during the course of the project with the benefit of hindsight, e.g. would you do anything differently if you could do the entire project again?
- **Summary and Conclusions:** Summarise the main points of what you have achieved in your project and the main conclusion(s) that can be drawn.
- **Recommendations for future work.**

NOTE: please see the sample / template document on My Dundee for some additonal suggestions about what to put in each of these sections.

Appendices

The main body of the report should read as a self-contained document. However, appendices can be used for necessary supporting documentation. A complete set of appendices will contain the following: project plans, requirements specifications (which may be in the form of user stories), designs (e.g. database designs, software designs, user interface designs), evaluation materials (description of tasks, evaluation forms and questionnaires), source code, a user manual, minutes of your team meetings and any other pertinent information for the project. NOTE: please conform to ethical practices when presenting evaluation data, e.g. personal data for evaluees should be anonymised. The above sections can be arranged appropriately into different folders within your appendices; there is no need to compile them into a single document. Please ensure that appendices are well labelled and organised and also cross-referenced appropriately within the body of your report.

'Log Book' or Equivalent

Please consider how your team will organize the work that it does. Have you identified a set of tasks that have to be completed, have you allocated these to people in your team, do have a record of when they were done? Ideally, we would like to see some representation of this in your report and/or appendices. If you decide to adopt an Agile approach to your development then this may be presented in the form of user stories, backlogs, or Kanban boards. In addition, if you make use of version control platforms such as GitHub then it may offer similar features which could be presented in the form

of screenshots or weblinks. Ideally, we want to see how things evolve during the project. So, what did the Kanban board look like during Week 1, Week 2, Week 3?

The Final Presentation

At the end of the project, all teams will present their end product to the project client. Typically, each team is given approximately 10 minutes to present their work and with time for questions too. There is no formal structure to the presentations per se but commonly we would like to see the following:
- An introduction to the team and the problem.
- How the team decided to approach the problem and organise themselves
- A description of any key factors during the implementation of the system
- A demonstration of the system that was created
- Results of any evaluations that were conducted
- Summary and conclusions

The presentation mimics the structure of your report to an extent but the main focus should be on the demonstration of your final product and so you should ensure that you dedicate time to this. Ideally, we like to see a live demonstration of your product but it is also worth considering having some kind of video of your product in action or via screen shots as a backup in case a live demo doesn't work or isn't feasible due to the nature of the project. Please enclose your presentation file(s) inside the ZIP file that you submit to My Dundee alongside your project report and appendices.

Project Feedback Form

As per your other modules you will have a chance to complete online questionnaires to provide feedback. However, we are also keen to receive feedback from you with your project submission. To that end, you will find a feedback form that you can complete available on My Dundee. You can complete this form individually if you wish or you can complete it together as a team. Please enclose the completed feedback form(s) inside the ZIP file that you submit to My Dundee alongside your project report (in PDF form) and the project appendices.

Peer review

The marks for the team project will be subject to peer review. At the end of the project we will ask everyone to complete a peer review individually. This is likely to occur using the online peer review system that you will be familiar with from previous years. The results of the peer review will be used to adjust the grades of individual students where applicable, e.g. in cases where some students have not contributed as much as others whether through reasons of non-attendance or failure to engage with the task or for other reasons outwith their control, e.g. illness or other matters.

If you have awarded someone in your team a greater or lesser contribution than others then please provide comments to justify your decision. In doing so, you may wish to reflect upon the following: were tasks outlined and were these agreed and clear to everyone in the team and when the deadlines were; did people contribute and complete their tasks to the best of their ability; where tasks completed on time; did people attend the team meetings; did people communicate well and keep each other aware of progress; did people contribute in other ways that may not just have been a technical contribution, e.g. project management, quality assurance, documentation, reporting, testing, design, usability, accessibility; were the contributions adequate and to an acceptable standard (bearing in mind different skill levels within the team).

Summary of deliverables

Here's a summary of what you have to submit:
1. Two hard copies of your final report, securely bound.
2. A ZIP file to be uploaded to My Dundee containing the following:
   - A copy of your final report as a PDF
   - Your report appendices, organized appropriately
   - A copy of your team's presentation materials
   - A copy of the project Feedback Form(s) completed by your team
3. Peer reviews to be submitted using the online peer review system.

Marking criteria

Summary information

The marking for the team project is divided into the following sections and weightings:

Criteria	Weighting
Quality of software development This will primarily be evidenced in your project report and comprises the following: - Background, aims, and requirements - Design decisions, methodology, and tools - Implementation, technical work, and testing - Usability and user-centred design - Evaluation and results - Summary, conclusions, appraisal, and recommendations	50%
Project management, planning, and communication This will be evidenced within your report and also the meetings with the client and management team and comprises the following: - Planning - Delivery - Professional conduct - Interaction with management and clients - The report - The presentation / demo	50%

Please see the following sections for more details of the criteria above.

Quality of Software Development and process (50%)

A common misconception with the assessment of the team project is that the end product that you produce will be the sole determinant of your grade. Whilst the end product is certainly the key practical outcome and is the main 'vehicle' that drives you through the project, the assessment of the project will focus primarily on your documented evidence of how you reached that outcome, i.e. your Final Report. For example, conveying your understanding of the problem; your plans and specifications

for the solution; your selection of appropriate tools and technologies to achieve the solution; showing how feedback from the client has shaped your solution; describing how you implemented, tested, and evaluated your solution and how you solved any major problems along the way; critically appraising how the project went and offering recommendations. To an extent, some of these factors will be visible to us during your meetings with the project client and management team. However, the primary conduit through which you will demonstrate and evidence your achievement will be your project report. If you have developed an excellent product, you must make sure that your report reflects that. Your report will also draw upon the entire process you went through. Weaknesses in a report will impact your overall grade. The report is assessed on the following criteria:

Criteria	What we will be looking for	Weight
Background, aims, and requirements	A clear summary of the aims and objectives of the project. A clear summary of the project requirements (which may be in the form of user stories or similar). Background research: did you consider the wider context of the problem and how other people approached the same or similar problems in research or practice? Are there similar systems or solutions? What can we learn from these and take forward?	8
Design decisions, methodology, and tools	What tools, technologies, and languages did you decide to use? Why? What were the alternatives? Did you choose tools appropriate to the software development process and software development methodology that you were undertaking and which would normally be considered by a professional software development team? Did you use project management tools as well as development tools? What software development process / management process did you adopt? Why? What were the major design decisions that had to made, e.g. user interface choices, technology choices, algorithm choices? Is there evidence of your system design? E.g. user interface prototypes, design diagrams, etc.	10

Implementation, technical work, and testing	Describe how the system was implemented. What are the major features? How did these fit into your timescale and your development process? What were the main challenges in implementing these features and how did you overcome these challenges? Can you provide 'evidence' of the key aspects of your implementation, e.g. code snippets or similar? How did you go about testing your system and have you provided evidence of this? Has the full source code for the system been provided in the report Appendices? Is the code well- structured and organized? Is the code sufficient, i.e. does it convey a good degree of technical accomplishment? Does the end product actually achieve the client requirements? Does the end product contain any novel aspects? Is it well-designed? Is a description of the final product provided and does this highlight the main features of the product satisfactorily? Check: does your report provide a complete and accurate representation of what was actually done?	10
Usability and user-centred design	Have you considered usability in the design and implementation of your system? Does your report show that you engaged with users and adapted to their needs where applicable?	5
Evaluation and results	Have you evaluated your system? Have you described the process that you went through to evaluate it? Have you presented the results of the evaluation? Have you discussed the outcomes and their significance?	10
Summary, conclusions, appraisal, and recommendations	Provide a summary of the main outcomes of your project. What was achieved? What wasn't achieved? Are there any limitations? If you were to do the entire project again, what would you do differently; would you make different decisions and choices? What are you most pleased with? What recommendations do you have for future work?	7

Project Management, Planning, and Communication (50%)

Because this is a 'team' project we want to see evidence of how you have approached the problem, including how you organized yourself as a team, planned the work, communicated, and interacted with others. Evidence of this will be drawn from your report (where you describe your process, decision-making, problem-solving, and planning) as well as from the meetings that you attend with the client and management team. This section is assessed on the following criteria:

Criteria	What we will be looking for	Weight
Planning, delivery, motivation	How did you plan your project? Have you conveyed your organization of the project? Was there a clear understanding and direction? Did you have to adapt the plans as you went along? Did you make sensible and timely decisions in your planning? Did you plan well for your meetings with the client and management team? Were the team motivated to produce a credible solution? How well did the team manage the risks involved in the project? Did they show motivation and persistence in dealing with the challenges that arose? Was the approach that was undertaken by the team conducive to ensuring quality and reliability? Did the team actually meet the relevant deadlines and deliverables?	15
Professional conduct	Were appropriate, professional, practices employed in relation to project management, software development, and evaluations? Did the team present themselves professionally at the management and client meetings?	7
Interaction with management and clients	Were meetings attended well? Did the team convey a clear understanding of the task and were they motivated towards addressing the problem? Were different team members aware of what they were doing and were they contributing satisfactorily? Was the team well-prepared for the meetings? Were the interactions professional? Was the team open to	8

	feedback as well as presenting pertinent questions themselves?	
The report	How well have you communicated your work within the report? Is the report a good representation of what you actually achieved? Is it well-structured and well-written? Is the level of detail good? Is there good use of Figures and Diagrams, etc.? Are the appendices comprehensive and well-organized?	10
Presentation and demo	Were the team and their roles introduced? Was the project background / context introduced? Did the team describe how they approached their work and the major stages completed and issues that had to be overcome? Was a demo provided for the end product? Was there any evidence of an evaluation and was this presented? Did the team offer any conclusions and recommendations for future work? Was the length of presentation suitable? How well was it presented, e.g. was it clear, well-structured, well-paced, good eye contact? Did the team respond well to questions? Did the team pose suitable questions to other presentations they were viewing? **NOTE:** the client's input will be sought here too, e.g. what did they think of the presentation?	10