MSc CS+ Projects

Conducting your masters project

Dr José Cano Reyes
MSc CS+ Projects coordinator

School of Computing Science
University of Glasgow

20/09/2021

Outline

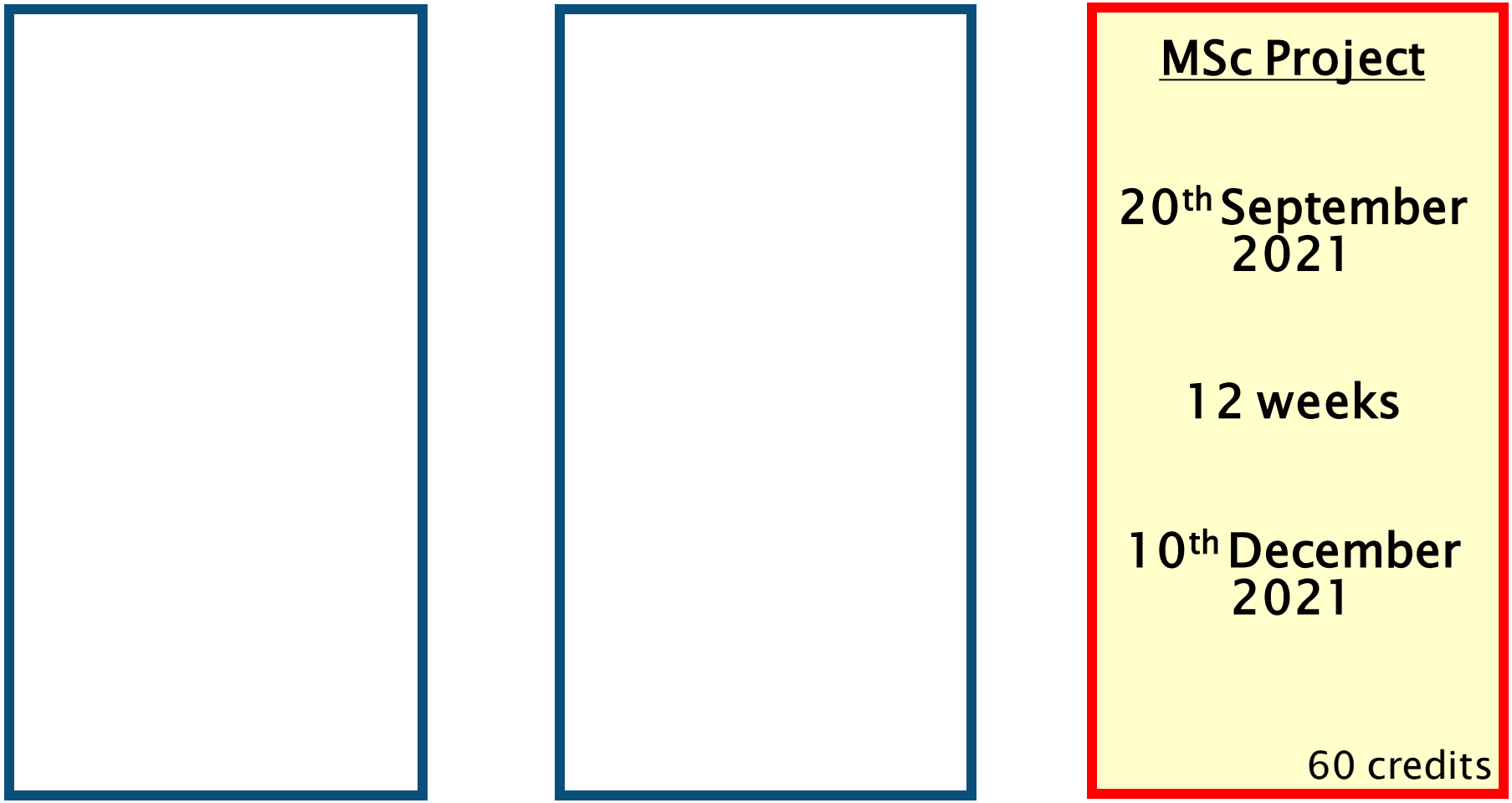
- General information
- Submission/Evaluation
- Report
- Recommendation
- Conclusion

Progression

- To clarify for progression to the project: at least 120 credits
  - at least 90 credits at level M
  - at least 90 credits are grade D or above
  - no credits at grades G or H
  - Grade Point Average (GPA) $\geq$ 12.0

- Resit students
  - After your resit exam, contact Course Director before starting the project
  - Monday 11th October – Friday 5th November 2021

Timeline



semester 1

semester 2

autumn

Project coordinator

- Make sure process runs smoothly
- Allocate students to supervisors
  - You should have received an email from your supervisor
  - If not (or you don't have a supervisor yet) you should receive it soon
- Make sure marking is done according to the University procedures
- Finalise the marks and forward to the exam board

Supervisor

- Guide the student for completing the project
  - Different stages of the project
  - Advice you in the writing stage
  - If you give your report early enough, they will comment on the work
  - You will be responsible for your work and own your work
- They will meet you regularly
  - Typically ~30 minutes per week
- They could be away part of time (break, research)
  - Discuss in advance; plan your time
- If you need a reference letter, he/she is best person to ask

Course director

- Make sure the course…
  - runs smoothly
  - meets the University regulations
- Monitor issues that may arise during the course
  - Initiate remedial actions
- Conceptually owns the course!
  - Once makes a ruling most often that will be the final
- Anything out with stipulated period/programme
  - Needs Course Director explicit Approval

Technical support though online Tutors

- Roughly ~2 hours per day
  - Starting week 27th September
  - Days and times to be announced
  - There will be a Teams channel

- Tutors
  - Douglas Fraser
  - Francesco Perrone
  - Joseph KABERUKA
  - Christopher Chandler
  - Ethan Kelly
  - Nailia Naila

- socs-msc-proj-support@glasgow.ac.uk

Communications

- Please when you communicate indicate…
  - Your specialisation (CS, DS, IS)
  - Your matriculation number (if you are not using University email)
  - Your supervisor's name
- It is important that you provide this information
- Otherwise your emails will be ignored!

Extensions/Jobs/…

- Extensions
  - Getting extensions will affect when the results are released!
  - However, if you end up with a situation…
    - Discuss with your supervisor first
    - After the agreement, email supervisor along with details
    - Supervisor to forward the email along with his/her recommendation to project coordinator
  - Any other requests will not be answered!

- Jobs
  - You are expected to be working on the project full-time (at least until the end of November)

SUBMISSION/EVALUATION

Submission

- Your dissertation has a strict page limit of
  - 30 pages including Appendix
  - recommended page length – 20
  - two band penalty for non-adherence to submission instructions
  - previous A grade dissertations on the Moodle for reference
    - Check out Hall of Fame section

- Deadline
  - The deadline is Friday 10th December 2021 at 16:30
  - Late submission will be penalised

What you submit

- Report
  - 30 pages (recommended 20 pages)
- Code
  - archived/compressed
- Other materials
  - like documentation, if you have developed
- Submit on Moodle
  - Submission details will be on Moodle

Once you submit your project report

- Examiners: both mark reports & code independently
  - Supervisor (involved in the project work)
  - Reader (independent of the project work)

- If their marks differ by 1 band
  - Supervisor's mark is the final mark

- If their marks differ by more than 2 bands
  - They discuss and agree on a mark

- If their marks differ by two letter bands (say A & C or B & D)
  - A third marker will be appointed
  - All three discuss and agree on a final mark

Evaluation Criteria

- Analysis 15%
  - Surveyed relevant literature and existing software products, captured the requirements, analysed the problem and devised a suitable approach
- Product 40%
  - Solution/product well-designed, functional, reliable, robust, efficient, usable, maintainable, and well-documented and demonstrated
- Evaluation 15%
  - Software tested and user evaluation, suggestions for further work
- Report/Dissertation 20%
  - Complete, well-organised, clear, and literate, clearly explain the steps of the project with bibliography and proper citations
- Conduct 10%
  - Did the student attend meetings & engage effectively with the supervisor?

Assessment criteria

- https://moodle.gla.ac.uk/pluginfile.php/4962458/mod_resource/content/1/pgt_project_assessment.pdf

MSc Development Project Assessment						
Grade (Band)	**Analysis**	**Product**	**Evaluation**	**Dissertation**	**Conduct**	**Overall**
A (A1–A5)	The problem analysis is excellent. The survey is comprehensive. The approach is clearly feasible and innovative.	The software product is extremely well designed, implemented, and documented.	The evaluation is really thorough. There are excellent suggestions for further work.	The dissertation is complete, very well organised, very clear, and highly literate.	Excellent.	An excellent project of MSc distinction standard, and possibly worthy of dissemination. (A1 or A2 signifies a truly outstanding and challenging project, definitely worthy of dissemination.)
B (B1–B3)	The problem analysis is very good. The survey is wide. The approach is feasible.	The software product is very well designed, implemented, and documented.	The evaluation is very thorough. There are very good suggestions for further work.	The dissertation is complete, well organised, clear, and literate.	Very good.	A very good project of MSc merit standard.
C (C1–C3)	The problem analysis is good. The survey is adequate. The approach is largely feasible.	The software product is well designed, implemented, and documented.	The evaluation is quite thorough. There are some good suggestions for	The dissertation is nearly complete, fairly well organised, mostly clear, but occasionally less	Good.	A good project of MSc pass standard.

REPORT

Report: common structure

- Title page, Abstract, Table of Contents
- Chapter 1: Introduction ~1 page
- Chapter 2: Analysis/Requirements ~4–6 pages
- Chapter 3: Design & Implementation ~4–5 pages
- Chapter 4: Testing & Evaluation ~4–5 pages
- Chapter 5: Conclusion ~2–3 pages
- References/Bibliography ~1–2 pages
- Appendix (any number of pages)

Title page and Abstract

- Title page
  - Project title
  - Your name in full
  - Month and year of submission

- The abstract is a short summary of the dissertation
  - Its purpose is to catch the reader's attention: is this dissertation worth reading in full?
  - It should be ½–1 page long
  - It should briefly outline the context of the project, its goals, and its achievements
  - It should highlight any novel aspects of the project

Table of contents

- The table of contents lists the chapters of the dissertation
  - showing each chapter's number and title, and the number of its first page
- Similarly, it lists the abstract, acknowledgements, appendices, bibliography, … describe the status of your product
- If chapters are subdivided into sections, these should also be listed
  - showing each section's number and title and the number of its first page
  - section and sub-section details should be indented and less prominent
- If you use a template, this should come automatically
  - Templates (Word, LaTeX) in Moodle

Chapter 1: Introduction

- Briefly explain the context of the project problem

- Specify overall aim and objectives and report structure

Chapter 2: Analysis/Requirements

- Problem Statement
  - Clearly state the problem to be addressed in your project
  - Explain/Motivate why it would be worthwhile to solve this problem

- Background Survey/Analysis
  - Present an overview of relevant previous work including articles, books, existing software products and requirements identification
  - Critically evaluate strengths and weaknesses of previous works

- Effectively combine above in one chapter
  - I have a problem (statement of the problem) and here is the background
  - Or here is the background and I am going to solve the following problem

Chapter 3: Design & Implementation

- Discuss the main features of your design and how it evolved
  - Include high-level design diagrams/data-flow diagrams
  - Highlight any novel features; explain critical design decisions
  - But don't include design documentation here (this can be a separate document)

- In your implementation part
  - discuss the main algorithms and data structures and how they evolved
  - highlight any novel features
  - also discuss your testing strategy

Chapter 4: Evaluation

- Describe how you evaluated your solution/product
- Summarise the evaluation results, and use them to critically evaluate your own work
- Be honest about any shortcomings

Chapter 5: Conclusion

- Describe the status of your research/product
- Summarize what you have achieved
- Compare to what you originally set out to achieve
- Relate your work to relevant previous work
- Suggest further/future work that you think would be worthwhile

Bibliography

- List, in alphabetical order by author and date, all articles that you have consulted
  - For each article, give full bibliographic details
- Use consistent style
  - Full bibliographic details for all items
  - Web pages – include access date
  - Books/articles – full details
- Collect all the details when you access a document first
  - Update the .bib file or Endnote

RECOMMENDATION

Suggested Timeline

- Start the project: 20th September 2021
  - Meet up with supervisor this week, agree on a topic
- Specify the project, update the **title**: 1st October 2021
- Draft of **Analysis** Chapter: 15th October 2021
- Draft of **Product** Chapter initiated: 30th October 2021
- **Evaluation** started: 15th November 2021
- Development stop; Concentrate on writing: 30th November 2021

Content – Avoiding plagiarism

- Plagiarism means:
  - Using another person's work without acknowledgement
  - Example: presenting another person's work as if it were your own

- You must cite the source of anything that is not your work
  - Text (either direct quotation or paraphrase)
  - Ideas
  - Designs
  - Code
  - data
  - diagrams, images, etc

Content – Avoiding plagiarism

- If you must use another person's words exactly, include quotation marks as well as a citation

- Almost always it is better to paraphrase the other person's words (using your own words) – but still include a citation

"Testing can prove the presence of errors, but never their absence." (Dijkstra 1968)

direct quotation

Dijkstra (1968) observed that testing might expose errors in a program, but no amount of testing can ever prove the program free of errors.

paraphrase

Content – Plagiarism vs acknowledgement

- Every project builds on previous work
- It is normal to use previous work in your project, but you are also expected to contribute something new
  - you will be assessed on your own contribution
- Whenever you use another person's work, you must acknowledge its source
- Failure to acknowledge a source is plagiarism
  - this means presenting another person's work as if it were your own

Content – Plagiarism vs acknowledgement

- Wherever you reuse another person's code, acknowledge the source in the code itself (as a comment) and in your dissertation

- Wherever you use another person's idea, design, data, table, figure, image, …, acknowledge the source in your dissertation
  - Example:

Year	2004	2005	2006	2007
UK	2.8%	2.6%	2.8%	1.5%
France	1.8%	2.0%	1.9%	1.5%

Table 4.1 Annual growth rates (The Economist 2008).

Content – Bibliography

- **The bibliography must list all sources (books, articles, webs, etc)**
  - that are cited in your report
  - that provide useful background information

- **Normally order the sources by authors' surnames and dates**

- **For every source, include the author names, date, title and**
  - for an **article**: the title of the journal or conference record in which the article was published, and page numbers
  - for a **book**: the name of the publisher
  - for a **web site**: the URL
  - also, if useful, briefly summarize the content

Content – Citations

- **The Harvard style: author_surname, date**

The quick-sort algorithm was invented by Hoare (1962); see also Wikipedia (2007).

Python (Downey et al. 2002, Martelli, 2006) is a highly dynamic language, suitable for object-oriented and functional programming.

citations in the text

Downey, A., Elkner, J., Meyers, C.(2002) *How to Think Like a Computer Scientist – Learning with Python*, Green Tea Press.

Hoare, C.A.R. (1962) Quicksort, *Computer Journal 5*, pp. 10-15.

Martelli, A. (2006) *Python in a Nutshell*, O' Reilly.

Wikipedia (2007) Quicksort, en.wikipedia.org/wiki/Quicksort.

bibliography

Content – Citations

- **The Vancouver style (numbered) is an alternative**

The quick-sort algorithm was invented by Hoare [2].

Python [1, 3] is a highly dynamic language, suitable for object-oriented and functional programming.

citations in the text

[1] Downey, A., Elkner, J., Meyers, C. (2002) *How to Think Like a Computer Scientist – Learning with Python*, Green Tea Press.

[2] Hoare, C.A.R. (1962) Quicksort, *Computer Journal 5*, pp. 10-15.

[3] Martelli, A. (2006) *Python in a Nutshell*, O'Reilly.

bibliography

- **Latex supports automatic styles (bibtex), while MS Word does not**

Content – Supplementary material

- Supplementary material includes code, documentation, detailed evaluation results, …
- Do not include supplementary material in chapters of the dissertation
- Put supplementary material:
  - in an appendix but **only if** it is essential to understanding of the dissertation **and** it is not too bulky
  - if it is not an appendix include separately in the electronic submission
- Include references to the supplementary material where necessary in your dissertation

Ethical approval

- If your project involves the participation of other people (for example in an evaluation), or data relating to other people
  - You should complete an ethics checklist form

- You may also need to apply for approval from the schools ethics committee see
  - http://www.dcs.gla.ac.uk/ethics for further details

Conclusion

- Your project is critically important!

- The award of MSc requires
  - Satisfying the criteria for progression to the MSc project
  - A project grade of at least D3

- The award of **MSc with Merit** requires
  - A Full GPA of at least 14.5 in all 180 credits

- The award of **MSc with Distinction** requires
  - A Full GPA of at least 17.5 in all 180 credits

ANY QUESTIONS?