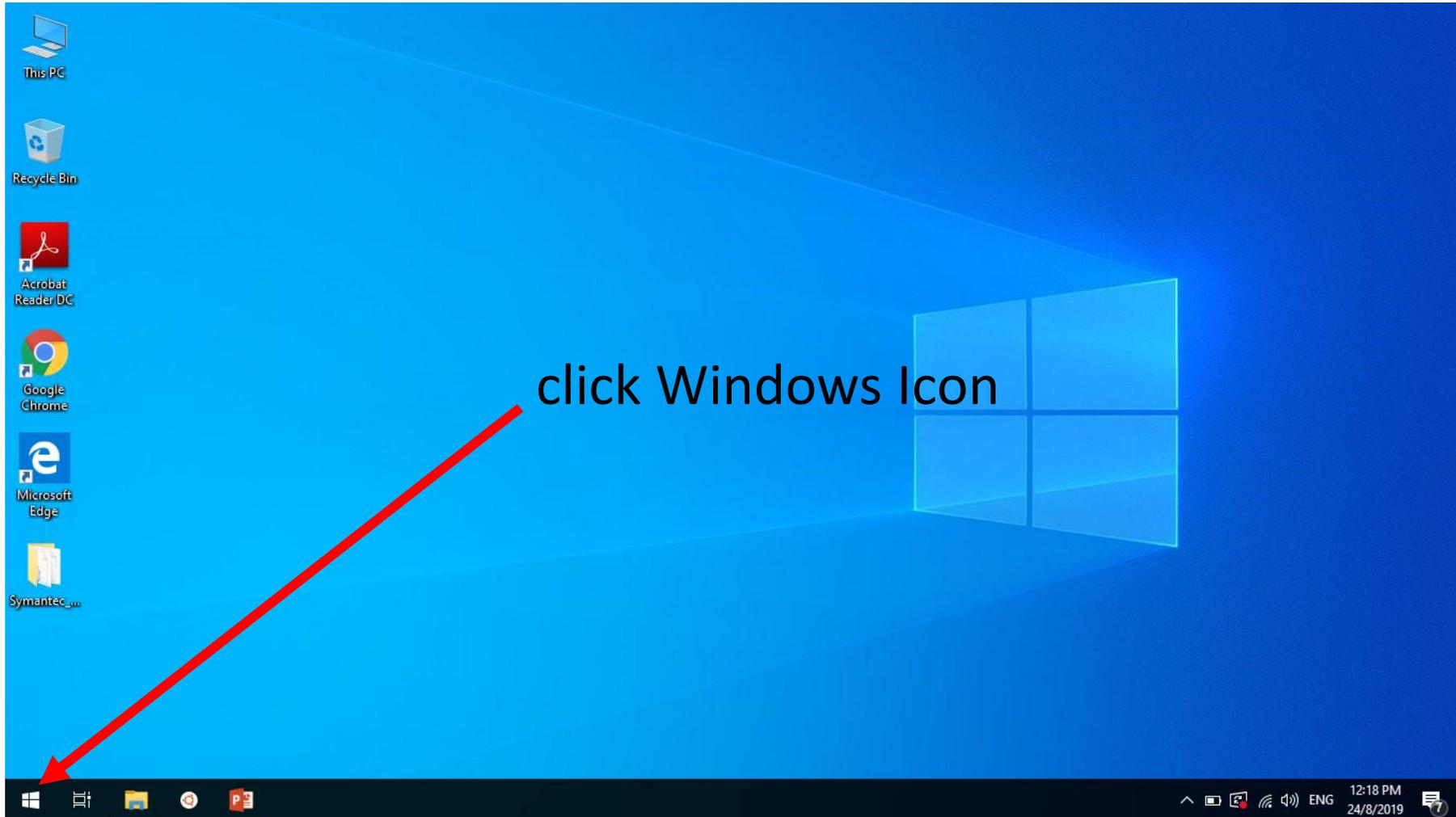


Introduction to Linux

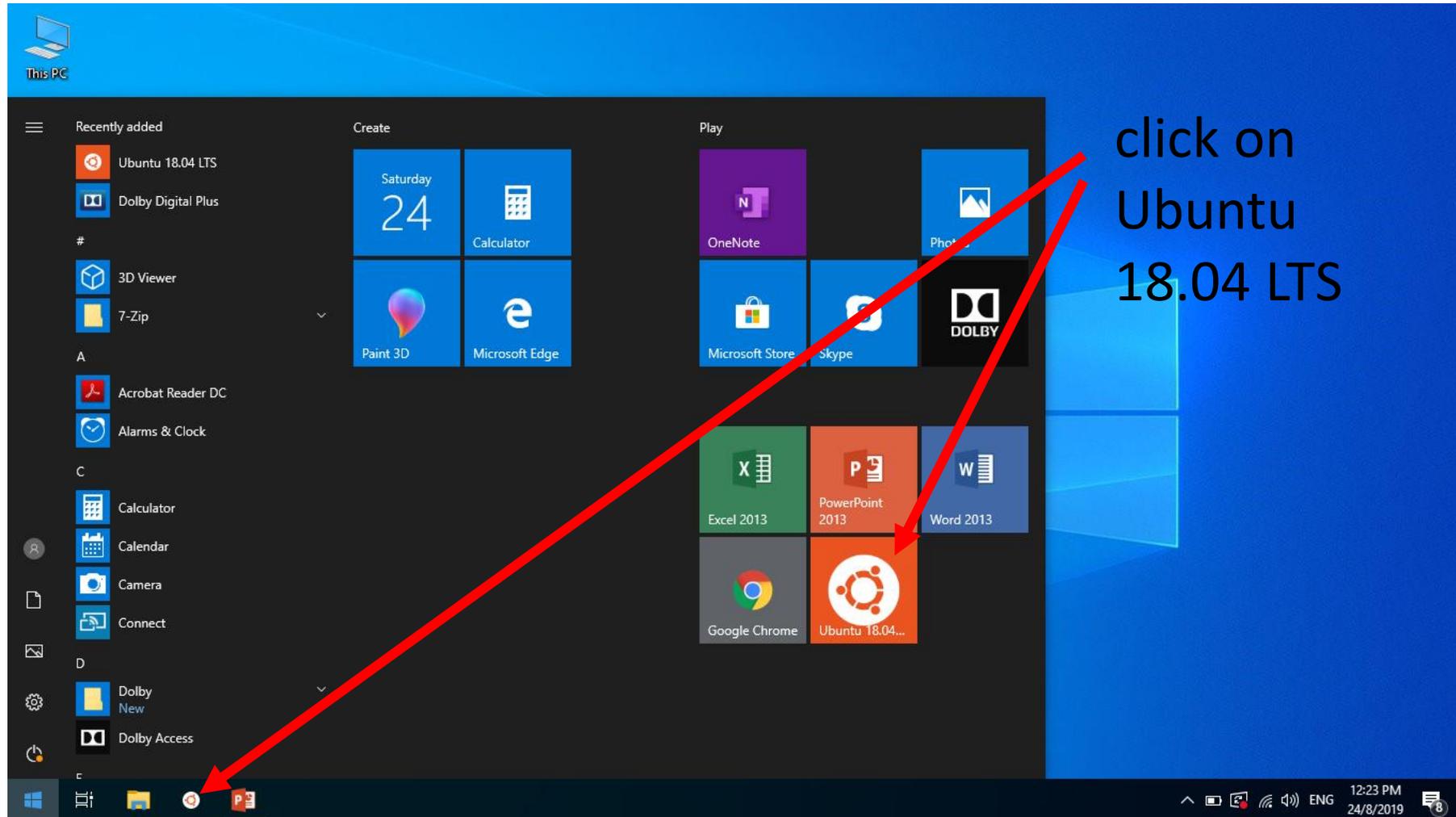
Using Windows Subsystem for Linux (WSL)

Slides prepared by Jhoann Miyajima
BII, A*STAR Singapore

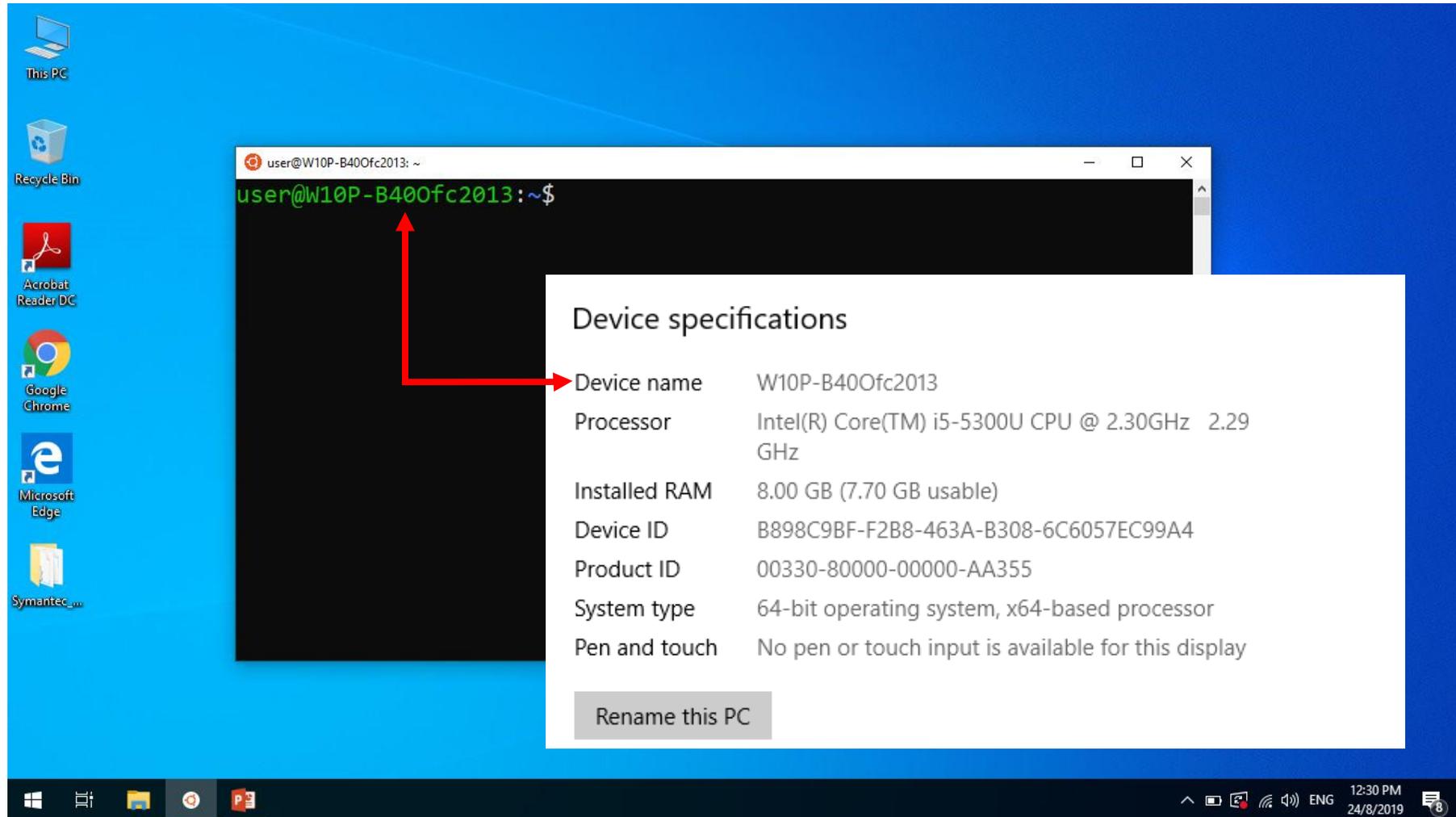
Starting Ubuntu Terminal



Starting Ubuntu Terminal



Starting Ubuntu Terminal

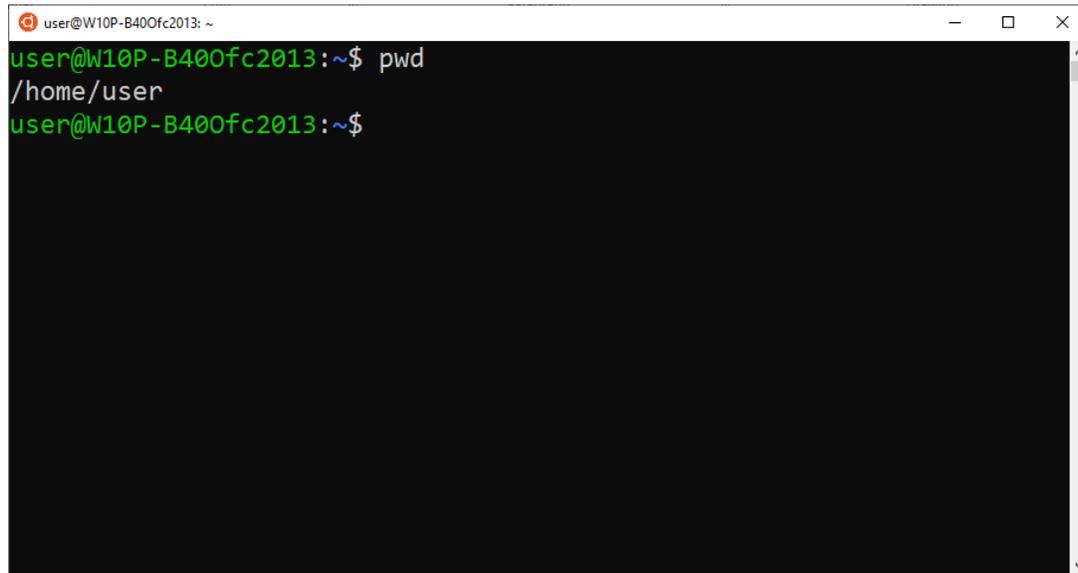


The screenshot shows a Windows 10 desktop with a blue background. On the left side, there is a taskbar with icons for 'This PC', 'Recycle Bin', 'Acrobat Reader DC', 'Google Chrome', 'Microsoft Edge', and 'Symantec...'. In the center, an Ubuntu terminal window is open, displaying the prompt 'user@W10P-B40Ofc2013: ~\$'. A red arrow points from the terminal prompt to a 'Device specifications' dialog box that is overlaid on the terminal. The dialog box contains the following information:

Device specifications	
Device name	W10P-B40Ofc2013
Processor	Intel(R) Core(TM) i5-5300U CPU @ 2.30GHz 2.29 GHz
Installed RAM	8.00 GB (7.70 GB usable)
Device ID	B898C9BF-F2B8-463A-B308-6C6057EC99A4
Product ID	00330-80000-00000-AA355
System type	64-bit operating system, x64-based processor
Pen and touch	No pen or touch input is available for this display

At the bottom of the dialog box, there is a button labeled 'Rename this PC'. The Windows taskbar at the bottom shows the Start button, task view, and several open applications. The system tray on the right shows the time as 12:30 PM on 24/8/2019, along with icons for network, volume, and language (ENG).

Getting around Linux system

A terminal window with a black background and green text. The window title is "user@W10P-B400fc2013: ~". The prompt is "user@W10P-B400fc2013:~\$". The command "pwd" is entered, and the output is "/home/user". The prompt "user@W10P-B400fc2013:~\$" is shown again.

```
user@W10P-B400fc2013:~$ pwd
/home/user
user@W10P-B400fc2013:~$
```

pwd

- **p**rint **w**orking **d**irectory
- to know which directory you are in
- forward slash(/) denotes the base of Linux file system
- user directory is usually like "/home/username"

Getting around Linux system

```
user@W10P-B40Ofc2013: /mnt/c
user@W10P-B40Ofc2013:~$ pwd
/home/user
user@W10P-B40Ofc2013:~$ cd ..
user@W10P-B40Ofc2013:/home$ pwd
/home
user@W10P-B40Ofc2013:/home$ cd /mnt/c/
user@W10P-B40Ofc2013:/mnt/c$
```

cd

- change **directory**

cd ..

- to move one level up to parent directory

cd <specific directory>

- For example:

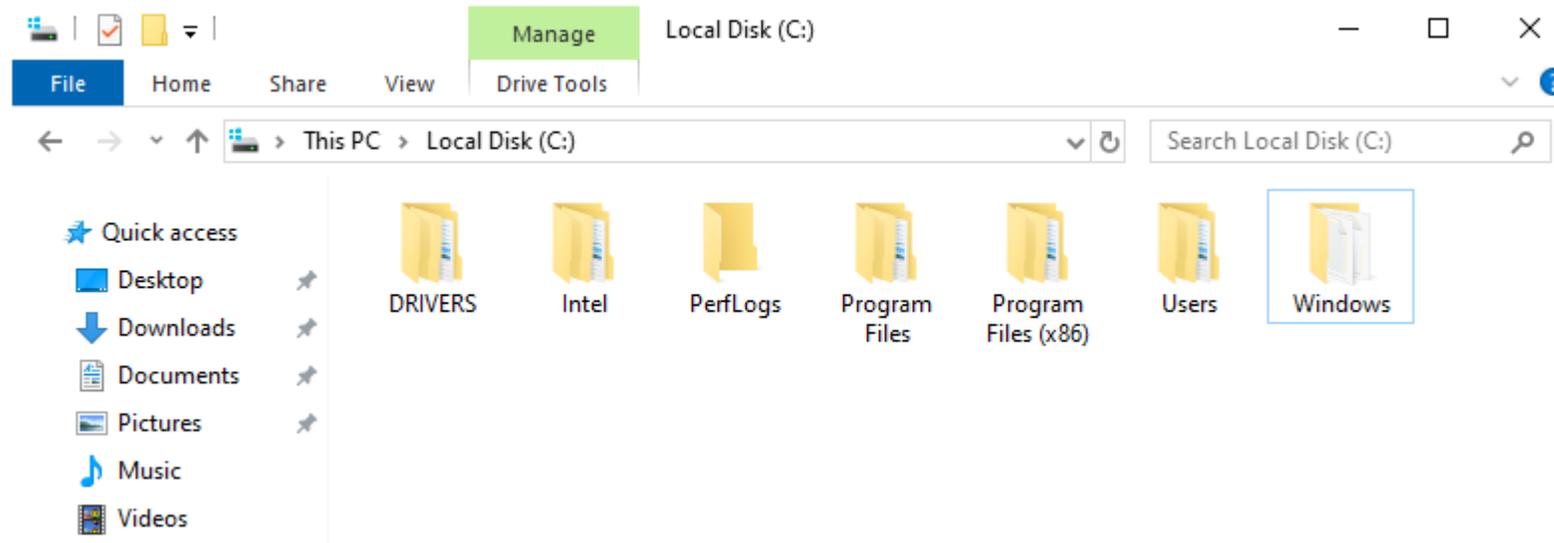
change directory to C:\

Getting around Linux system

```
user@W10P-B400fc2013: /mnt/c$ ls
ls: cannot read symbolic link 'Documents and Settings': Permission denied
ls: cannot access 'hiberfil.sys': Permission denied
ls: cannot access 'pagefile.sys': Permission denied
ls: cannot access 'swapfile.sys': Permission denied
$recycle.bin          PerfLogs             Users
Config.Msi            'Program Files'     Windows
DRIVERS               'Program Files (x86)' hiberfil.sys
'Documents and Settings' ProgramData          pagefile.sys
Intel                 Recovery             swapfile.sys
MSOCache              'System Volume Information'
```

ls

print the contents of current directory
(folders/files/programme/etc)



Creating a new folder

```
user@W10P-B400fc2013: /mnt/c/Users/User/Documents
user@W10P-B400fc2013:/mnt/c$ cd Users
user@W10P-B400fc2013:/mnt/c/Users$ cd User
user@W10P-B400fc2013:/mnt/c/Users/User$ cd Documents
user@W10P-B400fc2013:/mnt/c/Users/User/Documents$ ls
ls: cannot read symbolic link 'My Music': Permission denied
ls: cannot read symbolic link 'My Pictures': Permission denied
ls: cannot read symbolic link 'My Videos': Permission denied
Custom Office Templates  My Music  My Pictures  My Videos  desktop.ini
user@W10P-B400fc2013:/mnt/c/Users/User/Documents$
```

```
user@W10P-B400fc2013: /mnt/c/Users/User/Documents
user@W10P-B400fc2013:/mnt/c$ cd Users/User/Documents
user@W10P-B400fc2013:/mnt/c/Users/User/Documents$ ls
ls: cannot read symbolic link 'My Music': Permission denied
ls: cannot read symbolic link 'My Pictures': Permission denied
ls: cannot read symbolic link 'My Videos': Permission denied
Custom Office Templates  My Music  My Pictures  My Videos  desktop.ini
user@W10P-B400fc2013:/mnt/c/Users/User/Documents$
```

First go to “Documents” folder

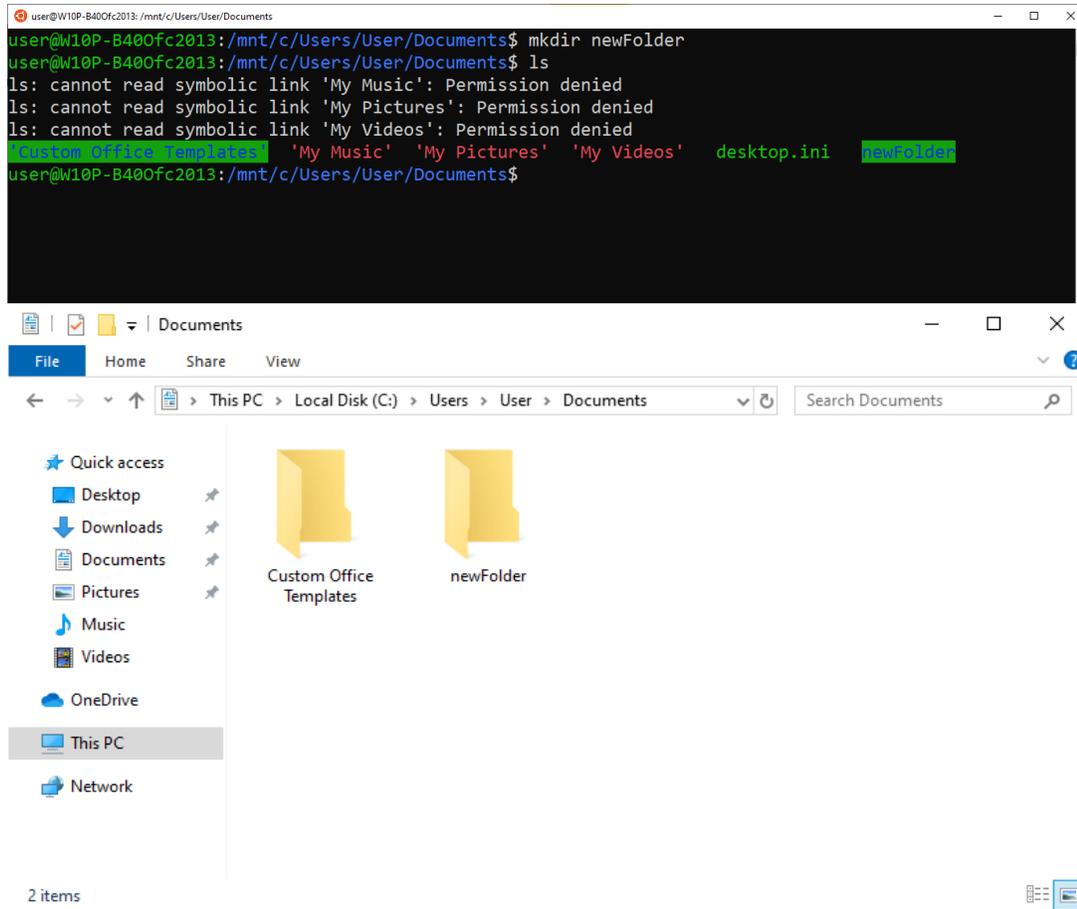
- From current directory: /mnt/c
(the long way)

cd Users -> cd User -> cd Documents

(the short way)

cd Users/User/Documents

Creating a new folder



mkdir

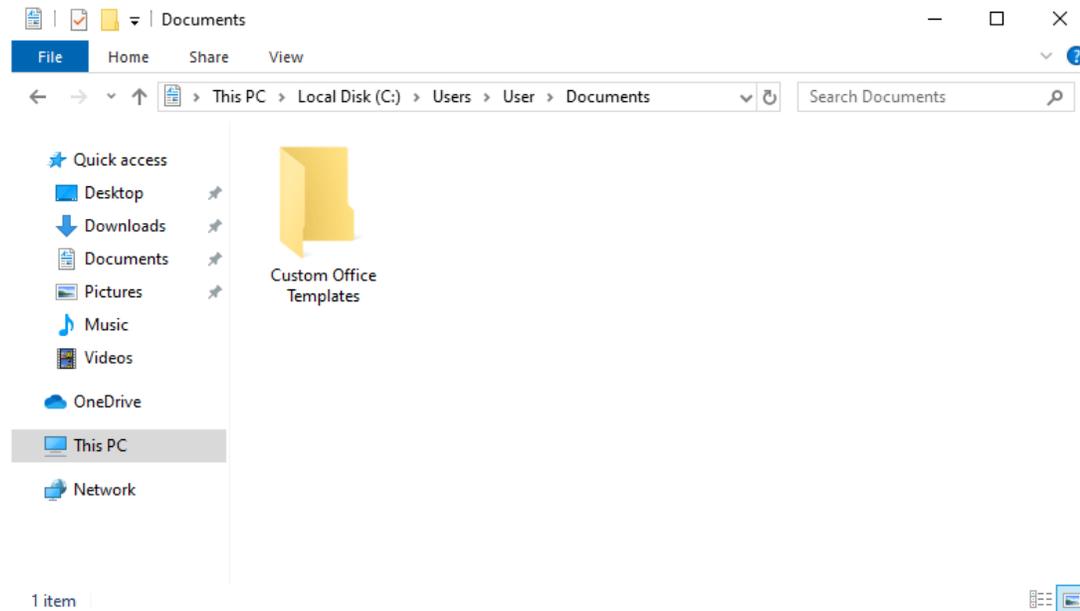
- make new directory

mkdir <folder name>

- For example we want to make a new folder and we name it “newFolder” **mkdir newFolder**
- Opening a windows browser, you should see a newly created folder with the name “newFolder”

Deleting a folder

```
user@W10P-B400fc2013: /mnt/c/Users/User/Documents$ ls
ls: cannot read symbolic link 'My Music': Permission denied
ls: cannot read symbolic link 'My Pictures': Permission denied
ls: cannot read symbolic link 'My Videos': Permission denied
Custom Office Templates  'My Music' 'My Pictures' 'My Videos'  desktop.ini  newFolder
user@W10P-B400fc2013: /mnt/c/Users/User/Documents$ rmdir newFolder
user@W10P-B400fc2013: /mnt/c/Users/User/Documents$ ls
ls: cannot read symbolic link 'My Music': Permission denied
ls: cannot read symbolic link 'My Pictures': Permission denied
ls: cannot read symbolic link 'My Videos': Permission denied
Custom Office Templates  'My Music' 'My Pictures' 'My Videos'  desktop.ini
user@W10P-B400fc2013: /mnt/c/Users/User/Documents$
```



rmdir

- Remove directory

rmdir <folder name>

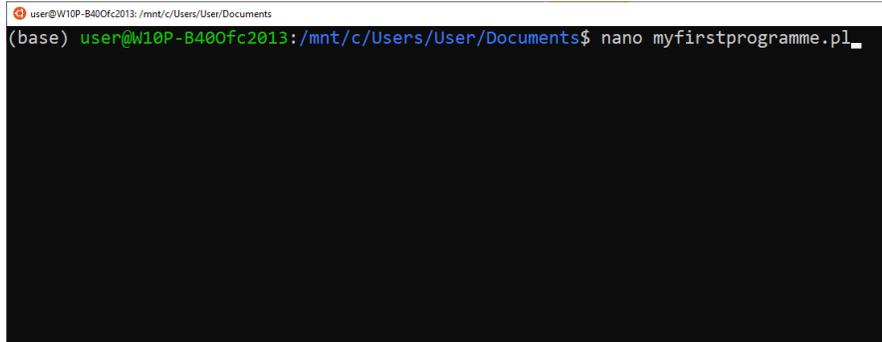
- for example we want to remove the “newFolder” **rmdir newFolder**

- checking with windows browser, “newFolder” should now be removed

Printing 'Hello World' – Starting nano

nano

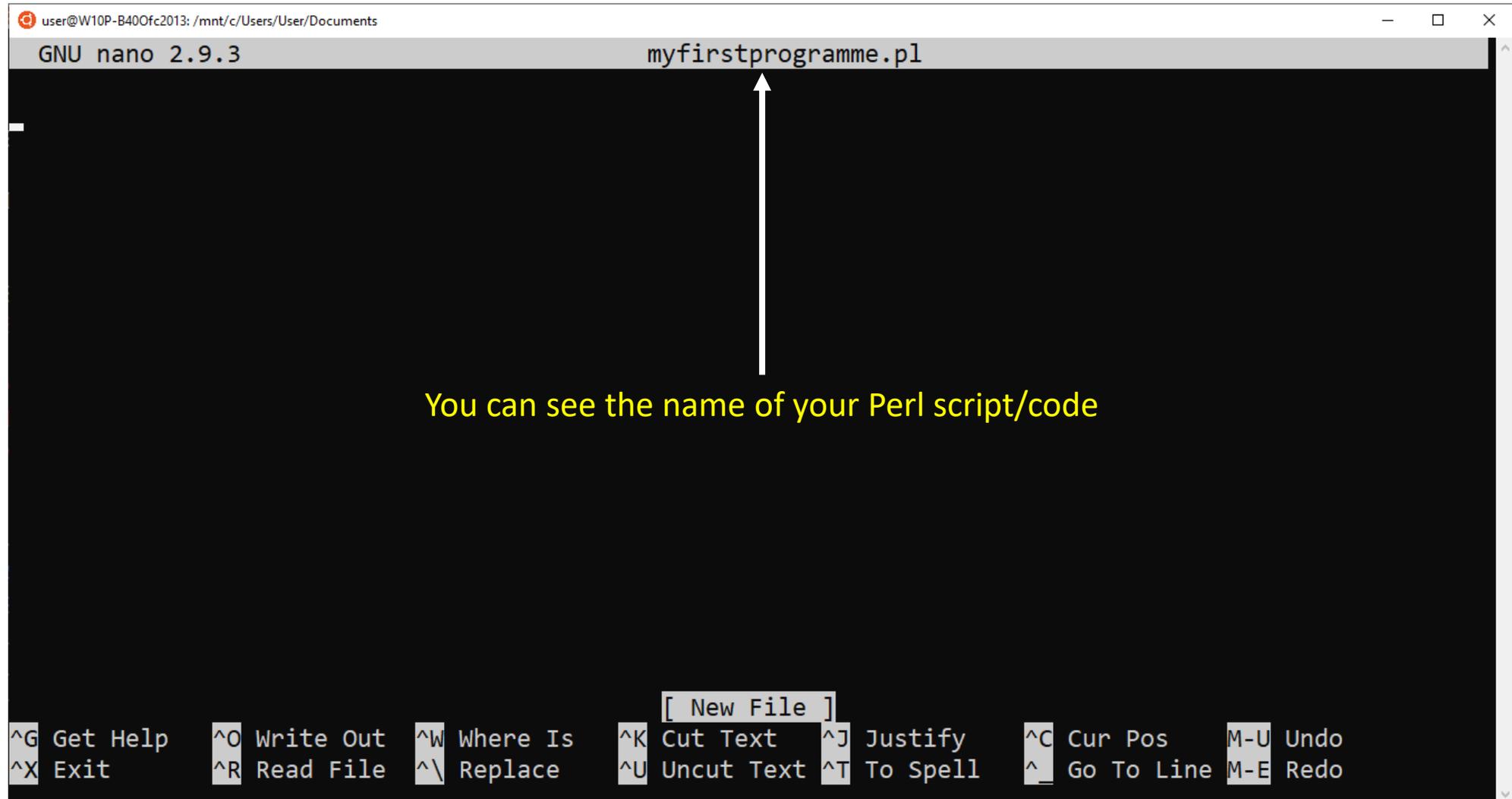
- text editor for Linux System to create your first Perl script/code

A terminal window screenshot showing a command prompt. The prompt is '(base) user@w10p-b400fc2013:/mnt/c/Users/User/Documents\$'. The command 'nano myfirstprogramme.pl' has been entered and is followed by a cursor. The terminal background is black, and the text is white and green.

nano <name of Perl script/code>.pl

- For example: nano myfirstprogramme.pl

Printing 'Hello World' – Inside nano



```
user@W10P-B40Ofc2013: /mnt/c/Users/User/Documents
GNU nano 2.9.3 myfirstprogramme.pl
```

You can see the name of your Perl script/code

```
[ New File ]
^G Get Help    ^O Write Out  ^W Where Is   ^K Cut Text    ^J Justify    ^C Cur Pos    M-U Undo
^X Exit        ^R Read File  ^\ Replace    ^U Uncut Text  ^T To Spell   ^_ Go To Line  M-E Redo
```

Printing 'Hello World' – Inside nano



The screenshot shows the GNU nano 2.9.3 text editor interface. The window title is "user@W10P-B40Ofc2013: /mnt/c/Users/User/Documents". The editor is editing a file named "myfirstprogramme.pl", which is marked as "Modified". The code in the editor is:

```
print "Hello World!\n";
```

Yellow text in the editor reads: "Type the command:" followed by the code `print "Hello World!\n";` in red. Below that, yellow text reads: "To save and exit:" followed by the commands `Ctrl + o`, `Enter`, and `Ctrl + x` in red.

At the bottom of the editor, a menu bar is visible with the following options:

<code>^G</code> Get Help	<code>^O</code> Write Out	<code>^W</code> Where Is	<code>^K</code> Cut Text	<code>^J</code> Justify	<code>^C</code> Cur Pos	<code>M-U</code> Undo
<code>^X</code> Exit	<code>^R</code> Read File	<code>^\</code> Replace	<code>^U</code> Uncut Text	<code>^T</code> To Spell	<code>^_</code> Go To Line	<code>M-E</code> Redo

A "[New File]" button is also visible in the center of the menu bar.

Printing 'Hello World' – Back to Ubuntu

```
user@W10P-B400fc2013: /mnt/c/Users/User/Documents
(base) user@W10P-B400fc2013:~$ cd /mnt/c/Users/User/D
Desktop/  Documents/  Downloads/
(base) user@W10P-B400fc2013:~$ cd /mnt/c/Users/User/Documents/
(base) user@W10P-B400fc2013:/mnt/c/Users/User/Documents$ nano myfirstprogramme.pl
(base) user@W10P-B400fc2013:/mnt/c/Users/User/Documents$ ls
ls: cannot read symbolic link 'My Music': Permission denied
ls: cannot read symbolic link 'My Pictures': Permission denied
ls: cannot read symbolic link 'My Videos': Permission denied
'Custom Office Templates'  'My Pictures'  desktop.ini  myfirstprogramme.pl.save
'My Music'                 'My Videos'  myfirstprogramme.pl
(base) user@W10P-B400fc2013:/mnt/c/Users/User/Documents$ _

user@W10P-B400fc2013: /mnt/c/Users/User/Documents
(base) user@W10P-B400fc2013:~$ cd /mnt/c/Users/User/D
Desktop/  Documents/  Downloads/
(base) user@W10P-B400fc2013:~$ cd /mnt/c/Users/User/Documents/
(base) user@W10P-B400fc2013:/mnt/c/Users/User/Documents$ nano myfirstprogramme.pl
(base) user@W10P-B400fc2013:/mnt/c/Users/User/Documents$ ls
ls: cannot read symbolic link 'My Music': Permission denied
ls: cannot read symbolic link 'My Pictures': Permission denied
ls: cannot read symbolic link 'My Videos': Permission denied
'Custom Office Templates'  'My Pictures'  desktop.ini  myfirstprogramme.pl.save
'My Music'                 'My Videos'  myfirstprogramme.pl
(base) user@W10P-B400fc2013:/mnt/c/Users/User/Documents$ perl myfirstprogramme.pl
Hello World!
(base) user@W10P-B400fc2013:/mnt/c/Users/User/Documents$
```

To check if perl script/code is present:

ls
you can see it here!

To run your Hello World script:
perl myfirstprogramme.pl

Hello World! is now printed