CM20314 - Experimental Systems Project
Deliverable 2: Requirements and Design

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<u>Set</u>: Wednesday 18/10/2023 (week 3)   <u>Due</u>: Friday 15/12/2023 (week 11), 8pm
<u>Percentage of overall unit mark</u>: 25%
<u>Submission Location</u>: Group submission via Moodle   <u>Submission Components</u>: Report   <u>Files</u>: PDF named 'Group # - Requirements and Design'
<u>Anonymous Marking</u>: No

1 Overview

For CM20314 your overall project involves the proposal, specification, design, implementation, testing and evaluation of a novel interactive system. This deliverable focuses on specifying requirements, the high-level architecture of your proposed solution as well as showing preliminary examples of your requirements could be translated into design elements.

2 Deliverable

The deliverable is a group report, written in teams of 7-9. It must have between $3300 - 5300$ words including figure captions – this is a hard limit (appendices are not to be used to extend this limit etc.). Tables of content, figures, diagrams, and references do not count towards the word limit. It must use the ACM Primary Article Template which is a single column format (use Word or LaTeX for editing; submission must be PDF): https://www.acm.org/publications/taps/word-template-workflow

You should remove the CCS Concepts, Additional Keywords and Phrases, as well as the ACM Reference format sections.

In addition to the report, the group must also submit a Group Contribution Form (see below) which does not count towards the word limit.

<u>Structure</u>: The following structure is mandatory. The report is worth 25% of the of the overall unit mark and it will be marked according to the criteria below. Every point listed below must be adequately and concisely covered in the report. The marks listed below sum up to 100%.

Requirements Specification – about 5 pages[1] (30%)

- Briefly reintroduce your project and state your refined problem statement/project aim.

- Present an account of how you established requirements building on reviewed literature and existing solutions/systems, as well as stakeholder engagement.

- Describe the environment of operation including your users/stakeholders in the problem domain, their viewpoints, and their tasks (including ethical concerns).

- Expand upon 2 use cases and their associated scenarios.

- List a set of core functional and non-functional requirements for your proposed system, organised into sensible groups and following good practices (e.g. noting relationships and priorities). Any additional requirements documentation can be included in the appendices.

- Briefly describe how you managed conflicts between requirements.

Architecture Design – about 4 pages (25%)

- Include the High-Level Architecture (HLA) box-and-line diagram of your system with accompanying description (e.g. sub-system responsibilities, considering visibility, economy, spacing, symmetry, maintainability and extensibility).

- Include 2 UML models describing the low-level design of your system (e.g. class model, sequence diagram).

- Present a justification of your chosen design. This should show how your design meets both functional and non-functional requirements by making explicit reference to them in order to illustrate your rationale.

  [Make sure you include explanatory text with your diagrams and models. The meaning of a diagram is very rarely self-evident because it depends on an explanatory frame for interpretation. So, you need to express in words what you wish the reader to understand by them.]

Preliminary Design and Prototyping – about 2 pages (25%)

- Showcase how you translated (or plan to), ideally in consultation with your stakeholders, your requirements into systems interactions and features[2].

- Include any preliminary interface representation (i.e. prototype) that was used to gather user feedback and to validate the aforementioned features, interactions and user goals. The prototypes can vary from low-fidelity paper sketches to higher-

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[1] The suggested "about x pages" is for guidance only, not mandatory.

[2] Features in this context are a set of logically related requirements that allow users to satisfy an objective. These are focused on higher-level goals rather than implementation.

fidelity digital prototypes with limited functionality.

Progress report – about 2 pages (20%)

- Report on progress against your initial project plan in the proposal deliverable. Highlight any:

    o Challenges encountered

    o Corrective actions taken

    o Departures from targets

    o Any plan changes as a result of the above.

- Critique the approaches and methodologies you followed to achieve your project goals.

- Briefly re-evaluate risks that might arise in future stages of the project.

References – (does not contribute to the word count)

- Include a bibliography of the academic papers, articles, websites, and other media you used to provide support and rigour in your report.

- For citations and references you must use the ACM format: https://www.acm.org/publications/authors/reference-formatting

Please notice that the ACM citation format is not explicitly covered by the library website on referencing (see below). If you request the assistance of a librarian, please mention that you are using the ACM format.

The marking criteria for the deliverable are as follows:

Criteria	Percentage of overall deliverable mark
Requirements Specification	**30%**
Re-introduction and problem statement	3%
Establishing requirements	4%
Description of environment, viewpoints, users etc.	6%
Use cases and scenarios	7%
Core functional/non-functional requirements	6%
Conflict management between requirements	4%
Architecture Design	**25%**
HLA diagram, responsibilities, properties	9%
UML models	10% (no explanatory text -2% per diagram)
Justification	6%

Preliminary Design and Prototyping	25%
Translation of req. to interactions/features	10% (no stakeholder involvement -4%)
Preliminary interface representation	10%
User feedback and validation	5%
Progress Report	20%
Report against initial plans	8%
Critique of approaches methodologies	6%
Brief re-evaluation of risks	6%
References and General	-10% max loss
Template non-adherence	up to -2%
Structure non-adherence	up to -2%
Citation style non-adherence	up to -2%
Poor presentation	up to -2%
Non-coherent writing style	up to -2%

3 Group Contribution Form

In addition to your report, please submit a separate PDF with a Group Contribution Form as described in a separate document "CM20314 - Group Contributions and the Group Contribution Form (GCF)".

4 Academic Integrity

Your work will be checked to ensure that you have not plagiarised. For more information about the plagiarism policy at the University see:
https://library.bath.ac.uk/referencing/plagiarism.
Remember that published work that you refer to in your report should be clearly referenced in your text and listed in a bibliography section given at the end of your report. For more information see: https://library.bath.ac.uk/referencing/new-to-referencing.

There is currently much debate about the use of Generative AI Large Language Model (LLM) tools such as ChatGPT in Higher Education and how these impact on assessments and academic integrity.

AI tools can be useful to support you in your project, for example to help inspire ideas and find information quickly. However, AI systems do not possess true comprehension or reasoning abilities. They generate responses by identifying patterns in their training data, not through deep understanding. So, while they may seem intelligent, they cannot replace human critical thinking and analysis which are assessable elements in your reports. If you are thinking about using AI tools in this report, there are some important things to think about before you do.

What **not** to do:

- Have them write full assignments for you. It is unethical and it prevents you from developing core academic skills.

- Copy directly from the tools' output. Passing off AI content as your own is a breach of academic integrity: https://www.bath.ac.uk/corporate-information/academic-integrity-statement/ states that by submitting your coursework, among other things, you confirm that *"You have not presented content created by generative AI tools (such as Large Language Models like ChatGPT) as though it were your own work"*.

What to do:

- Use them to brainstorm ideas.

- Get different perspectives.

- Summarise content.

- Stimulate discussion.

Always maintain a critical mindset:

- Does the response make sense?

- Is it well reasoned and supported?

- Always verify the output! This hones your critical thinking abilities.

- Review citations and references carefully as some of them are fake or irrelevant. Validate key points by reading the original work and confirming or rejecting the generative AI synthesis of information.

Please note that regardless of your decision to use generative AI as a guiding tool for your report, it is your responsibility to ensure that you adhere to the University's academic integrity guidelines and to avoid plagiarism (your report will be reviewed by plagiarism detection software as part of the submission process).

5 Getting Help

- During your tutorials the tutors will be available to answer questions and offer guidance. Please note that tutors will not be able to make decisions on behalf of your group about the course of the project. They are there to discuss your ideas and offer advice.

- Use Moodle forums to post general questions or questions specific to your group's project. The unit convener will respond to these as well as your peers. This way we will create a repository of knowledge that will be available to all.