Preliminary Project Briefing
for
2015/16 CST IB Students
(2016/17 CST II Students)

CST Part II Project

Next year you submit a dissertation:

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

- To display **Computer Science** skills

- To demonstrate ability to **plan** and **execute** a large project
  - usually software, could be hardware, assembly of a knowledge base, or a mechanically-assisted proof

- To demonstrate ability to select appropriate **languages**, **techniques**, **algorithms**, **tools**, **data structures** etc

- Demonstrate **understanding** of the project’s area:
  - use of appropriate standard algorithms or libraries
  - relationship to Computer Science,
  - awareness of standard results & literature
  - avoid inadvertently re-inventing the wheel.
... continued

- 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 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

- Briefing Officer assigns two per student.
- Oversee selection and approval of a suitable project and its plan,
- Check requirements are satisfiable:
  - Computing equipment to be used,
  - Other special equipment or resources,
  - IPR, human experiments and other legal obligations.
- Monitor progress and liaise with your DoS,
- Briefing Officer will help if you have problems with your overseers
Sources of Projects

Main sources:

- Your own (moderated) ideas,
- Supervisors and Directors of Studies,
- Suggestions on the projects webpage,
- Previous years’ projects,
- Industry.

Requirements:

- You have a named project supervisor,
- Both your overseers are happy,
- Written permission for special resources and experiments.
Content, Narrative and Evaluation

- Choose something with significant technical content.
- Ideally implement some complex algorithm.
- Do not do something big yet simple.
- Choose something interesting.
- Phrase a question or two at the outset.
- Answer the questions in the conclusion.
- 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 visualize 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 vac to explore tools, libraries and languages.
Equipment

- Standard resource is the **MCS** facility
- Use of other and/or non-standard equipment or libraries
  - needs written permission from resource owner.
- Certainly use git/SVN or other version control system.
- Relying **only** on your own PC is very risky:
  - have a backup plan identifying a second PC or MCS equipment.
  - Keep backups on MCS filesystem or cloud server.
The CST Project Timetable

Start of Mich Term $\implies$ Fortnight Later $\implies$ Mid May Noon

- Formal Briefing
- Proposal Deadline
- Dissertation Deadline

Also:

Early 2017: Written progress report to overseers,

Lent Term: presentation to peers,

And send regular updates to your DoS.
So, after IB exams this year...

- Look at old projects,
- Read up background material,
- Think about tools:
  - read documentation
  - play with toy examples.
- Start a project log book
  - a hard-back notebook is ideal
- 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 and your Chapter 1 - it does not matter whether someone else or you yourself did the previous work.
• Review this talk via the web

• The **URL** for projects is:
  
  http://www.cl.cam.ac.uk/teaching/projects/

• That's it ................. see you next year!