Preliminary Project Briefing for CST IB Students

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2018 – 2019
What’s this all about?

Next year you submit a dissertation
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Next year you submit a dissertation

- worth one paper
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- worth one paper
- a quarter of total marks!
Aims of the Project

The main goals are to

▶ demonstrate computer science skills
▶ design, implement, test something substantial
▶ select suitable methods and tools
▶ prepare a convincing report

In addition to

▶ demonstrate ability to select appropriate
  ▶ languages, techniques, algorithms, tools, data structures, etc
▶ demonstrate understanding of the project’s area
  ▶ professional use of appropriate standard algorithms, tools, etc
  ▶ relationship to computer science
  ▶ awareness of standard results & literature
  ▶ avoid inadvertently re-inventing the wheel
Also, to show ability to

- prepare a well-structured and readable document
- demonstrate technical writing skills
- prepare a report which convinces its readers that stated objectives are achieved
You submit your code alongside the dissertation
  ▶ but only the dissertation is typically looked at

Your supervisor and/or DoS writes a two or three sentence report

Some people will be called for viva
Overseers help plan the project and monitor progress

- briefing officer assigns two per student
- they oversee selection and approval of
  - a suitable project
  - its plan
- they check requirements are satisfiable
  - Computing equipment to be used,
  - Other special equipment or resources,
  - IPR, human experiments and other legal obligations.
- liaise with your DoS, especially mid-project

Briefing officer will help if you have problems with your overseers
Ideas and Requirements

The main sources of project ideas are

- your own (moderated) ideas
- supervisors and Directors of Studies
- suggestions on the projects webpage
- previous years’ projects
- industry

In order to get your proposal accepted, you must

- have a named project supervisor
- ensure both your overseers are happy
- obtain written permission for special resources and experiments
  - e.g. tests using human subjects
Content

- choose something with significant technical content
- ideally implement some complex algorithm
- do not do something big yet simple

Narrative

- choose something interesting
- phrase a question or two at the outset
- answer the questions in the conclusion

Evaluation

- choose a project amenable to structured evaluation
- ‘It worked according to plan’ is not sufficient
- components ideally separately testable
- composition ideally evaluable using several metrics
Use Appropriate Tools

Think about tools carefully

- need a parser: use a parser generator
- need to optimise in multiple dimensions: use a hill-climbing library
- need to solve NP problem: use a standard SAT solver
- need to visualise networks: output via dot

Many projects are done in Java or C++,

- but consider OCaml/F#, Scala or C#
- (or Rust, Swift, Go, …)

Use the long vacation to explore tools, libraries and languages
Standard resource is the MCS facility

You can use other and/or non-standard equipment or libraries
  ▶ needs written permission from resource owner

Certainly use git or some other version control system

Relying **only** on your own PC is very risky
  ▶ have a backup plan identifying a second PC or MCS
  ▶ keep backups on MCS file space or cloud server
CST Project Timetable

Start of Michaelmas term
  Formal project briefing
A fortnight later
  Proposal deadline
February
  Progress report
Mid-May
  Dissertation deadline

Send regular updates to your DoS!
Your Tasks Now

After IB exams are done

- look at old projects
  - available in the library
- read up background material
- think about tools
  - read documentation
  - play with toy examples
- start a project log book
  - a hard-back notebook is ideal
- but don’t start implementing your project
  - your overseers might not approve it!
FAQ

How much time should I spend on my project
▶ one paper’s worth

What if I have started my project already?
▶ it might not be approved
▶ also, you describe your *starting point* in your proposal
  ▶ it does not matter whether someone else or you yourself did the previous work

How can I prepare for my project?
▶ think about potential projects
▶ contact potential supervisors
▶ arrive back in October with a proposal draft
Those of you reading the 75% option take two Part II Units of Assessment:

- take note of the assessment dates and include them in your project plan
- session timetables will have hardly any clashes with other Part II material
  - so there is a good chance you can attend sessions you are not registered for
  - (but seminar and practical class space may be limited)
- be careful with your selection of units
  - focus on things you are good at
  - some units use a seminar or ‘reading group’ style, some require good essay writing skills, others involve more programming...
More Information

The project web page is

https://www.cl.cam.ac.uk/teaching/projects/

Here you’ll find links to:

- these slides
- the pink book, your project bible
- project suggestions

Any questions, any time, please ask

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That’s it

See you next year!