

Computer Tutorials: Introduction

The purpose of this tutorial is to introduce you to the MAGMA computer algebra system. In subsequent tutorials we will use MAGMA to investigate various cryptosystems and number theoretic algorithms. MAGMA was developed by Prof John Cannon and the Computer Algebra Group at the University of Sydney.

Getting Started

The mathematics laboratory computers that you will use in this unit form a network that is separate from the University's Access Lab network. However, accounts have been created for all students enrolled in MATH2068/2988 with the same usernames as for the Access Labs. That is, your username is your unikey. Initially your password will be your SID (unless you already have a mathematics laboratory password from a first semester unit).

Students who have a pre-existing mathematics laboratory password:

At the Windows login screen, login to "ROMEGROUP" using your unikey as username and your pre-existing password.

Students using the mathematics laboratory for the first time:

At the Windows login screen, login to "ROMEGROUP" using your unikey as username and your SID as password. You will immediately get a message saying that your password has expired, and you will be asked to enter a new password. If you wish you may set your maths lab password to be the same as the one you use for the Access Labs, thus keeping your maths lab password and your unikey password synchronized. Or, if you prefer, you can choose a separate maths lab password.

After logging in you will find several icons on the desktop. There is a shortcut to your "Home" folder: the files you create will be stored here. "Crimson Editor" is a useful alternative to notepad for editing these files. There is an "Undergrad Mathematics Home" web page shortcut (Firefox), which you can use to navigate to the MATH2068/2988 web page and find the computer tutorial exercise sheets. You can access your Sydney Mail account via the link to www.outlook.com or the link to MyUni. There are also icons named "handin" and "handout" which will be used for electronic submission of assignments.

Most important for MATH2068/2988 is the icon marked "Run Magma". Double click it. In a short while the MAGMA program will start and you will be presented with its 'prompt' (>). You can now type MAGMA commands; for example, type

```
1 + 1;
```

and observe that MAGMA responds 2. (Every MAGMA command must be terminated with a semicolon; if you enter a command and nothing happens then it is probably because MAGMA is waiting for you to type a semicolon.)

Starting MAGMA via the "Run Magma" icon ensures that MAGMA keeps a log file record of your MAGMA session. The log file will be stored in your Home folder; and in fact the log file for your current session will already be there. Open the Home folder and double click the log file to see its present contents. (You will not be able to make changes to the log file while MAGMA is running, but you can do so after exiting MAGMA. Looking back through these log files may be useful for revision purposes; so if your Home folder gets overfull you may wish to email the log files to yourself and save them on some other computer before deleting them from your Home folder.)

To finish a MAGMA session type

```
exit;
```

making sure to include the semicolon.