

# Installing GNU/Linux

- in this module some of the tutorials will be undertaken on the GNU/Linux operating system
  
- there are two supported approaches to install GNU/Linux
  - firstly using VMware
  - secondly using the Raspberry Pi-4
  
- both give the same user level experience, see later on for install instructions

## Installing GNU/Linux

- either approach can be used:
  - VMware (VMware runs under Windows, OSX and GNU/Linux)
  - Raspberry Pi-4
  
- you only need to choose one approach!

## Installing GNU/Linux

- the aim at the end of this weeks tutorial is to have installed either:
  - VMware and to have run the associated operating system image
  - or alternatively have successfully installed the Raspberry Pi4 image
  
- once you have succeeded installing either of these you could use the remainder of the time to explore the operating system

## Installing VMware image of Debian 10

- you will need to download this zip archive: `<http://floppsie.comp.glam.ac.uk/download/targz/deb10.zip>`
- you will need to obtain a legal vmplayer, an evaluation/home use can be tried here [evaluation-home-student](https://www.VMware.com/uk/products/workstation-player/workstation-player-evaluation.html) `<https://www.VMware.com/uk/products/workstation-player/workstation-player-evaluation.html>`
- if you are a University of SouthWales student you can email [Robert Thomas](mailto:robert.thomas@southwales.ac.uk) `<robert.thomas@southwales.ac.uk>` in our dept for a VMware licence. He needs to register you to the VMware academic programme. Please only email him from a University email account.

## Installing VMware image of Debian 10

- to install on a GNU/Linux machine you need to:

```
$ cd  
$ mkdir VMware  
$ cd VMware  
$ wget http://floppsie.comp.glam.ac.uk/download/targz/deb10.zip  
$ unzip deb10.zip
```

## Installing VMware image of Debian 10

- you need to install `vmplayer` using the instructions provided by VMware
- now start `vmplayer`

- ```
$ vmplayer &
```

## Installing VMware image of Debian 10

- you should now open a virtual machine and choose the top Debian 10
  - your account name is: `student` and password is a
  - the `root` account password is also a

## About this USW VMware image

- it is based on the Debian 64bit Buster distribution
- as far as known it has all the tools necessary to complete the courseworks for Game Engine Design, Game Tool Development and Operating Systems
  - caveat, there maybe additional packages, necessary, but these should be a single command line instruction away
- it comes with `gcc`, `g++`, `gdb`, `vi`, `emacs`, `python3`, `python2`, `pge`, `chisel`, `gm2`, `openconnect` (a vpn client) and thousands of other packages
  - `C++-17` is also installed as an extra, the `gcc-10` is also installed which contains detailed semantic analysis of your C programs!



## Installing the USW Raspberry Pi-4 image

- the [USW Raspberry Pi-4 image](http://floppsie.comp.glam.ac.uk/download/bootimages/student-rpi4-22-09-2020-shrink.img) (<http://floppsie.comp.glam.ac.uk/download/bootimages/student-rpi4-22-09-2020-shrink.img>) is a 32bit arm7 for the Raspberry Pi-4 (either 8GB or 4GB variety).
- the image is just over 6GB and needs to be etched or dd'd to a micro USB card
  - the image contains a self inflating filesystem which will expand when the machine first boots and it will utilise the whole micro USB card
  - it has been tested successfully with a 32GB card

## Placing the contents of the image onto the micro USB card

- if you are on a Windows or OSX or Raspberry-Pi machine you should install [etcher](https://www.balena.io/etcher) <<https://www.balena.io/etcher>> and use this tool to prepare the card
- you need to run the `etcher` program, locate the `.img` file and write the image file to the micro USB card
- notice that the USW Raspberry Pi-4 image is not zipped

## Placing the contents of the image onto the micro USB card

- the user account is: `student` and the password is a
- the `student` user account can `sudo` to `root` and the password for `root/sudo` is a
  - you might want to change this (see the command line program `passwd`)
- when your Raspberry Pi-4 boots for the first time you need to be patient as the self expansion can take 3-4 minutes, during this time the screen is pretty near blank.
  - thankfully this only occurs once and thereafter it boots in seconds

## About this USW Raspberry Pi-4 image

- it is based on the Raspbian 32bit Buster distribution
- as far as known it has all the tools necessary to complete the courseworks for Game Engine Design, Game Tool Development and Operating Systems
  - caveat, there maybe additional packages, necessary, but these should be a single command line instruction away
- it comes with `gcc`, `g++`, `gdb`, `vi`, `emacs`, `python3`, `python2`, `pge`, `chisel`, `gm2`, `openconnect` (a vpn client) and thousands of other packages
  - C++-17 is also installed as an extra, the `gcc-10` is also installed which contains detailed semantic analysis of your C programs!