Tutorial 1: Using MobaXTerm to Login to the Linux Server

Problem: you have a windows laptop and want to access a linux/unix opearating system.
Solution: use the IOP mumak server (a remote machine), which runs linux for you to practice.

How:
1. From the start menu, search for mobaXterm, a program designed to access remote servers from a local machine. We are going to use it to access the mumak server.
2. Click on mobaXterm when it comes up in the search results.
3. Click the session button, then click SSH.
   In the remote host text box, type: mumak.iop.kcl.ac.uk
   Check the specify username box and enter your user name:
   username: tusrX (X is a number from 1 to 25)
   e.g. **tusr5@mumak.iop.kcl.ac.uk**
4. In the console, enter the password when prompted. It should be the same as the user name.

Once you are successfully logged in, you can use the command prompt windows as your access portal to the Linux server and you will be using it for the rest of the lecture/tutorials.
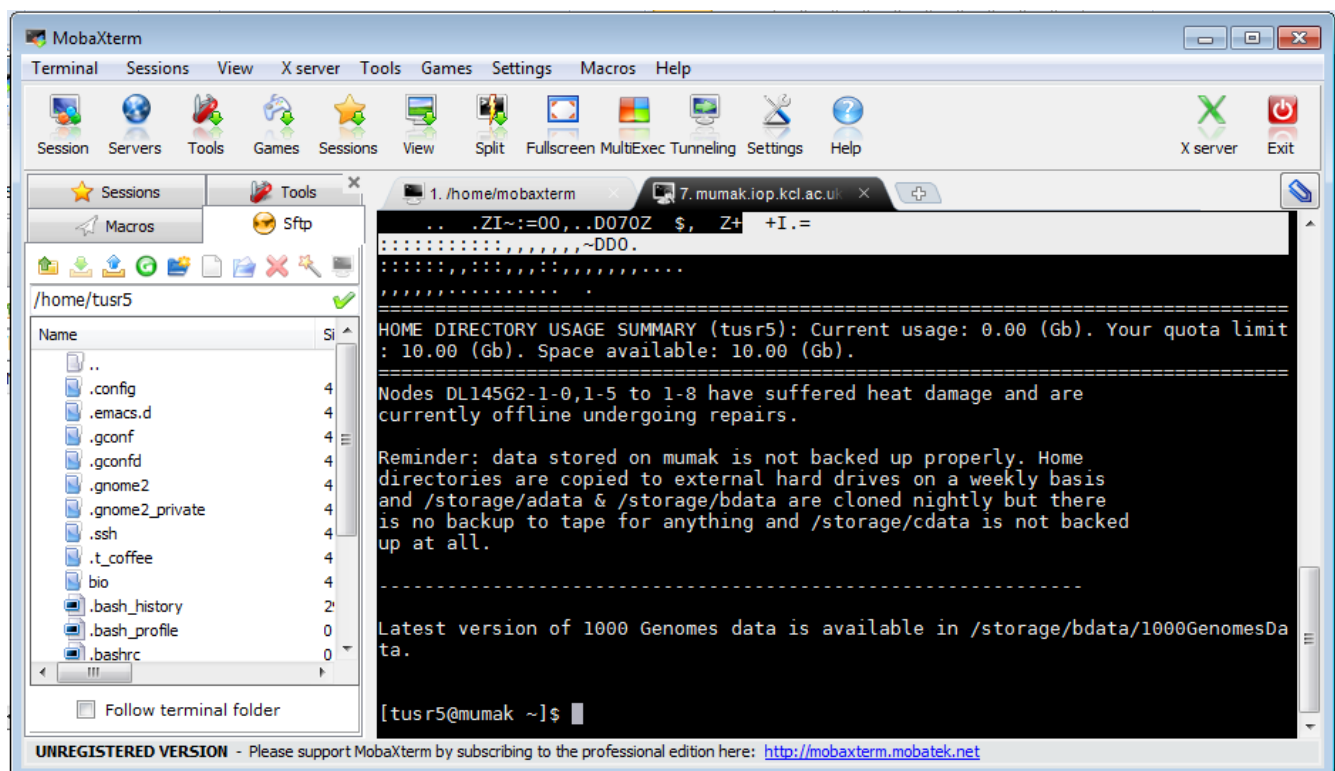
Tutorial 2: Navigating the file system and simple useful commands

1. Once you have logged into the server, you can enter commands to navigate the files on the server, create files, manipulate them, run scripts, etc...

   - Find out where you are in the file structure tree
     `> pwd`
   - If you are not in your home directory, go there:
     `> cd /home/tusr5`
     (Note: the above assumes that your username is tusr5. Change accordingly)
   - Use the ls command to view the files you have in the directory.
     `> ls`   (take a note of what's in there)
   - Create a new file, newYOURNAME.txt
     `> emacs newZINA.txt`
     This should open the emacs text editor. You can now enter your text. Type:
     "I am a test file. Feel free to modify me!"
   - Save the file and exit emacs. Press: **Ctrl+X** followed by **Ctrl+C**
   - More on emacs: http://zoo.cs.yale.edu/classes/cs210/help/emacs.html
   - Use the **cp** (copy) command to copy newZINA.txt to copyZINA.txt
     `> cp newZINA.txt copyZINA.txt`
   - Use the ls command again to view the files you have in the directory.
     `> ls`   (A new file has been added!)
   - Use the rename command to rename copyYOURNAME.txt to renamedYOURNAME.txt
     `> rename copyZINA.txt renamedZINA.txt`
   - Use the ls command to view the modifications.
     `> ls` (copyYOURNAME.txt has been renamed!)
   - Create a new directory inside your home directory, call it practice
     `> mkdir practice`
   - Navigate to **practice** using the ~
   - `> cd ~/practice`
   - View your present working directory
     `> pwd`
   - Navigate to **practice** using the full path
   - `> cd /home/tusr5/practice`
   - View your present working directory
     `> pwd`

Tutorial 3: Writing a basic shell script

1. Use SSH to login to the server (Tutorial 1)
2. Navigate to your home directory
   > cd /home/tusr5/practice
3. Start emacs for a new file scriptYOURNAME.sh
   > emacs scriptZINA.sh
4. Type the following in emacs:

```
#!/bin/sh
clear
echo "My first unix shell script!!!"
cd /home/tusr5/practice
ls
```

- The first line is called the shebang. It tells the operating system that the script should be run as a program.
- After the shebang, you can put any UNIX command. In our case:
- **clear**: clears the screen
- **echo:** outputs to the console.
- The other commands have been explained before

5. Save the script and exit emacs.
   - Type CTRL+X followed by CTRL+C.

Tutorial 4: Setting up permissions and running your script

1. Before running the script, we must make it executable by the user (i.e. give yourself an execute permission on the script). By default, the user has only read/write permission on the files. If you attempt to run the script prior to setting up permissions, you will be given an error message. To check:
> ./scriptZINA.sh (./FILENAME runs the script. You should receive a message saying: Permission denied).
   - Type:
     > chmod u+x scriptZINA.sh
   - Now that you have setup the permission to execute, run the script again
     > ./scriptZINA.sh
The screen should be cleared, the message will appear and the results from executing the commands will be shown.