

COMP110 Practical 1

Using the Departmental Windows Systems

1 Introduction

This practical is intended to familiarise you with the Departmental Windows systems and relates to the following two module learning outcomes:

- To *effectively use relevant software packages* and *appreciate different types of software*;
- To *effectively use general IT facilities* including organising your file store, taking advantage of access control and security features of operating systems.

Your first task will be to access the COMP110 module resources via the Departmental web server. Since a lot of the ‘official’ communication between you and staff of the University will be via e-mail, a short introduction to the University e-mail system follows. You will then go on to learn how to use the file manager and how to create text files using Notepad++ or Atom. The tasks in Section 10 require you to create, compile and execute your first Java program. You will then submit that program using both the Departmental and the University’s Submission Systems. In the concluding part, printing will be explained in some detail.

In the past all the labs of our Department were maintained by our own technical staff, using our own servers to provide student and staff filestore, and using Departmental accounts for authentication. In 2016-17, Lab 3 will be managed by the University’s Computing Services Department (CSD). The setup of the PCs in Lab 3 will be different and your University account is used for authentication. So, be aware which lab you are working in and adjust what you do accordingly.

It is important that you complete the tasks in Sections 8 and 10 during this practical. If you run out of time, then skip forward to these sections and complete the skipped parts of this practical in your own time.

This document is available in PDF format at

<http://intranet.csc.liv.ac.uk/~ullrich/COMP110/notes/practical01.pdf>

While you work through the tasks below compare your results with those of your fellow students and ask one of the demonstrators for help and comments if required.

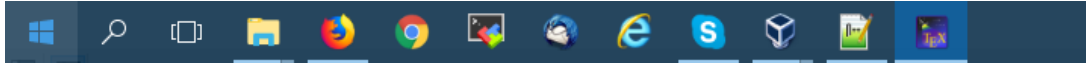
2 Logging in

You first need to log in. In Lab 3 you will need to do so with your University (MWS) *username* and *password* while in all other labs you will need your Computer Science *username* and *password*. You were given your username and an initial password during registration and may have already changed the password. Computer Science username and password are *not* the same as your University username and password. If you do not have this information, or have forgotten your password, please go to the Computer Science Helpdesk, on the second floor of the Holt building.

If you make a mistake while logging in, the system will tell you and you should try again. Ask at the Helpdesk if you have any difficulty. (Should any “warning” windows appear, simply acknowledge these and carry on.)

Once you have successfully logged on you will be presented with your *Windows 10 desktop*. The desktop comprises a series of graphical icons on the left hand side listing a number of directories, files and common applications.

At the bottom of the screen (desktop) is a horizontal *taskbar*. The taskbar contains the *Start* button, providing access to the Start menu, and the *Task view*:



The *Start menu* allows you to access applications and files on the PC. The *Task view* contains frequently used applications and indicates which applications you are currently running. A web browser may have been started automatically when you logged in and would then be shown in the *Task view*.

It is likely you are familiar with some version of Microsoft Windows. However, you may not be familiar with the Enterprise Edition of MS Windows used here. It affords more limited rights to ordinary users (i.e., those without admin rights like yourself), but also uses *roaming user profiles* (i.e., certain changes you make on one PC will be reflected on any other PC you may use).

3 Starting Applications and Manipulating Windows

The tasks in Sections 4 to 11 will require you to access the web.

There are number of *web browsers* installed on the system including Google Chrome, Firefox MS Edge and MS Internet Explorer. In all likelihood, the default application for accessing the web has been set to be MS Internet Explorer, a most unfortunate choice.

So, your first task is to make a better choice. To do so you need to go to the ‘Default App Settings’ of the System Settings. You can either do so by left-clicking “**Start**”, then “**Settings**” (a button that looks like a gear wheel), “**System**”, and finally “**Default apps**” (such a sequence of selections is typically denoted by “**Start→Settings→Default apps**”). Alternatively, click on the “**Start**” button, type “default app settings” and select the most search appropriate result. This opens the settings shown in Figure 1.

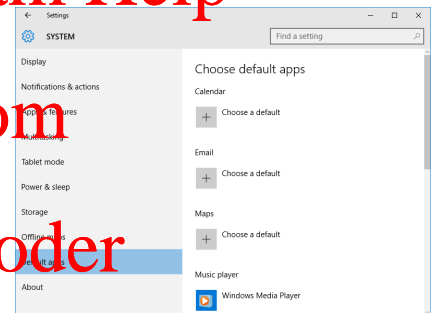


Figure 1: Default App Settings

Look for the ‘Web browser’ setting and choose your default browser. Also, add the web browser of your choice to the taskbar by dragging the corresponding icon from the desktop onto the taskbar.

Practise with the window of the web browser that has just opened, and make sure you are comfortable with the following:

1. Move the window by left-clicking on the *title bar* and, while holding down the left mouse button, *dragging* it round the screen.
2. Resize a window by left-clicking on the *resize button* (bottom right hand corner) and, while holding the left mouse down, increase the size of the box by dragging to the left and downwards. To decrease the size of the window drag in the opposite directions.
3. *Maximise* the window by clicking the *maximize* button and then return to the original size (button in same position but different icon).

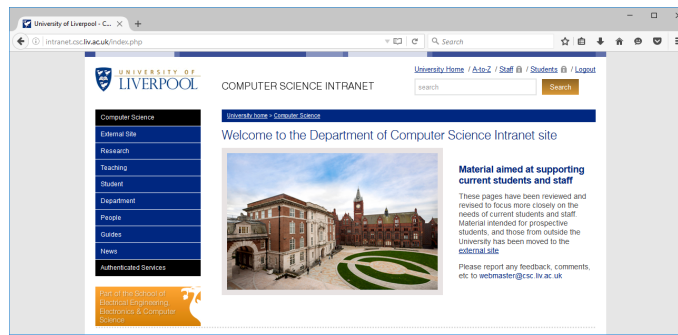


Figure 2: The departmental home page.

4. *Minimise* (iconify) the window using the *minimize* title bar button.

If you have any problems, ask a demonstrator to help you.

4 Accessing COMP110 Module Resources

The module resources for COMP110 are hosted on the Department's web servers, through a web page maintained by the module co-ordinator, Dr. Ullrich.

In the web browser open the URL <http://intranet.csc.liv.ac.uk/>, the Department's Intranet (Figure 2). In the top right-hand corner you see a link 'Login' that allows you to log into the Intranet using your departmental user account. Do so now. Then follow the link 'Teaching' (in the navigation menu in the left column), then the link 'Modules' (again in the navigation menu in the left column) and finally 'COMP110' (in the middle column). You have now reached the official Departmental web page for COMP110 (Figure 3). In the middle column you find the aims, learning outcomes, syllabus, recommended textbooks and learning strategy of the module. Analogous web pages exist for all modules and can be accessed in the same way.

More useful is the web page for COMP110 that is maintained by the module co-ordinator (Figure 4), also called the *module's e-learning resource page*. This web page can be reached by following the link for 'Support Material' on the Departmental web page for COMP110 or directly via the URL

<http://intranet.csc.liv.ac.uk/~ullrich/COMP284/>

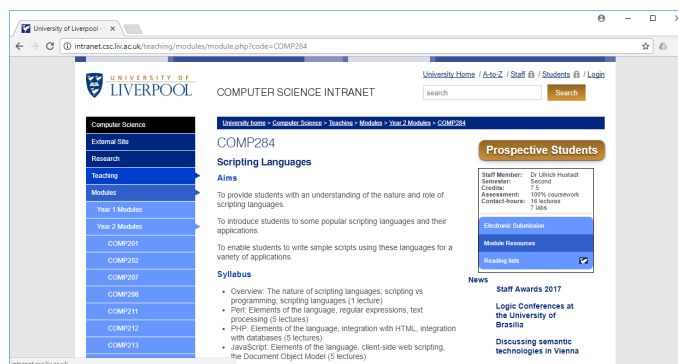


Figure 3: The departmental web page for COMP284.

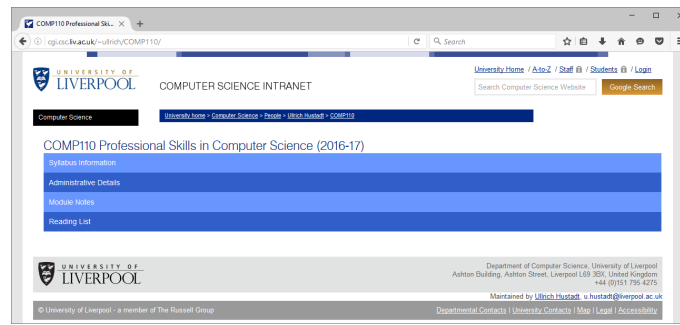


Figure 4: The module co-ordinator's web page / e-learning resource page for COMP110.

You should have a look at the information provided here in your own time and also visit the e-learning resource pages for your other modules. Right now you should work through the remaining tasks of this practical.

5 Accessing VITAL

Some lecturers may still use a web-based *Virtual Learning Environment* called VITAL based on a basic, feature-poor version of Blackboard to host the e-learning resources for their module. Again, you will then typically find a link to VITAL on the Departmental web page for that module. (It would be possible to link directly to the module in VITAL, but the corresponding URL changes every year and is only useful for the students taking the module in that year.) Alternatively, you can access VITAL using the URL

<http://vital.liv.ac.uk/>

into the URL field of your web browser. This will take you directly to the VITAL login page (Figure 5).

To access VITAL you need to log in to the system by using your University (or “MWS”) username and password. Once you are in VITAL you should locate the link to the particular module or course you are interested in by clicking on the Sessions/Resources link in the sidebar.

For COMP110, VITAL will only contain links back to the e-learning resource page of the module.

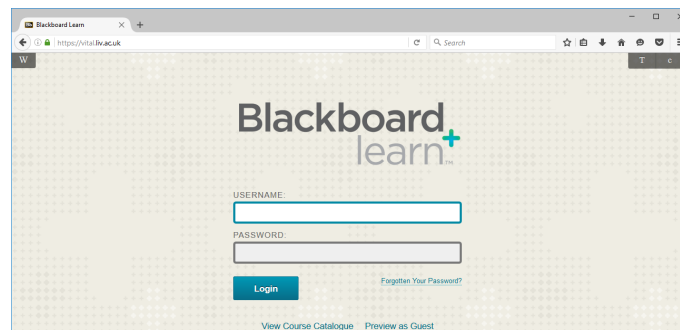


Figure 5: The VITAL login web page.

6 Changing Your Password

When you first registered with the Computer Science Department, you should have been given a sheet of introductory exercises to familiarise yourself with the various systems in use in the Department. One of the first tasks was to change your password to something that you can remember (but no-one else can guess), rather than the random string you were given at first.

If you have not already changed your password, then do so now (having first read to the end of this section!) Press the <CTRL>, <ALT>, and <Delete> keys simultaneously, and select “Change a password . . .” from the list that appears. Then follow the instructions provided.

There are restrictions on what sort of password is acceptable. A valid password must:

- Contain at least 7 characters
- At least two characters must be letters (upper or lower case)
- At least one must be:
 - numeric (the digits 0 through 9), or
 - special (neither letter nor numeric, for example, -, _, or \$).

Make sure you remember your password, you will need it next time you login.

Assignment Project Exam Help

The web page

<http://lin.sanet.csc.liv.ac.uk/student/ug-faq.pdf>

explains what to do in case you lose/forget your username or password.

Add WeChat powcoder

7 Electronic Mail

An important means of communication is *electronic mail* (or *e-mail*). E-mail allows you to communicate with anybody around the world who has a computer with appropriate software and the required network connections. Many e-mail software packages exist and it is again up to you which one you want to use. The University’s own web-based e-mail system can be accessed via the URL

<http://webmail.liv.ac.uk/>

Alternatively, click on the link “Students” at the top of most University or Departmental web pages, then select “Webmail” from the list of Web applications. Again, this is covered as part of the introductory exercises. If you have not experimented with using the University webmail system, then spend a few minutes doing so now. Further information on how to use webmail is available at

<http://www.liverpool.ac.uk/csd/email/webmail/>

While the Department requires you to regularly read your e-mail and to use the University’s SMTP server to send e-mails to staff, there is no requirement that you need to use the University’s webmail system to do so.

In particular, see how e-mails can be forwarded

<http://www.liverpool.ac.uk/csd/email/forwarding/>

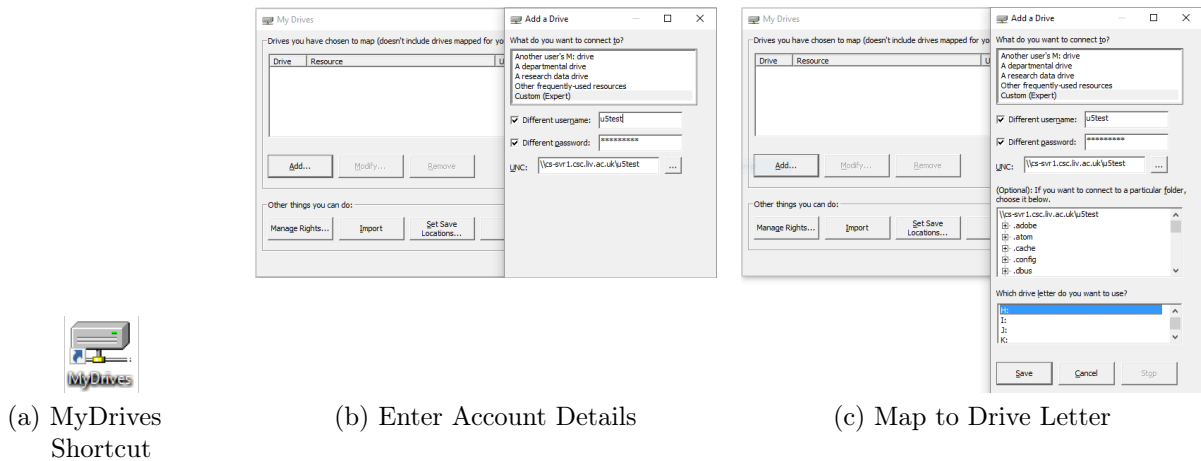


Figure 6: MyDrives: Enabling Access to the Departmental Filestore

and how a variety of e-mail clients can be configured to use the University's e-mail servers:

<http://www.liverpool.ac.uk/csd/email/unsupported/>

Note: thoroughly test any alternative setups. Nothing is more annoying (and damaging) than e-mails getting lost because forwarding was not been set up correctly.

The Department and the University will assume that e-mails sent to your University e-mail address reach you and that you check you e-mails frequently. Incorrectly configured e-mail forwarding will not be accepted as an excuse for not receiving e-mails sent to you.

8 Organising Your Filestore

One of the ways that the systems at the University may differ from your home computer, is that your personal files are not stored on the PC you are using but instead are stored on a central server, and shared across all departmental PCs. This means that whichever machine you log into, you should see the same files. This holds true for both the Departmental PCs, and University PCs (such as those in the PC centres, see <https://www.liverpool.ac.uk/csd/pc-centres/>, and in Lab 3).

8.1 Accessing Your Departmental Filestore

If you are working on a University PC, then you first need to enable access to your departmental filestore. Click on the MyDrives shortcut on the desktop (Figure 6a) to open the MyDrives program. Click on “Add”, then on “Custom (Expert)” in the configurator that opens. In the configurator, click on the box to the left of “Different username” and enter your departmental username `<username>` as `intra\<username>`; click on the box to the left of “Different password” and enter your departmental password; in the textfield to the right of “UNC” enter `\\cs-svr1.csc.liv.ac.uk\\<username>` (Figure 6b); then click on the button to the right of that textfield. If all the details entered were correct you now see a listing of the contents of your departmental filestore (Figure 6c). Ignore the option to connect to a particular folder within that filestore, but pick the drive letter `H:` as the one you want to use for your departmental filestore. Finally, click “Save”.

Now, to see what files you currently have access to right click on the Start button, then select the entry “File Explorer” in the menu that opens.

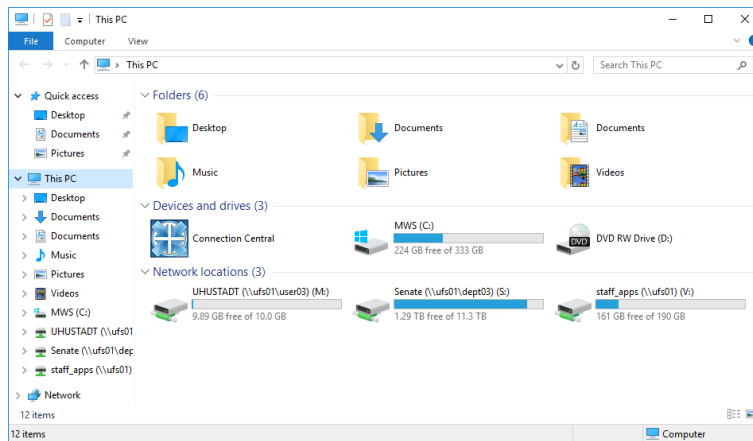


Figure 7: File Explorer

8.2 Working With Directories

The **file explorer** is an example of a type of application called a *file manager*. It displays the following *drives* (Figure 7), among others:

1. **System (C:)** — the primary partition of the first physical hard disk, contains the *operating system*.
2. **cs6xyz (H:)** — your Departmental filestore (where *cs9xyz* is your Departmental account name)
3. **SG6XYZ (M:)** — your University/MWS filestore (where *sg6xyz* is your University account name)

It is a good idea to organise your filestore in a logical manner. To help you do so the file manager allows you to:

- Create new folders (or *directories* - the terms are effectively interchangeable).
- Move part or all of the contents of one folder to another (regardless of whether the contents is made up of folders, files or a mixture of the two).
- Copy part or all of the contents of one folder to another.
- Delete folders and files.

Note that Microsoft Windows distinguishes between “deleting” files, which simply moves them to the “**Recycle Bin**” from where they can be recovered, and “permanently deleting” files, which completely removes the files.

- Rename folders and files.

Students typically create a directory for each year of study, e.g. **year1**, **year2**, etc and within each of these directories a directory for each module taken within the year, e.g. in the directory **year1** there would be directories **comp101**, **comp103**, etc. Note that while operating systems nowadays typically allow the use of whitespaces in directory or file names, these are cumbersome when using command line tools; the use of underscores ‘**_**’ instead of whitespaces or the use of CamelCase is preferable. Use the file manager now to create a directory structure on the **H:** drive that you feel comfortable with, but note that the next

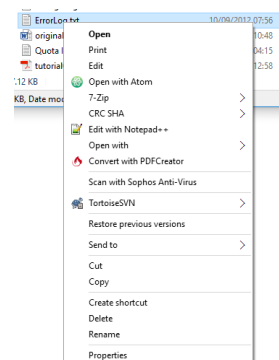


Figure 8: File menu

two practicals assume that you create exactly the directory structure suggested here.

Now open the top directory of the **H:** drive in the the file manager. That is your *departmental home directory*. You might already have a file called `myTimetable.txt` in it. If not do the following to create it: Right click in the file manager, use “New→Text Document” to create a document, rename it from `New Text Document.txt` to `myTimetable.txt`. Move the file `myTimetable.txt` to your `year1` folder and rename the file to `semester1Timetable.txt`.

You can delete a folder by clicking the right mouse button on it, and selecting the “Delete” entry from the menu that appears (Figure 8).

Alternatively, you can select the folder by clicking the left mouse button on it and then pressing the **<Delete>** key. Try creating another folder and then deleting it. Recover the folder from the “Recycle Bin”, then permanently delete it (by pressing the keys **<SHIFT>** and **<Delete>** at the same time).

Most of the functions provided by the file manager are fairly self explanatory and can be discovered through a process of experimentation by *right-clicking* on folders and files and selecting items from the resulting menus.

9 Editing Text Files

You will regularly have to develop computer programs in a variety of programming languages. While there are *Integrated Development Environments* that make program development easier, on most modules you will just use a *text editor* to write your code. Note that word processors like Microsoft Word or Wordpad are *not* suitable for writing computer programs.

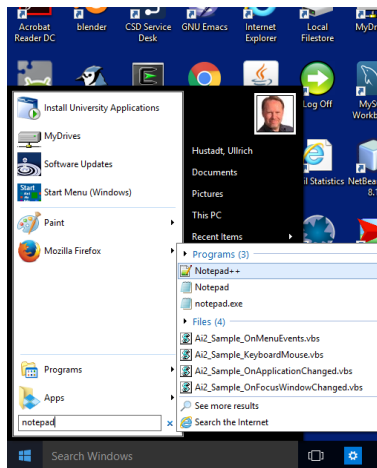
Regarding *text editors*, we recommend that you use either Notepad++, Atom, or Emacs. The latter two have the advantage that they are also available under Linux. Try experimenting with these editors to see which one you prefer to use.

To invoke Notepad++ or Atom click on the Start button, then search for the editor you want to use (Figure 9a) and select the correct entry among the search results. Alternatively you can type the name of the program into the search box and again select the correct entry among the search results (Figures 9b and 9c). For now, start Notepad++. Once Notepad++ is running you see a corresponding icon in the taskbar. As you may need the editor more often it might make sense to make it a *pinned app*: Right-click on the editor icon in the taskbar and select the option “Pin to taskbar” in the context menu that opens.

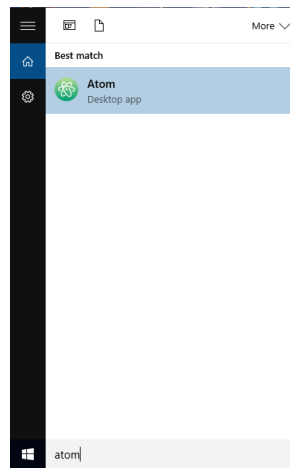
9.1 Notepad++

Before we use Notepad++ we need to make a change to its settings. The department uses a range of operating systems including Linux, MacOS and MS Windows. One of the differences between these operating systems is how the end of a line is indicated in files. Linux uses the single LF ‘Line Feed’ character, MacOS the CR ‘Carriage Return’ character, while MS Windows uses the sequence CR LF. For better interoperability of your files you should use LF. In Notepad++, use “Settings→Preferences” to open the preferences editor of Notepad++. Click on “New Document” in the menu on the left. You then see two lists of radio buttons. In the list entitled “Format (Line ending)”, select “Unix (LF)” instead of “Windows (CR LF)”. Close the preferences editor.

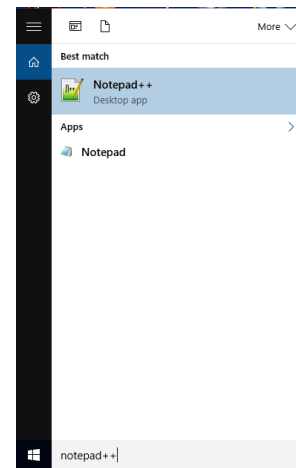
To create a new file, click on the “File” option on the menu bar and then select “New” from the resulting drop down menu (Figure 10).



(a) Via Start Menu



(b) Atom via Search



(c) Notepad++ via Search

Figure 9: Invoking Notepad or Atom++

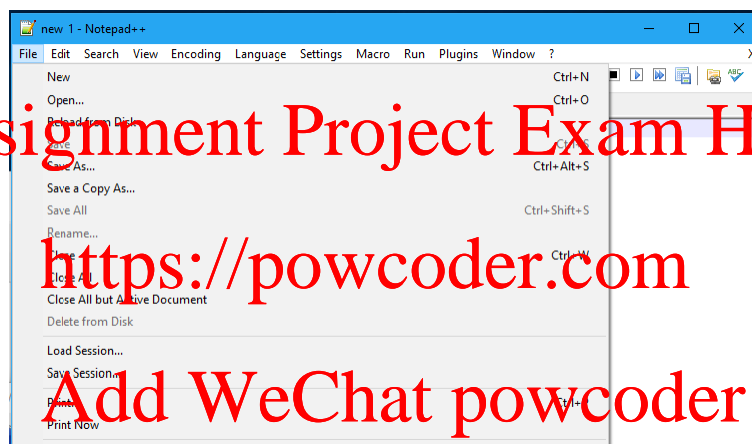


Figure 10: Creating a new text file using Notepad++

To type into an edit window the window must have what is called *input focus*. If the edit window's title bar is blue then you have input focus, if not (i.e. it is greyed out) then simply click in the window to gain input focus.

Using Notepad++ put together a list of all the recommended textbooks of your first semester modules.

You can either type those in from the notes that you have taken during lectures or copy the information from the departmental website. For example, to get the recommended textbooks for COMP110, go to

<http://intranet.csc.liv.ac.uk/~ullrich/COMP110/lit.html>

On that web page, select the description of the four recommended text books by moving the mouse across the text while holding down the left mouse button (Figure 11). You can let go of the mouse button now and press **<CTRL>-c**; alternatively, press the right mouse button and choose the option "Copy" from the context menu.

Then move the input focus back to the Notepad++ window and paste the text into Notepad++. You do so either by selecting "Edit→Paste" from the top menu of Notepad++ or by right-clicking

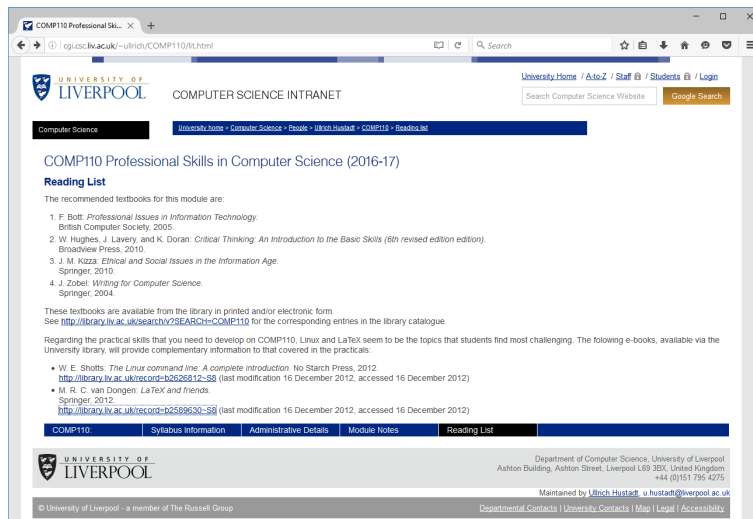


Figure 11: Copying text from a web browser

in the editor pane and selecting the option “Paste” from the context menu (Figure 12).

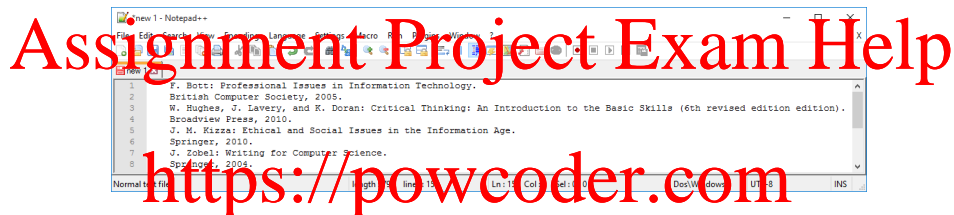


Figure 12: Text copied into Notepad++

Note the red floppy icon to the left of the file name in the text bar you are currently editing. This indicates that you have not saved the file since you have last modified it. Save the file into a directory of your choice, e.g. `year1`, giving the file the name `myBooks.txt`. You do so by clicking on the floppy disk symbol in the toolbar, navigating to the correct directory and giving the file the name suggested.

Continue by adding information about the recommended textbooks for the other modules. While doing so experiment with the menu options of Notepad++. Make sure that at the end of this exercise you know how to do the following:

- Insert new text into the file.
- Overwrite existing text.
- Move text within the file (cutting and pasting).
- Delete text from the file.
- Save the edit (i.e. store the changes you have made).
- Save the edit using a different file name (save-as).

To print out your list of recommended textbooks, use “File→Print ...”. Alternatively, click on the printer symbol in the toolbar. See Section 11 for more details on printing.

Once you feel comfortable with Notepad++, close it using “File→Exit”.

9.2 Atom

Next open the Atom text editor. When you open Atom for the first time it is likely there are several tabs open, possibly including “Welcome”, “Telemetry Consent”, and “untitled”. You might want to start with “Telemetry Consent” and decide whether you want to send usage stats to the developers of Atom.

Next explore the configuration options of Atom.

- Use “Edit→Preferences”. A new tab “Settings” will appear in the main window pane of Atom. In the left pane click on “Editor”, then in the right pane scroll down to “Show Line Numbers”. Make sure that this option is enabled.
- Next click on “Themes” in the left pane and choose the colour scheme that you prefer. For the “UI Theme” choose “One Light” among the options and for the “Syntax Theme” again choose “One Light” among the options.
- Finally, explore “Install”. Atom is an extensible editor for which a lot of packages are available that make program development easier. In the search field enter “Java” and press **<RETURN>**. Atom will list a number of packages for Java and JavaScript. Install the package `autocomplete-java`.

Once you feel that you understand how Atom works, close it by clicking on the cross in the top right corner, via “File→Quit”, or via the key combination **<CTRL>-q**.

10 A Small Cup of Java

Obviously, you can not only copy text from a web browser, but also from a PDF previewer.

1. If you have not already done so, open the following URL in your web browser:

<http://intranet.csc.liv.ac.uk/~ullrich/COMP110/notes/practical01.pdf>

The web browser should automatically open a PDF previewer for the file, if not it should offer you to save the file and you can then open the saved file in a PDF previewer. Scroll to Table 1 on page 12. This table shows a small Java program.

2. Create a new file in the Notepad++ editor.
3. Copy the text from the PDF previewer into Notepad++ just as you did with the list of recommended text books from the COMP110 web page.

Notice the way Notepad++ helps you editing your Java program (you may first have to tell Notepad++ that you are editing a Java program by selecting the “Java” option in the “Language” menu of Notepad++):

1. Different parts of the program get automatically shown in different colours. This is useful, for instance, to spot typos while typing Java keywords. If you typed `ent` instead of `int` the word would be displayed in a different colour because Notepad++ would not recognise it as a Java keyword but as a user-defined identifier. This behaviour of the editor is called *syntax highlighting*.

```
// HELLO WORLD PROGRAM
// Frans Coenen
// Monday 15 January 1999
// The University of Liverpool, UK

class HelloWorld {
    // ----- METHODS -----

    /* Main method */

    public static void main(String argv[]) {
        System.out.println("Hello World");
    }
}
```

Table 1: Your first Java program

2. Every time you close a bracket Notepad++ shows you which opening bracket it corresponds to and vice versa. (Missing a bracket is a very common mistake while writing a program or a Java class definition.)
3. Notepad++ automatically indents different lines of your program in different ways depending on where they are within an application program or class definition.

Save the program to an appropriate directory in your filestore using the file name `HelloWorld.java` (making sure that you type the file name in exactly the same way as presented here).

Now open a command prompt. One way of doing that is to right-click on the Start button and to select the entry “Command Prompt” in the context menu that opens. Again, it might make sense to pin this app to the taskbar.

By default you will be in the root directory of your filestore. If you have stored the Java program somewhere else, then use the `cd` command to change to that directory. Then execute the following two commands:

```
► javac HelloWorld.java
► java HelloWorld
```

as shown in Figure 13. Check that the output is as expected, in particular, check that the program

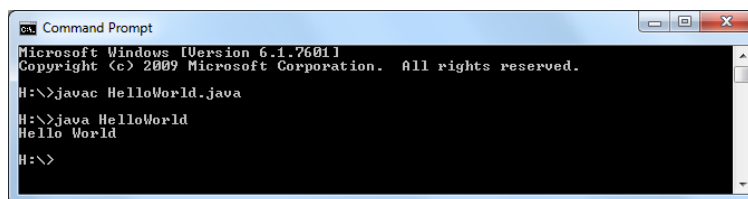


Figure 13: Compiling and executing a Java program

prints out “Hello World”. Congratulations, you have created your first Java program on our computer systems.

11 Printing

If you want to print your Java program, you can do so using “File→Print...” in Notepad++. This will open the print dialogue that lets you choose a printer and set your print preferences

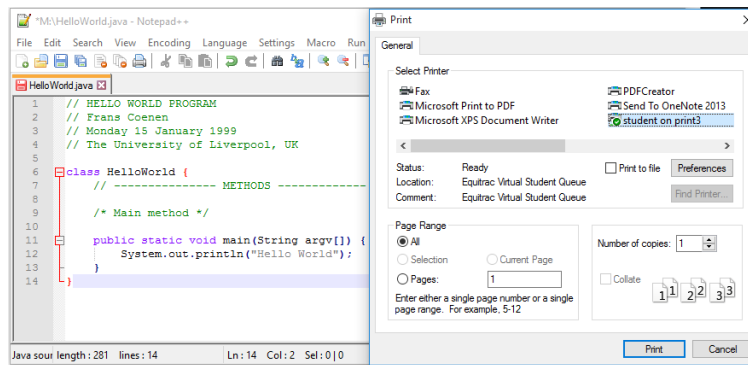


Figure 14: Printing in Notepad++

(Figure 14). The three main printers available to you are

1. Microsoft Print to PDF
2. PDFCreator
3. UOL-Queue on print

Microsoft Print to PDF and PDFCreator convert your file to PDF. PDF is often the required format for reports that you need to write for your assignments or projects. You can easily convert Microsoft Word documents to PDF using either of the two printing options. If the operating system on your own PC / laptop does not come with built-in facilities to generate PDF files, then you should install one.

UOL-Queue on print refers to the Follow-You print service of the University. Before you can use this service you may first have to set it up. To do so, open

<http://intranet.csc.liv.ac.uk/~kjc/print.html>

in a web browser and follow the instructions on “Setting up Follow-You on Computer Science student PCs”. As the instructions explain, before you can print your print account must also be in credit. So, do not forget to always top-up your print account.

Once the set-up is complete and you are in credit on your print account, test whether printing is working by printing out either the Java program you wrote or the list of recommended textbooks that you have compiled. To do so, follow the instruction on “Using Follow-You printing on the Student PCs” at the URL given above.

You should be able to retrieve your printouts from any student accessible printer on the campus. For example, there are two such printers located at both ends of the first floor corridor of the Holt Building as well as the first, second and third floor of the Ashton Building.

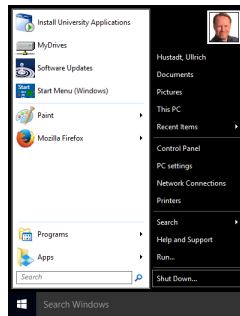
For instructions on how you get one of these printers to release your print jobs, please read

http://intranet.csc.liv.ac.uk/~kjc/ricoh_instructions.pdf

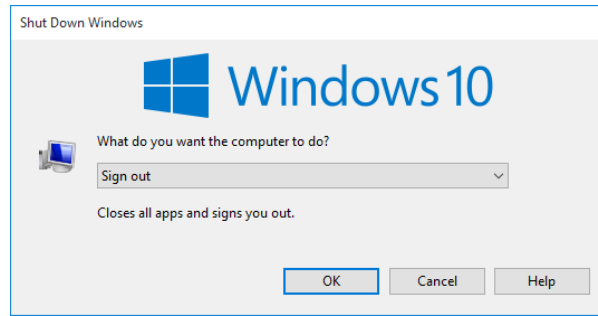
12 Logging Out

At the end of the session:

1. Close down any programs that you are running - editor, web browser, etc (by, in each case, selecting the appropriate menu option).



(a) Start menu



(b) Shut down menu

Figure 15: Logging Out

2. Do not delete any of the files and directories that you have created. You will need them again.
3. Left-click on the Start button and select the “Shutdown” option (Figure 15a). In the window that opens confirm that you want to “Sign out” (Figure 15b).

Finally, note that you can use the computer systems at any time in any lab which is free. Check whether a scheduled lab practical is taking place before you enter a lab. You may also be asked to leave a lab once such a session starts.

Assignment Project Exam Help

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