Learning Day

. . . or How to Study Computer Science

October 2005

This session is intended to help students to get the best out of Computer Laboratory courses, and covers the following topics:

Learning as a skill: Techniques to cope with lectures, practicals, supervisions and exams.

The Objectives of the CST: Why the course has the structure and contents that it does, and where it leads.

Contacting the Teaching Staff: How, where and when to get advice, make suggestions or complain.

Computers for study and for fun: Use of your own, college, lab, national or international resources for work, play and for keeping in contact.

In case of difficulty: The difference between a difficult course and a disaster, and other classes of problem — with ideas about how to start to resolve them.

1 Learning as a skill

As you sit and listen to this session you will certainly not be able to absorb all that is said. If you try to take notes they will end up a bit sketchy and incomplete, but they may nevertheless help remind you of what was said. This hand-out can also help, though what is actually said in the lecture will not match it in detail, so perhaps there will be some extra useful thoughts given in the live presentation.

Most students will want to make their attendance at lectures an active process rather than a purely passive one: making their own notes or at least annotating the lecturer's handouts to ensure that what was said and what is written there can be reconciled.

Perhaps the most important message to get across here is that studying and learning is not just something that always happens automatically, and that there is some real point in thinking about it as a process. The following books (listed in decreasing order of how seriously I recommend them) can help you understand what others have found to be helpful:

The Sciences Good Study Guide Andrew Northedge, Jeff Thomas, Andrew Lane and Alice Peasgood, The Open University, 1997. This was written to help Open University students understand the process of studying, but almost all of it is directly relevant and helpful for those taking a traditional-style degree course. The section on preparing for examinations is probably the most worthwhile, but it has useful hints on a wide range of other topics (eg taking notes in lectures).

Fresher Pressure Aidan MacFarlane and Ann McPherson, Oxford, 1994. This has more emphasis on social than on the studying bit. Maybe one chapter on studying out of twenty represents their estimation of where the problems of surviving University mainly lie?

Microcosmographia Academica F M Cornford, 1908. Well did you ever feel a need to understand what all those senior members were doing wandering along King's parade in their gowns muttering to one another. This classic explains only too realistically how parts of the University (still) work, and before you dive too deep into student politics aiming to revolutionise and tidy up the way things are organised, read this to understand what you are up against! [By the way the University would like to think that this book now represents ideas that are *well* in the past and that it should now be viewed as sarcasm about an old regime that has now been swept away by a tide of modernisation and efficiency] [Note that this suggestion for reading is at least in part a joke]

A Handwriting Manual Alfred Fairbank, Faber and Faber, 1932 and onwards. On the cover sheet you attach to every single examination question you answer you will find a notice that reminds you that people who write illegibly may be at a severe disadvantage. This appears to be the most global and oft-repeated message that the University as an official body gives its students written notification of — though in general the first time they see this is when they enter an examination hall. One of the things that especially encouraged me about Fairbank's book is that it lays stress that the styles of writing it suggests are ones intended for rapid writing, and that there is merit in fast-written but clear and legible well-formed writing just as much as there is in painstaking art-form calligraphy. At least when I checked `www.amazon.co.uk` in early September they could provide pointers to supplies of this book, even though it is no longer in print. Any other way in which you can develop a really clear style of writing that is quick and easy for you to use will be equally valuable!

2 Objectives of the CST

As well as having goals for the CST, the Computer Laboratory also has a number of constraints that it has to live within. These include the particular lecture rooms we have to use, the times of day we can use them to give our lectures, and the fact that there are at least a few limits on the scale of the computing facilities we can offer to our 1A students. We also have expectations of our students, and plan our courses on the basis that a full student load is roughly

- 12 hours of lectures per week,
- 4 hours (two afternoons) of practical classes, plus perhaps another 4 hours of less supervised practical work,
- around 2 hours per week supervision,
- 12 hours per week reading and assimilating lecture material, looking things up in textbooks etc.
- 6 hours per week preparing for supervisions and working through example sheets and questions from past examination papers.

That is organised to add up to a 40-hour week, and the main point being made here is that in general just attending lectures and organised practicals is not sufficient: private study to make sure you understand what you have been told is generally needed. You will need to take active steps to organise your own time and ensure that you keep a balance between work and play and between the various courses (eg especially the Part IA CST and NST units). Do not just sit and believe that others will sort out an exact balance and schedule for you!

Within these limits our main aims in year one are:

- Give a broad foundation course that will support later and more detailed study in all areas of Computer Science. Hence the 1A course on the Foundations of Computer Science prepares the way for later courses on proving programs correct and on the detailed technology of analysing type-structures for programming languages. It uses the language ML which is good as a vehicle for discussing the way in which fragments of computer programs fit together but which is also used as a day-to-day programming language by some of the laboratory's research groups. The IA course on operating systems leads in to second year coverage in directly the same area. Java is covered so that students all know a language that is suitable for use in major project work later on, while the Easter term Algorithms course (new to IA in 2005-6) introduces systematic coverage of a range of computational techniques.
- Arrange that Maths with Computer Science and the 25% CST receive a coherent collection of courses and will be able (after a little reading up) to join

us for 1B if they want, without allowing this to damage the structure of the course we offer to the 50% CST.

- Make the courses that only 50% students attend interesting and valuable to those who know at this ateg that they intend to continue in our subject. The relevance of courses on Hardware and on Software Engineering will probably be obvious. Mathematics for Computer Science is in fact strongly similar to the Numbers and Sets course offered in the Mathematics Tripos, but material from it is used later on both to back up a study of algorithms and in courses that look at the ultimate limits of what computers can do.

- Keep options for our students open somewhat by making it feasible for them to migrate into another suitable scientific Tripos for year 2 if that will suit their interests best. The most visible effect of this is that all our 1A students take some non-computer-science subject. As well as helping to keep second year options open this is in line with University (and probably national!) policy about keeping some degree of breadth in at least first year studies. A few of our students find this need to take non-computer-science courses painful — they can be reassured that it is only in the first year and that their unhappiness is balanced by the benefit to both those who enjoy the breadth and those who take advantage of the opportunity to switch courses for 1B.

- The Computer Science Course teaches general principles and fundamental results. It is neither a course in keyboard skills nor a direct training in the use of particular current commercially important languages or packages. We want it to provide a basis upon which our graduates will be able to build to keep themselves up to date with the rapidly changing field of computers for years after they leave us. Thus we want to concentrate our teaching on things that are liable to become important over the next five years, more than on those that have been important for the last ten but are now about to start their decline. As the Head of Department has explained, we hope that our graduates will help to shape the future rather than just survive in it;

- Our 1A course should not rely on any particular background. Some incoming students will have taken a Computer-related GCSE and A-level, and some will have had significant experience either at home or perhaps during a year off. Others will have hardly programmed before at all. But even among the "experts" there will be hardly any who have come across ML, and few who have met the material in our Systems course (or, say, in the Professional Practise and Ethics lectures), so to the extent that it is possible we have put people on a reasonably level field to start with. The laboratory's experience over many years is that incoming students who are totally new to computers can find things quite hard work during part of the first year, but that by year two it is hard to know who had originally had what background: so if you do find it tough then hang on in there in the confident expectation that things will get better. Note that we run some "help sessions" intended to give extra support to those who might find them useful.

- Many students who arrive here have been used to being comfortably at the top of their classes throughout their school careers. It can be hard to adapt to uncertainty about one's standing here or the fact that some of the courses here can be tough. Via help sessions, the supervision system and encouraging students to help each other out we want to make it as easy as we can for all to find their feet.

- Initial teaching uses PCs, but after Christmas the emphasis moves to use of Unix workstations. This change-over is deliberate and means that all students will have exposure to two different computing environments. Later courses on operating systems will want to look back to both of these and to compare them and explain some of their internal structures. One thing to note about this is that the Computer Lab would really quite prefer students to use the machines in that order. In particular it is considered strongly desirable that through the year all students get significant practical exposure to both Windows and Unix, and anybody who runs **all** their examples on their own machine and just one of these operating systems is losing out.

- As well as the Help Sessions and this Learning Day the laboratory arranges other support and general guidance sessions throughout the year (eg information on installing Linux on a personal computer, early advice on careers and vacation jobs, ...). Several of these are timetabled for late Thursday afternoons.

- We want to make at least most of our courses interesting! A few may cover material that is essential but is not so enthralling, but most of the material in the course ought to be fun.

Year two of the CST covers a wide range of detailed technical subjects. On the hardware front it repeats the Digital Electronics course so that ex Maths+C/S and ex-25% students can take it and catch up, and then moves on into serious computer design. The programming side gives coverage of more advanced aspects of Java, and then goes on to mention various other languages, and to a study of how compilers are constructed. The operating systems thread looks at concurrent systems and networks. The first coverage of Artificial Intelligence starts in Part 1B. Other courses look at the theory behind computation (algorithms, computation theory) and major application areas (eg graphics). You can see this year's version in the Reporter or the laboratory hand-out of lecture schedules, but of course there will be small changes from year to year. In year two our students do a group project.

Year three provides more of an opportunity to specialise, particularly with the final year project. It is too early for you to worry about that yet.

Some of our students stay on here or elsewhere to become research students. In general the correct time to start planning that is in the Michaelmas Term of your Part II year. This apparently astonishingly early start is especially needed if you wish to study abroad, but even for places within Cambridge some sources of funding operate early closing dates for applications. The laboratory is planning the introduction of a fourth-year option that will be relevant to those proceeding to graduate study. It is not in place yet but over the next few years you may expect to see announcements about progress in its development.

3 Cooperation vs. Plagiarism

There has recently been a fair amount of public worry about the boundary where obtaining help from fellow students and supervisors with your practical work strays over into cheating, plagiarism and fraud. It would be really nice to be able to say that the laboratory just expects a common-sense approach from you all, but in the light of problems that some other universities have suffered it seems sensible to attempt to spell out what we think common sense entails, at least as best we can!

During the Part IA year computer scientists are required to do a number of "tickable problems", and these are then shown to checkers at one of the regular practical sessions. At the end of the year any student who has not completed enough of the exercises has penalty points deducted from the marks they obtain on their examination papers. Over the last few years there have typically only been one or two students each year who suffer deductions: the exercises are intended to be such that **all** students will be able to complete them, albeit some at a second attempt. The department believes that discussing these problems with friends and supervisors is an important part of the educational process. Comparing different approaches and seeing which lead to more elegant solutions can be very valuable. As part of the teaching process a supervisor may well sketch some code on paper to show how some part of a task could be addressed, or show a solution that they have implemented on the screen, possibly working. Equally many of the less experienced programmers among you will need help from others in finding and correcting errors in the attempts that you make. Such activity is what we have always expected and encouraged: as software engineering courses will make even more explicit programming is a social activity and doing it strictly in private can lead to idiosyncratic, unreadable and unsatisfactory code.

The Cockroft 4 laboratory is used for formal practical classes on a number of afternoons each week, but is is available as a form of informal meeting area for students and may be especially useful for those who have gaps between lectures: it can be used for doing supervision work and quiet reading as well as for addressing the tickable problems.

What we do want, however, is that you all try the problems for yourselves before seeking (much) discussion or help. Read the lecture notes and try other smaller examples in them to warm up if you find the task you are set next seems to be too hard. When you need help try to get hints not complete solutions, and when you are shown some code look at it while talking to the expert but then go away and try to reconstuct it for yourself. Understanding the idea that makes it work will be what benefits you. If you find some problem a severe challenge and need a lot of help with it then afterwards go back to your supervisor and make sure you get similar help to see you through some related problem that you find in the lecture notes, a book, or that you invent just to prove to yourself that you have now mastered that issue. A good rule of thumb will be that the laboratory would count it as cheating if, when you submit a solution to an exercise, you can not explain how it works, and if you would be totally stuck if taken to a private computer area and asked to do the exercise again from scratch without looking at the version that you submitted. Provided you understand the programs you hand into us (in Part IA) well enough to explain them and to do the exercise a second time but unaided we do not mind how much help or just what form it was in while you were doing the task the first time. Thus if the exercise-checkers ask you to talk about your solutions please be ready with answers. If your code looks as if it was written by somebody else, and sometimes as a bit of random sampling, they might ask you to sit at a terminal close to them and start doing the exercise again from the start: normally if you start off in cheery confidence they will not insist on the whole task being finished. Obviously the more you yourself write and understand the code you hand in the less this is liable to happen to you! In any case where the assessed exercise tickers are worried that some individual may have been copying rather than doing the work themselves they will report this information and it will be passed back to Directors of Studies since it could indicate a student who was having serious difficulty and needed more help.

In Part IB the practical work is in the form of two larger exercises and a group project. Guidelines for the assessed exercises are similar to those above for Part IA in that the test for a fair submission should be whether the student concerned could solve that or a somewhat similar problem again under controlled circumstances. If the assessors do detect multiple submissions that are uncomfortably similar (there is now elaborate software to check for even quite subtle similarities) they may ask for a re-submission. Group projects explicitly call for cooperative working and are conducted in a pretty open way with regular meetings to present plans and progress to the project coordinator. It may well be that the best way to complete a project is to use some large component found and downloaded from the web. This is satisfactory unless the exact detail of the task set is rendered silly by it, and in all such cases it is important and proper to declare explicitly in project reports what external resources are being used. Failure to declare a major body of code brought in from outside the project group would be counted as serious.

Guidelines for Part II projects will be given by the Part II briefing officer at the start of the year in which they are carried out.

4 Contacting the teaching staff

One particular strength of the Cambridge system where there are Colleges and Departments is that each can provide you with contact points that may help if you need something explained or sorted out. But because there are so many contact points you may get confused about which to use! Here I try to list at least some of the resources there are just as a reminder:

Instant Feedback The Computer Laboratory web pages have an "instant feedback" button which is intended to let you get queries or comments in to us, especially when prompt attention is needed. Items sent in through that scheme are circulated to the parts of the laboratory relevant. In some cases it will be possible to take immediate action, in others the issues will be scheduled for consideration by the next meeting of the appropriate committee in the lab.

Supervisor You will see your supervisor(s) on a regular basis, and should feel free to send electronic mail to any Computer Science supervisor at any time at all. Their main job is to assist explaining what the lecturers said and getting you prepared for the exams, but they will often be able to help direct you to the right place to solve any other queries. Note that the small-group teaching in supervisons is something which works best when the students concerned prepare their questions and written work ahead of time as well as when the supervisor takes the job seriously. See

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www.cl.cam.ac.uk/Teaching/Supervising/
        onsupervising/notes/notes.html
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for notes provided for would-be supervisors, since understanding their perspective can help you get the best out of the arrangements. You might also like to be aware that the Department runs a training session for new supervisors towards the start of each year.

DoS Your supervisors are allocated by and report back to your Director of Studies, and so a DoS is an especially useful person to talk to if you find supervisions awkward or unsatisfactory in any way.

Tutor Tutors have general responsibility for your well-being while you are in Cambridge. If things are not working out with your DoS then talk to your Tutor. If you are about to run out of money talk to your Tutor. If you break an arm and a leg falling off your bicycle then it will be your Tutor's job to verify that Addenbrookes Hospital puts the plaster on you properly, and if you break them just before exam time your Tutor may end up writing your exam scripts for you as you dictate your answers!

Students Union representatives On the other side of an imaginary staff-student divide you can find either College Union or University people who may assist in various ways.

Chaplains Most College Chaplains are excellent sources of late-night coffee or possibly beer and will chat to any student (regardless of faith or commitment) who just wants some general support.

your GP You will be signed up with a local doctor, and if that sore throat and blinding headache is keeping you from studying for more than a week maybe you need a course of antibiotics? Most Colleges also have a sick-bay that might be able to issue asprin during the year and run relaxation classes during the Exam Term.

University Counselling Service If it will be useful either your Tutor or your GP can give you an introduction to the University Counselling Service so if you think this may help (or if you see one of the other students close to you in a distressed state) chat to one of them about the possibility.

Part 1A student representative The Computer Laboratory has a staff-student consultative committee, and the 1A and Diploma representatives will be elected in the week following the Learning Day. Make sure you know who your representative is and feed in suggestions, observations and complaints that way.

Sean Holden (sbh11@cl.cam.ac.uk) is the current chairman of the consultative committee and so at least until the 1A representative is chosen he is the person to send ideas to. In general these should be in the form of agenda items for the next meeting of the committee rather than personal or transient observations. Note that minutes of all the committee meetings appear (in due course) on the computer lab's web pages, and when new information is placed there you should receive broadcast e-mail notification. Before starting any new major campaign to put the laboratory to rights you might consider checking the last year or so's minutes to see if the issue concerned has been discussed before.

Lecturers All the Computer Laboratory lecturers will have electronic mail addresses, and these may be found in the lab syllabus booklet or on the computer (the computer lab's world wide web page `www.cl.cam.ac.uk` probably provides the easiest way of checking an e-mail address).

Lecture feedback A web-based scheme for you to comment on courses is available to you. If a reasonable proportion of you take the trouble to use it that helps the laboratory to look for ways of at least improving things for next year's batch of students. Please provide us with feedback.

The Teaching Committee plans the syllabus and timetable, and has overall responsibility for much that is teaching-related, and Frank King runs it.

student-admin@cl.cam.ac.uk Fiona Billingsley has main responsibility for the laboratory's interface to all you students, and most of you probably know her already. She probably knows the more troublesome ones of you by name already! It is through her that you can feed all manner of queries and observations about the course and collect almost all the paperwork that the department generates for you. Lise Gough fills a similar role with special regard to graduate students.

`ucam.cl.students` This mainly looks forward to when you use Unix, but there is a "newsgroup" intended as a forum for our students. When you use it please note that any message you post there is readable world-wide as well as by all the senior members of the University here, and that your message once posted will be preserved on archives! Thus a degree of diplomacy or tact is very useful if you want to achieve the correct responses!

Lise.Gough@cl and Margaret.Levitt@cl.cam.ac.uk are both incredibly helpful people capable of solving almost any problem within the lab, but should in general be contacted only after attempts to get satisfaction through everybody else has failed or in cases of great urgency.

Andy.Hopper@cl.cam.ac.uk is head of the department, and in case of **serious** problems or ones where the other contact points listed here prove unhelpful you can send mail direct to him, or go and find his secretary to book an appointment. It would be polite not to overload him with trivial points queries that can be resolved elsewhere, but you should mail him in person (a) in relation to any lecture course that he himself gives (just as you would mail any other lecturer), (b) in any case of a difficulty that arises that is so severe and urgent that it needs prompt intervention by the Head of Department or (c) if you have any parts of the CST that you want to record particular compliments about so that these can be stored in an archive and used when the Computer Lab wants to show how happy its students are!

Computer Laboratory Computer Officers There are computer laboratory staff who look after the machines used for research, networks within the laboratory, the web site and all the rest. However the computers in the public computer rooms that students use are *not* managed by laboratory staff but by the Computing Service. In general the correct way of raising an issue about hardware or software support is via the Staff-Student committee.

College Computer Officers Most Colleges will have Computer Officers who will have responsibility for College computer rooms and any provision for networking computers there. In most cases the computer rooms they provide for general use will be managed by the Computing Service and will provide an identical environment to that present in the laboratory. Your Director of Studies will probably be able to explain the who they are and what assistance they can be. But it should be noted that in all cases their job will not make support of Computer Science experts their prime job: they will be mainly concerned with facilities liable to be useful across all areas of study.

The Computing Service You are subject to their code of discipline. However (and despite the fact that they have inviting piles of forms that you could collect, complete and submit) CST students are **not** expected to apply to the Computing Service for alteration of their computer allocation, and should **not** be significant users of the general Computing Service help desk. By doing resource allocation in bulk and using demonstrators at our practical classes to give advice things can run much more smoothly than if all of our students interacted with the Computing Service directly. Even if what you want seems to you to be reasonable, please bear with this restriction.

4.1 …and vice versa

Members of the laboratory will expect electronic mail to be a reliable way to contact you, so please check for e-mail at least every day or so, and more often if you are in the middle of arranging meeting times. It makes sense to subscribe to the `ucam.cl.students` news group (when you have been shown how to), and you should also make yourself familiar with the layout of the computer laboratory web pages `www.cl.cam.ac.uk`, where you can find syllabuses, notes, questions from past exam papers and all sorts of information about the laboratory.

5 West Cambridge

The department is based in a fairly new building in West Cambridge. All first year lectures are in the centre of town, since Part IA students will need to get between our lectures and those given in other NST options. Most of the first Term of second year and Diploma/Part II(G) lectures are in the town centre: other courses and many practical classes and supervisions happen in West Cambridge. You can get to the Laboratory either by going out past Robinson College down Adams Road and then along the Coton cycle-path or by catching a "Citi 4" bus from Trumpington Street (by Pembroke), Silver Street (by Queens) or Grange Road near Robinson College. Busses are scheduled to run every fifteen minutes from around 7:44am to 7:44pm. If you show your University Card as you board the bus you will not be charged. As an alternative, Route 77 is charged for and runs from Emmanual Street (stop C), Bridge Street and Northampton Street to the Madingley Road Park and Ride Site.

If you walk (a bit over 30 mins from the centre of town) or cycle (10 mins) please take care: the foot-path and cycle-path will be very crowded at times and on wet, dark, winter evenings there may be many people in a hurry. If your journey calls for you to cross the Madingley Road note how fast the traffic is and again observe that during the winter it can be pretty dark in the afternoons. One of the lab staff was hurt on the Madingley Road just as the current Term was starting, and the really dark and wet nights are still ahead of us.

6 Computers for study, for fun and for profit

You may discover in time that the computers that you use for directly course-related practical work can also be used for game playing, for electronic mail to people both inside and outside Cambridge, for reading and even joining in international discussion groups and generally doing a load of exciting things. Sometimes you will be using computers and networks in one of the central terminal rooms, sometimes in College, and by now it is usually possible for students' own computers to be linked into the University and hence international networks. Surveys over the last year or two show that almost all computer science students have a computer of their own with an increasing number of these being laptops (which are easier to move between home and university, but which cost more and are much harder to upgrade). If you do not then do not panic, the department and colleges provide computer rooms with quite enough facilities for you. I would suggest that almost everybody should use the public computer rooms quite a lot in their first term, so that they get to know the others in their subject and year and so that experts can help those who need it. If you are thinking of obtaining or replacing a computer, the end of your first year or start of the second is a good time to choose, since then your machine will still count as close to leading-edge when you do your Part IB group project and Part II individual project. Note that all the computers that the computer laboratory provides as teaching resources for its students are variations on the "pc" hardware with Intel-compatible processors and running either Windows or Linux. This means that when lecturers provide or recommend software this will be the computing platform that they should have in mind. If you already have a computer of some other style you will still probably find that some of the relevant software can be installed on it and that it is useful as a terminal and for word-processing. If considering buying a new system to support your work in the course then you should probably obtain a system compatible with all those provided by the department for your use.

Note that the Computing Service run a computer repair service (not free, but reasonable if the guarantee you will have got when you bought your computer has run out). Their "pelican" archive server can be used to keep safe copies of important sets of files. In some cases College computer officers may be able to assist with other difficulties, but being in a computer science department you are liable to find that there is a lot of experience in problem-identification and computer fixing amongst your fellow students! Software relevant to the course that is available for download is generally mentioned by the relevant lecturers, and the collection at `http://www.mirror.ac.uk` is pretty comprehensive.

In all cases you are bound by some number of University Regulations, which include obligations not to make private copies of copyright software that you are not properly licensed for, not to display lewd or offensive pictures on computer-screens in public areas, not to write or unleash computer viruses or otherwise “play tricks” on people, and of course not to play shoot-’em-up style games with high volume sound and refuse to move when somebody wants to use the machine for something more course-related. I hope that the Computing Service has expounded adequately on all these matters.

Rules that may apply to you come from a number of places, eg:

National Law Eg the Data Protection Act, Computer Misuse act, various legislation about certain forms of pornography, respect for copyright on software;

All-UK university networking control No commercial use of academic networks (without very explicit clearance). No providing access to academic networks to other people. Stricter rules about downloading dubious images;

The local Computing Service All the above plus some detailed rules about how local systems may be used or attached to. No private machine may run a publically accessible service except when it is in the interests of the University mission (privately run anonymous FTP servers may be banned, etc);

Your department or College Certainly rules intended to prevent you from bringing the institution into disrepute, and possibly technical guidelines about network cabling and connections.

There is a significant problem, especially with big computer networks, that some actions that are best described as clumsy or thoughtless (rather than malicious) can in fact cause large-scale inconvenience or cost to a great many people. Furthermore it is not possible to make a complete and definitive list of such activities to go in any rule book, but the Laboratory and Computing Service would still like to outlaw such behaviour! The computing service have an extensive list of rules and when you were issued with your accounts on around day one you signed to agree you would abide by them. It is very unlikely that you have read and understood the lot, and so the hints here may at least help you avoid the most treacherous waters:

- Only log on to the computers in Cambridge that the Laboratory provides you with accounts on — even if you think you can arrange an account on some computer outside Cambridge avoid it (at least for now).

- Never masquerade as anybody else, use their filespace or password, or even attempt to read files that you do not have fairly explicit permission to. Anything that looks at all like a trick or a loophole that gives you access to some resource that would otherwise not be easy to reach should be avoided.

- The University has a site-license for Windows anti-virus software, and as a result students can install virus protection and arrange that their system is updated regularly — without having to pay. Seach for "antivirus" on the University web site and install the relevant software. Please.
- With electronic mail, avoid any scheme that would send copies of your message to more than one or two people. An exception is that the course representative will usefully want to send bulk mail to **all** the 1A students, but others should avoid broadcasting to too many people.
- Wide circulated email messages or newsgroup postings encouraging others to vote for you in elections or making (especially impolite) comments about other students who are standing is considered impolite.
- Utterly avoid electronic chain-letters and ignore "spam". Do not reply or join in discussions complaining about such abuse.
- When looking at network news groups, study the various items that give guidance on posting new items, and spend plenty of time reading before you even think of submitting your own entries. And when you do remember that all sorts of strangers will see what you write, so only contribute if you have something really worthwhile to contribute. If you want to respond to something said on a newsgroup just send personal e-mail to the original poster, rather than broadcasting your response to the entire group.
- Heavy recreational use of computer networks at busy times of day can slow down response for the people who are trying to work. Avoid it. Even for serious course-work, the fact that with some computer systems you can run lots of programs simultaneously or spread your calculation across several network machines does not mean that is a polite idea. Use of networked computer games (eg quake) involving links to sites outside Cambridge is not counted as proper use of resources.
- Respect Copyright, observe that the Data Protection Act restricts your right to keep "personal data" about other people (**anything** from which they can be identified appears to be counted as personal), and good taste requires that you should not browse through or snoop at other people's file-spaces.
- Even if the University or your College has not documented an absolute ban on file-swapping software or downloading of audio or video content those activities are not what the University network has been provided for and the activities concerned are discouraged.
- The networks here are all licensed for use for non-commercial activity by members of the university. There are two almost unexpected consequences of this which apply even if you have your own private computer in your own room in College. Firstly telnet, ftp and possibly even e-mail that is to do

with commercial activity is not permitted, and secondly even on your own machine (if it is connected to the networks here) you may not arbitrarily create accounts for use by people who are not members of the university or involved in authorised and organized academic collaborations. If in doubt you should probably get a dial-up account using some separate ISP.

- The University is charged for all network traffic that comes into or goes out of the University. The charging scheme used to be just for transatlantic traffic coming into the university: now data exchanged with (eg) other UK universities has a real cost. The bills will come down to colleges and departments. The first effect of this is that system managers will be surveying traffic in a much more active way then ever before. You may expect more and more "guidelines" to be issued. The ones most critical at present are

  1. If you use your own machine, configure your web browser to use a local "cache server".
     See `http://www.cam.ac.uk/WWW/ProxyServer/` for information. I am giving this indirection to the Computing Service web page because the exact recipe for configuring depends on which web browser you use and which release of it you have installed, but in all cases what you have to do is not very difficult.
  2. Do not access sites that are a long way away directly if there is a copy of the information that you need somewhere closer. For most computer-related items you should check `http://www.mirror.ac.uk` and if that fails `http://sunsite.doc.ic.ac.uk`.
  3. Napster/gnutella/kazaa, etc etc etc, streaming video and other uses that tend to lead to many megabytes of transmitted data are liable to get you noticed. Do not plan your life around them. Accept that college and university computer officers have to monitor network use to keep things running smoothly so they may contact you if your use becomes extreme, and some colleges may impose an absolute ban.

All of this probably sounds a bit heavy-handed, for which I apologise. To a large extent the requirement that you behave responsibly is there because we give you fairly free access to both very flexible local computing capabilities and to the "information superhighway" where everything is developing so fast that orderly growth has to depend on individual users applying good taste rather than any complete or comprehensive set of exact rules.

Another few hints or suggestions:

- You may want to arrange that some of your files are kept reasonably confidential by marking them so that you are the only person entitled to read them. If you do so, consider making some part of your file space more generally readable so that programs you want your supervisor to check and help you with can be put there where your supervisor can access them. I might suggest that at least during year one keeping most coursework in generally readable files is reasonable.

- If you set up nicknames that the mailer will use to sign messages you send, try to avoid things that are unduly jokey or hard to decode, since from time to time you will send mail to people who do not know you directly. Having your full name there is maybe dull but can help the people who receive your mail! This may be especially relevant if you already have an e-mail identity outside the University: unless mail you send via us comes with your full name visible supervisors etc may have some trouble keeping track of you. Please also arrange that e-mail sent to your standard-issue "`@cam.ac.uk`" address gets through to wherever you want to read it, since this is the one that will be used for all official purposes here.

- When using the PCs during the first term you can make safe copies of your programs on floppy disc, so you can arrange that even if you damage some of your files by careless editing you have a back-up copy to recover from. Get used to the discipline of making regular backups. A couple of floppy discs do not cost very much and most modern computers have CD or DVD writers! When you move to Unix investigate backup strategies suitable for that environment. The university has an archive server called `pelican`.

- The course runs most smoothly when students help and advise one another, but it is generally safest **not** to make substantial modifications to the default setup for your account, and certainly very desirable that if you want to change some of the preferences for your account that you do it for yourself rather than accept an offer from somebody else to do it for you. With some Unix editors it is possible to re-allocate the meaning of all the control keys "to make it behave just the way you want and so make it much more convenient". Do not rush into such customisation, please.

- Enjoy the course, write interesting programs beyond those required by the practical classes, form consortia to work on bigger projects, explore the networks with your web browser and select some interesting network newsgroups to subscribe to. All in moderation.

There are a collection of (mostly) local computer-related companies who have various degrees of contact with the laboratory. In the spring there is an afternoon session where they have a chance to introduce themselves to you. We do not have any organised or formal scheme to fix up vacation work with these or other employers, but browsing `http://www.cl.cam.ac.uk/ext/supporters-club/` may provide some pointers. Many of the companies listed there have several staff who passed through the computer lab's courses! Microsoft has an establishment adjacent to the lab in West Cambridge and it is probable that many smaller companies will also be close at hand.

7 In case of difficulty

The University has well-organised schemes for dealing with a range of extreme circumstances, even though it can not guarantee completely successful resolution of every sort of problem. The five main areas where trouble can arise will be

1. Academic: Course seems too hard, lectures incomprehensible, supervisor unsympathetic and unhelpful, and so failure seems inevitable. Perhaps the first point to make here is that the Cambridge course is indeed pretty intense, but that if you can keep taking notes very often hard material can start to sink in and make sense if you read over your notes and check them against textbooks at the end of Term. Often a few days spent in Cambridge working hard either just after lectures have ended or just before the start of the next term can make a big difference. Also check out the books suggested earlier in these notes for ideas about organising study. It is often possible to get your DoS to arrange one or two extra supervisions to cover particular points that are really holding you back (provided you can identify just where the problem is). If the reason that work is not going well is just that you are not doing a lot of it then recognising that fact may be the first key step towards correcting it!

   Perhaps the course seems just not to suit you at all? Well perhaps by the end of the year it will have fallen into place, but anyway it is because of this possibility that we make sure that from CST 1 it is possible to migrate out to a suitable Natural Science. If you may want to do this talk to your DoS (or some other relevant person) as soon as convenient, because which options you take in year 1 can influence what is feasible in year 2.

2. Financial: Please talk to your Tutor and your Bank Manager **before** things get totally desperate and hence before you stop eating properly and otherwise driving yourself into a truly dire state. Some Colleges will have hardship funds, and all can explain the workings of Student Loans and the like.

3. Social: Cambridge can be a big change from your previous existence, and it is utterly reasonable for it to take a while to acclimatise. There are enough students around who are full of blustering self-confidence that many quieter ones can get to feel a bit over-awed — often without real cause, since noisiness and true competence do not always go hand in hand. Tutors and Chaplains are both expected to be able to provide **confidential** advice and guidance, and will have significant experience of dealing with a wide range of difficulties: give them a try if you feel that you need your confidence bolstering or if you are in any sort of a jam.

4. Medical: The problems that can arise under this heading range from bones broken while involved in sports through to all flavours of disease imaginable. With luck you will not suffer anything worse than the odd cold while

you are here. But there is plenty of backup available if you do, and in this case your Tutor, GP and a College Sick-bay are the main ports of call. If anything disrupts your studies to a substantial extent your Tutor can report this fact to the University Central Authorities so that when you take your exams some allowance can be made. The scheme for this is slightly curious - if you actually pass the exam (with whatever grade) the fact that you had been ill is ignored and your result appears as normal. If however you would have failed then a confidential University committee considers the details of your case — balancing the severity of whatever disrupted your studies against your final examination performance, and if justified you are "allowed" the examination. In some cases students who are ill during the examination period sit their papers in hospital or sick-bay, possibly being allowed extra time or having somebody to write for them. If a medical condition means that you lose a large part of one year, your Tutor may be able to arrange that you "degrade" and start the year again after your recovery: this involves arranging that your grant is correspondingly extended. The notes here can not include all details of the scheme: in any case where you have a worry on this front consult your Tutor promptly. The CUSU web-site `http://cususite.headporter.com/` has especially helpful information about the details via the tabs for "work" then "camexams.com".

5. Discipline: If you break enough of the Computing Service's rules they can bar you from all access to their computers and networks, even though that would result in you not being able to complete essential coursework needed for your examinations. If you fail the examinations at the end of a year the default position is that you are not entitled to return the next. Serious enough breaches of College or University discipline can also lead to expulsion. Such cases are (fortunately) very rare indeed, so if you are so ill advised, unfortunate or stupid to get in such a mess you should find out what all the appeal procedures and so on are then.

8 Conclusion

I hope that these notes do not generate too much gloom by documenting some of the bad things that could at least potentially happen, because for almost all students the time in Cambridge can be pretty good — both in terms of the courses studies and socially. If you can strike a good balance between work and fun I hope things will go well for you too. And the Computer Laboratory as a whole hopes you will enjoy the courses that it lays on, and find the lecturers, demonstrators and supervisors friendly and helpful.

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