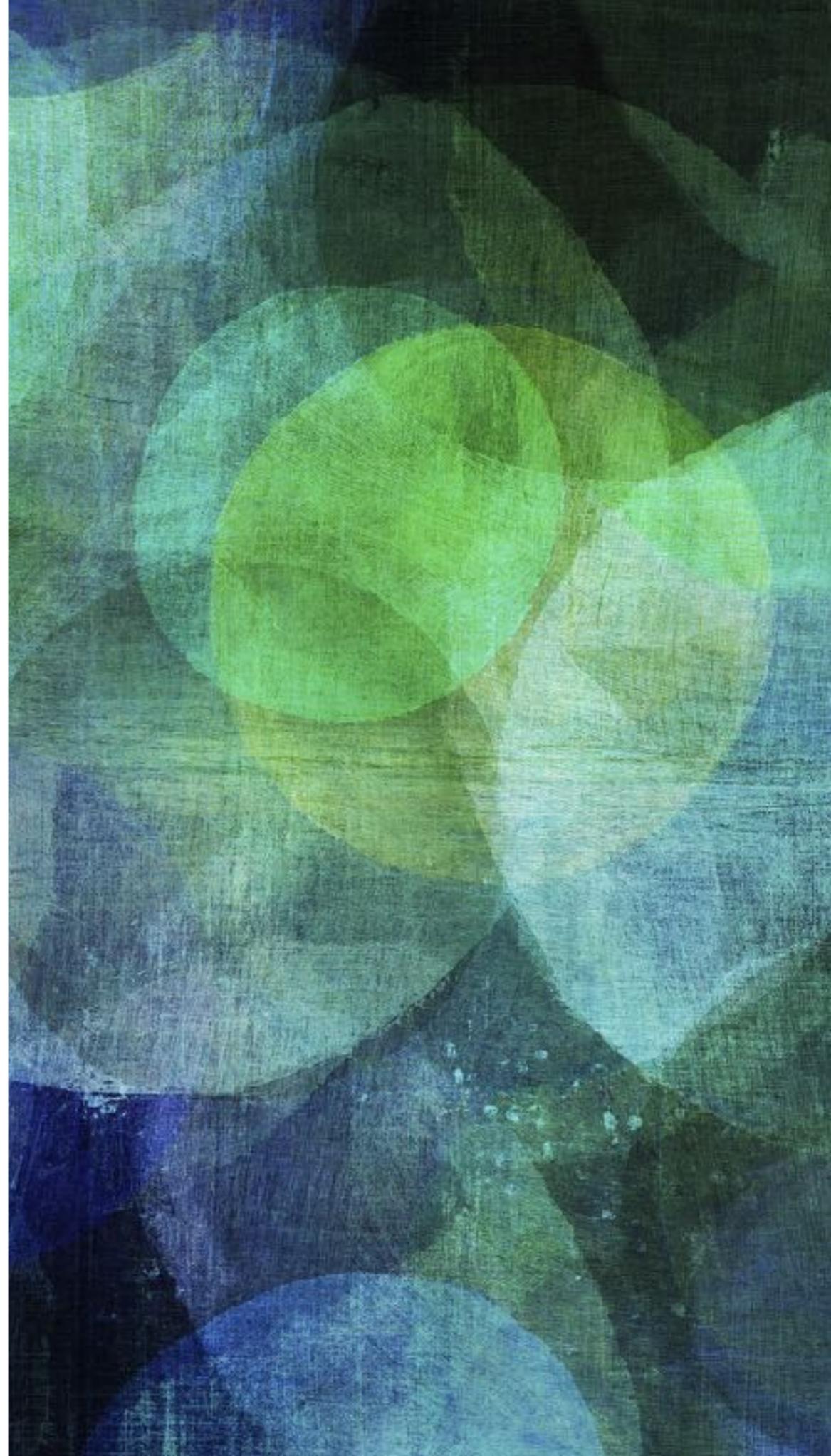
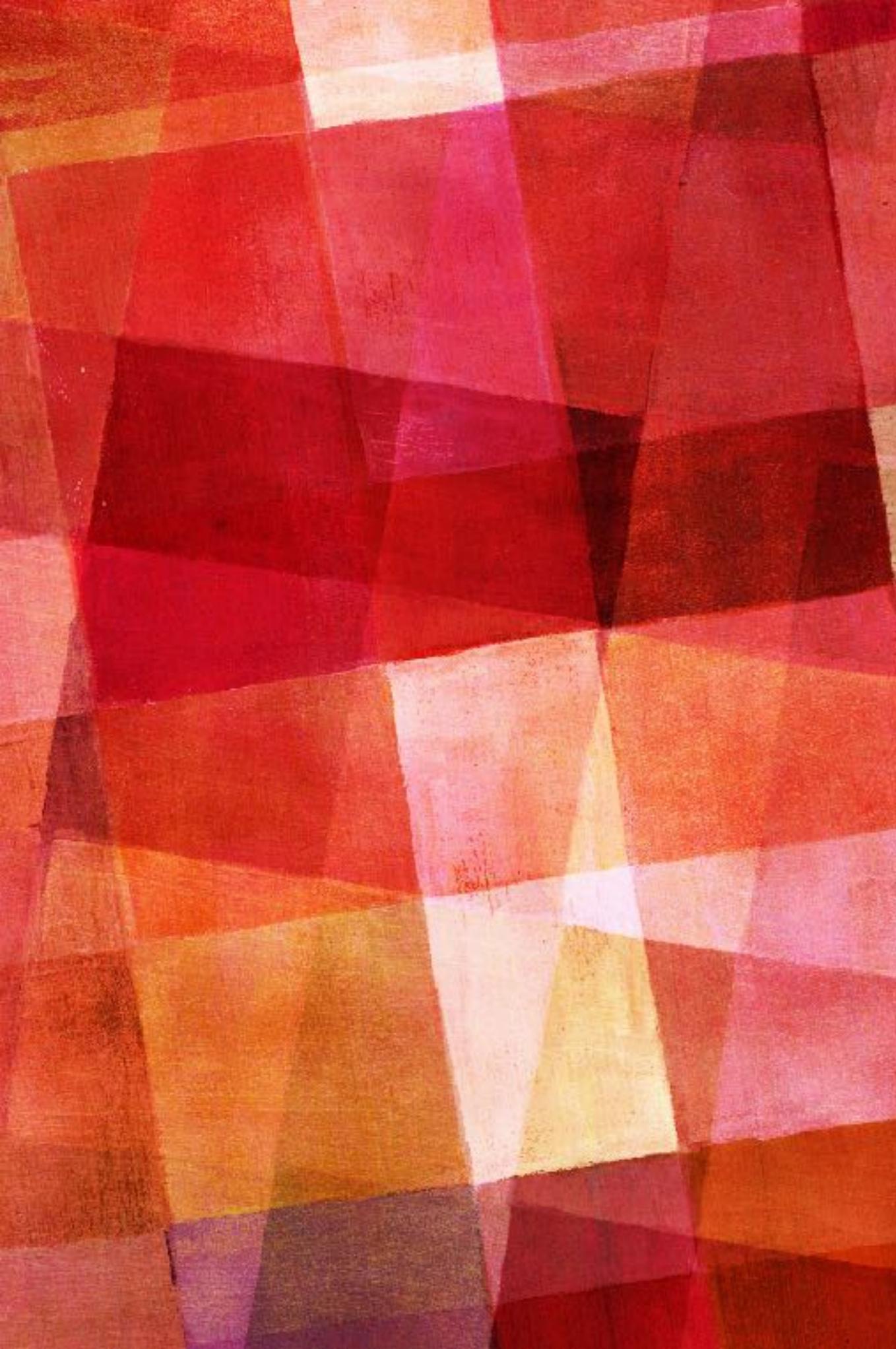


H4K & MINECRAFT

A raspberry pi workshop

**HI,
MY NAME IS
STEPHANIE**



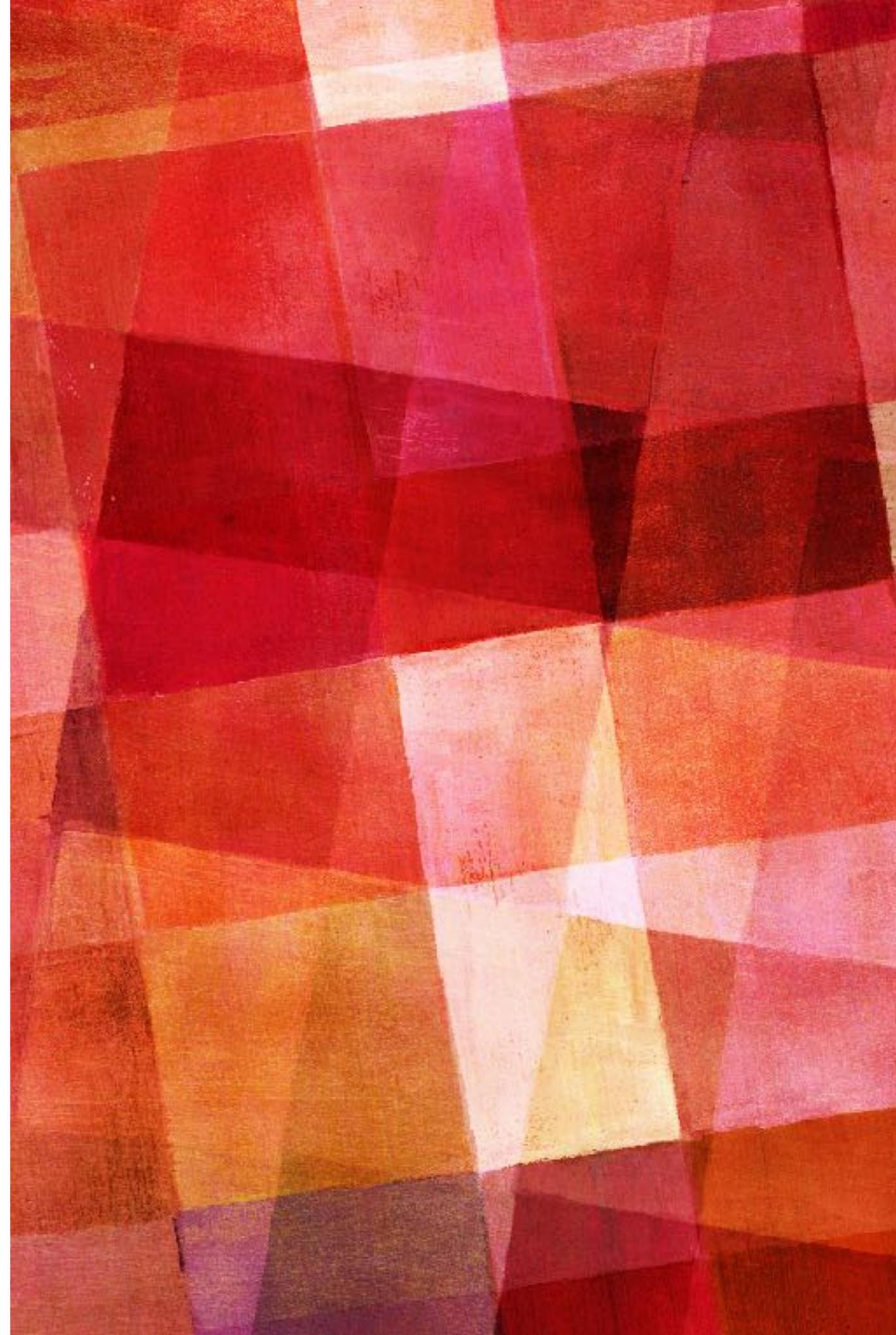


WHAT DO WE NEED

- Laptop
- Minecraft installed on computer
- Minecraft account
- Raspberri pi
- network

AGENDA

- Quick intro
- What is Minecraft
- What is a Raspberry pi?
- Let's install
- Let's play



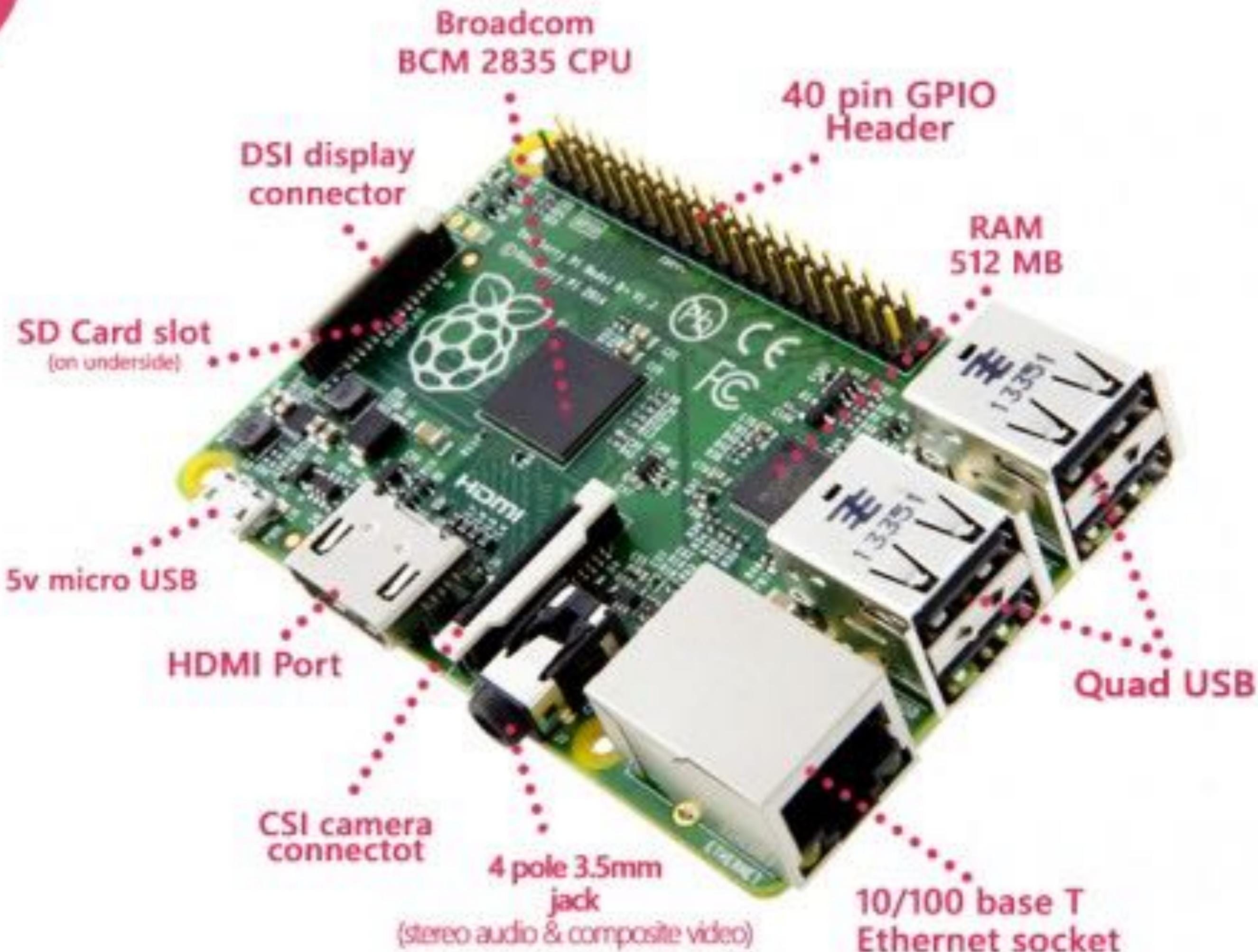
**WHO WAS HERE LAST
YEAR?**

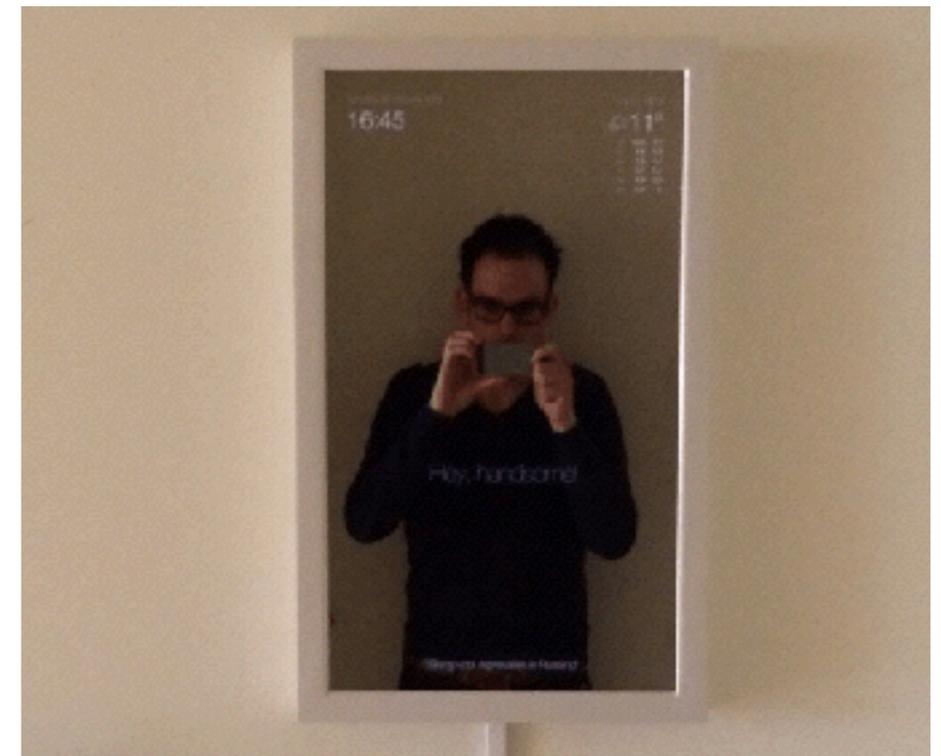
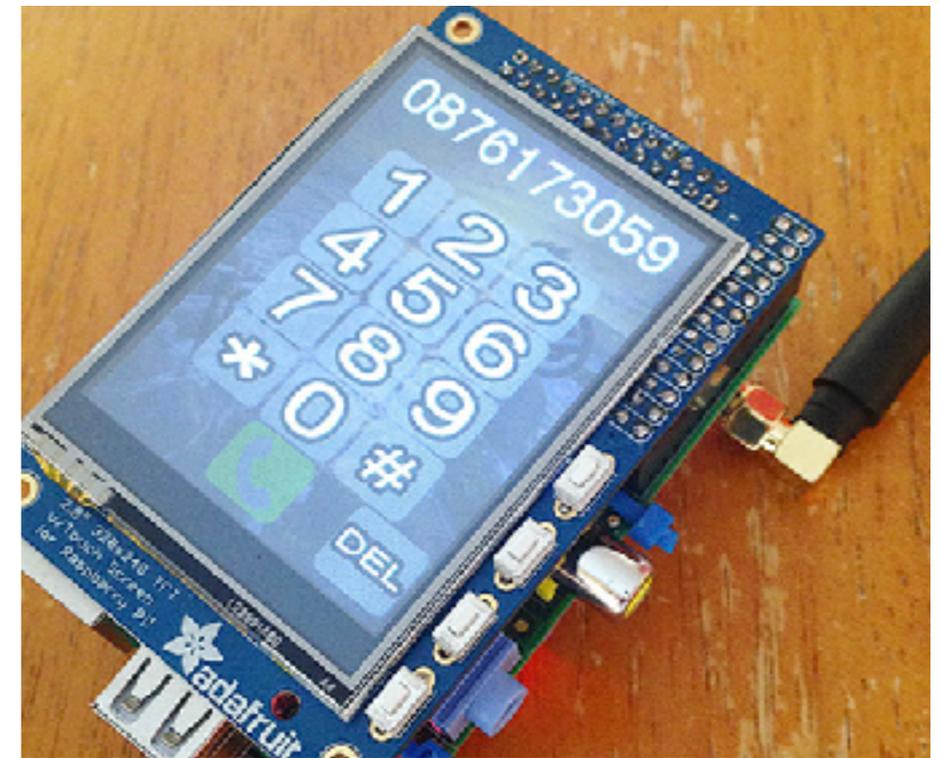
WHAT IS MINECRAFT?



Cool examples of things done in Minecraft

WHAT IS A RASPBERRY PI?





Cool examples of things done with a raspberry pi



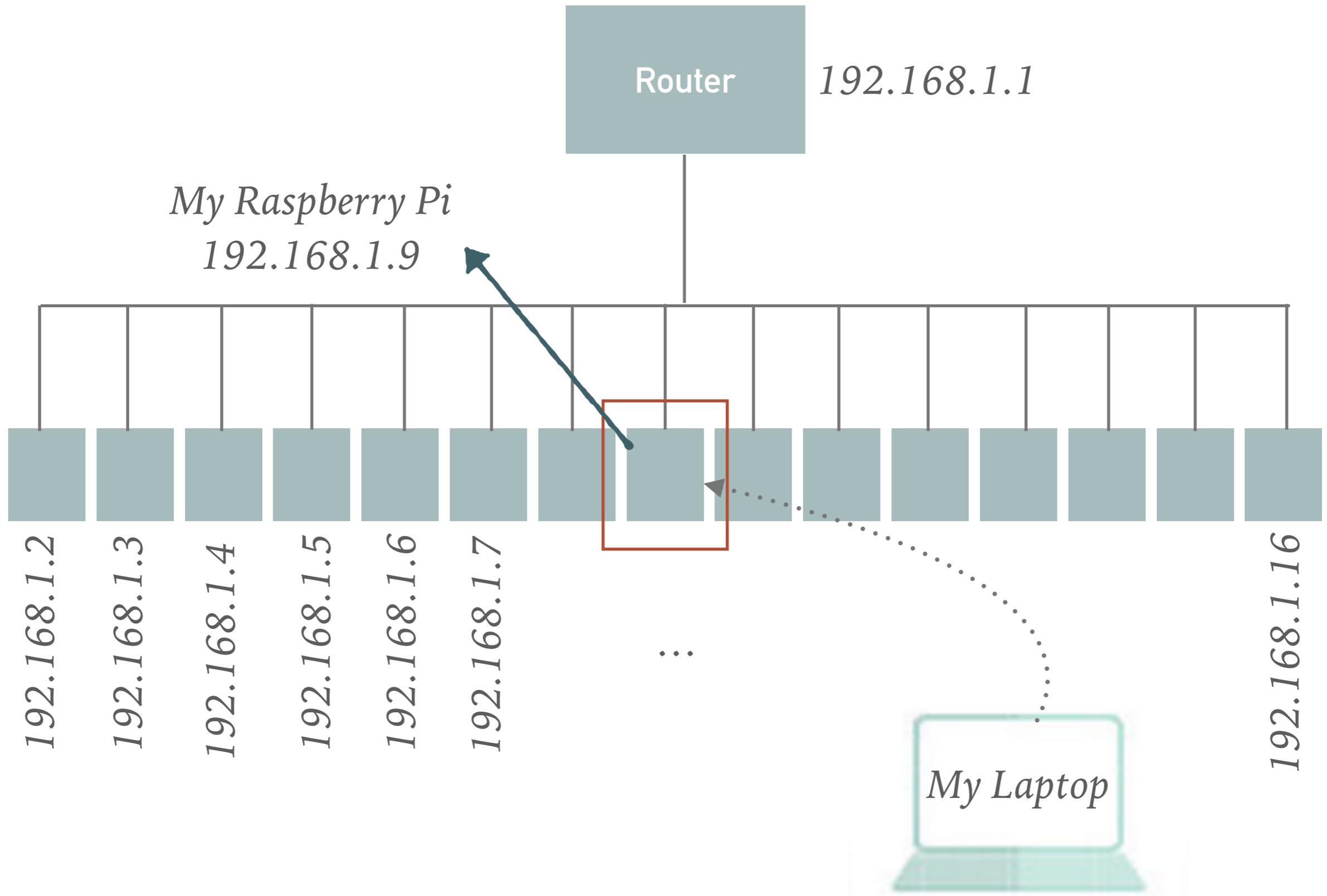
Let's get

STARTED



I'VE PREPARED THE PI'S

- installed Raspian Operating System
- updated and upgraded system (20 oktober 2016)
- hardcoded ip's
- installed JRE7
- downloaded the Minecraft server files
- put a Minecraft properties file on the Raspberry Pi to copy(just-in-case)





intro into commandline

STEP 0



OPEN SHELL / TERMINAL WINDOW

```
Memory:~ stephanie$ ssh pi@192.168.1.9[]
```

SSH is the protocol used to connect to the raspberry pi

Pi is the user you will use to log into the raspberry pi

192.168.1.9 is the adres of my raspberry, this number will be different for your raspberry pi.

THE TERMINAL / SHELL / OR COMMANDLINE INTERFACE

```
pi@raspberrypi ~ $
```

The image shows a terminal prompt 'pi@raspberrypi ~ \$' on a black background with green text. Three colored boxes highlight parts of the prompt: a yellow box around 'pi', a blue box around '@raspberrypi', and a pink box around '~'. Three arrows point from these boxes to the corresponding parts of the text below: a yellow arrow from 'pi', a blue arrow from '@raspberrypi', and a pink arrow from '~'.

- pi is the user you logged in with
- raspberrypi is your hostname or better said the name of your machine
- ~ that's the current directory (file) in which you are viewing. This symbol means that you are in the home directory of the pi user.

COMMON HANDY COMMANDS TO KNOW

- pwd (print working directory)

```
[pi@raspberrypi:~ $ pwd  
/home/pi
```

- ls (list)

```
[pi@raspberrypi:~ $ ls  
Desktop    Downloads  Pictures   Templates  python_games  
Documents  Music      Public     Videos
```

COMMON HANDY COMMANDS TO KNOW

➤ `ls -a`

```
[pi@raspberrypi:~ $ ls -a
.          .cache    .profile  Downloads
..         .config   .themes   Music
.Xauthority .dbus     .thumbnails Pictures
.asoundrc  .gconf    .xsession-errors Public
.bash_history .gststreamer-0.10 .xsession-errors.old Templates
.bash_logout .local    Desktop   Videos
.bashrc     .pki     Documents python_games
pi@raspberrypi:~ $
```

➤ `ls -la`

COMMON HANDY COMMANDS TO KNOW

➤ ls -la

```
[pi@raspberrypi:~ $ ls -la
total 112
drwxr-xr-x 20 pi pi 4096 Oct 18 05:08 .
drwxr-xr-x  3 root root 4096 Oct 16 09:47 ..
-rw-----  1 pi pi  56 Oct 17 05:37 .Xauthority
-rw-r--r--  1 pi pi  69 Oct 16 10:01 .asoundrc
-rw-----  1 pi pi  648 Oct 18 05:08 .bash_history
-rw-r--r--  1 pi pi  220 Sep 23 02:26 .bash_logout
-rw-r--r--  1 pi pi 3512 Sep 23 02:26 .bashrc
drwxr-xr-x  6 pi pi 4096 Oct 18 05:08 .cache
drwxr-xr-x 11 pi pi 4096 Oct 18 05:09 .config
drwx-----  3 pi pi 4096 Oct 16 10:00 .dbus
drwx-----  2 pi pi 4096 Oct 18 05:08 .gconf
drwxr-xr-x  2 pi pi 4096 Oct 16 10:01 .gststreamer-0.10
drwxr-xr-x  3 pi pi 4096 Oct 16 09:47 .local
drwx-----  3 pi pi 4096 Oct 18 05:08 .pki
-rw-r--r--  1 pi pi  675 Sep 23 02:26 .profile
drwxr-xr-x  3 pi pi 4096 Oct 16 09:47 .themes
drwx-----  4 pi pi 4096 Oct 18 05:08 .thumbnails
-rw-----  1 pi pi  353 Oct 17 05:37 .xsession-errors
-rw-----  1 pi pi  353 Oct 16 10:00 .xsession-errors.old
drwxr-xr-x  2 pi pi 4096 Sep 23 03:52 Desktop
drwxr-xr-x  5 pi pi 4096 Oct 16 09:47 Documents
drwxr-xr-x  2 pi pi 4096 Oct 16 10:00 Downloads
drwxr-xr-x  2 pi pi 4096 Oct 16 10:00 Music
drwxr-xr-x  2 pi pi 4096 Oct 16 10:00 Pictures
drwxr-xr-x  2 pi pi 4096 Oct 16 10:00 Public
drwxr-xr-x  2 pi pi 4096 Oct 16 10:00 Templates
drwxr-xr-x  2 pi pi 4096 Oct 16 10:00 Videos
drwxr-xr-x  2 pi pi 4096 Oct 16 09:47 python_games
```

PERMISSIONS

➤ If you have used the `ls -la` command then you will see something that looks like this: `-r w -r - -r - -`

`-r w -r - -r - -`

➤ these are file permissions:

➤ the above permissions mean:

➤ **r**eadable and **w**riteable by its **owner**

➤ **r**eadable by its **group**

➤ **r**eadable by **everyone**

MORE HANDY COMMANDS

- CD (change directory)

```
[pi@raspberrypi:~ $ cd Desktop  
pi@raspberrypi:~/Desktop $ ]
```

- TAB key

```
[pi@raspberrypi:~ $ cd D  
Desktop/ Documents/ Downloads/  
[pi@raspberrypi:~ $ cd Desktop/ ]
```



all about users

STEP 1



FIRST THINGS FIRST

DISCLAIMER: Make sure you remember your new password and / or user!!

- Create a new user if you want
 - `sudo adduser [new username] sudo`
- give your user a password or change the password of a user
 - `sudo passwd [new username]`

```
[pi@raspberrypi:~ $ sudo adduser stephanie
perl: warning: Setting locale failed.
perl: warning: Please check that your locale settings:
    LANGUAGE = (unset),
    LC_ALL = (unset),
    LC_CTYPE = "UTF-8",
    LANG = "en_GB.UTF-8"
    are supported and installed on your system.
perl: warning: Falling back to a fallback locale ("en_GB.UTF-8").
Adding user `stephanie' ...
Adding new group `stephanie' (1001) ...
Adding new user `stephanie' (1001) with group `stephanie' ...
Creating home directory `/home/stephanie' ...
Copying files from `/etc/skel' ...
[Enter new UNIX password:
[Retype new UNIX password:
passwd: password updated successfully
Changing the user information for stephanie
Enter the new value, or press ENTER for the default
    Full Name []: Stephanie Vanroelen
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
[Is the information correct? [Y/n] Y
pi@raspberrypi:~ $
```

GIVE YOUR NEW USER ADMIN RIGHTS

- CTRL C
 - This will stop a command you are executing

```
#
# This file MUST be edited with the 'visudo' command as root.
#
# Please consider adding local content in /etc/sudoers.d/ instead of
# directly modifying this file.
#
# See the man page for details on how to write a sudoers file.
#
Defaults                env_reset
Defaults                mail_badpass
Defaults                secure_path="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:$
# Host alias specification
# User alias specification
# Cmnd alias specification
# User privilege specification
root    ALL=(ALL:ALL) ALL
stephanie    ALL=(ALL:ALL) ALL
# Allow members of group sudo to execute any command
%sudo    ALL=(ALL:ALL) ALL
# See sudoers(5) for more information on "#include" directives:
#include_dir /etc/sudoers.d
```

Save modified buffer (ANSWERING "No" WILL DESTROY CHANGES) ?

Y Yes

N No

^C Cancel

LOGOUT & CHANGE PWD PI USER

- Let's logout of our pi and log in as our new user
- change the password for the user pi
 - `sudo passwd pi`



updating is important

STEP 2



DIFFERENCE BETWEEN UPDATE & UPGRADE

- apt-get update
 - This command get's an updated version of where the pi needs to look for updates for all the packages that are installed on it.
 - Kind of like getting a new address book with the new locations of all the packages
- apt-get upgrade
 - actually updates the packages by installing the newest versions available now that it knows where to look
 - Now you have the new address book you know where to get which package

MAKE SURE YOU HAVE ENOUGH SPACE LEFT

➤ df -h

```
[stephanie@raspberrypi:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       15G   3.9G  9.5G  29% /
devtmpfs        214M     0  214M   0% /dev
tmpfs           218M     0  218M   0% /dev/shm
tmpfs           218M  4.6M  213M   3% /run
tmpfs           5.0M  4.0K  5.0M   1% /run/lock
tmpfs           218M     0  218M   0% /sys/fs/cgroup
/dev/mmcblk0p6  66M   21M   46M  31% /boot
tmpfs           44M     0   44M   0% /run/user/1000
tmpfs           44M     0   44M   0% /run/user/1001
```

➤ sudo apt-get clean



let's configure

STEP 3



CHANGE THE CONFIGURATION OF YOUR RASPBERRY PI

- Make raspberry pi go faster
- `sudo raspi-config`
 - option 6: Overclock

Raspberry Pi Software Configuration Tool (raspi-config)

- | | |
|--------------------------------|-----------------------------------|
| 1 Expand Filesystem | Ensures that all of the SD card s |
| 2 Change User Password | Change password for the default u |
| 3 Boot Options | Configure options for start-up |
| 4 Internationalisation Options | Set up language and regional sett |
| 5 Enable Camera | Enable this Pi to work with the R |
| 6 Overclock | Configure overclocking for your P |
| 7 Advanced Options | Configure advanced settings |
| 8 About raspi-config | Information about this configurat |

<Select>

<Finish>

CHANGE THE CONFIGURATION OF YOUR RASPBERRY PI

- option 7: Advanced
 - A2 Hostname: change the name of your raspberry pi box
 - A4 SSH enabled (this is enabled by default)



Let's install Java

STEP 4



INSTALL JRE7

- What is JRE7? Java Runtime Environment
- Java is a programming language and computing platform first released by Sun Microsystems in 1995.
- Java Runtime Environment (JRE) is a software package that contains what is required to run a Java program
 - This means that a JRE contains instructions on how to run a program that is written in Java. It's kind of like the IKEA install guide.

HOW TO INSTALL

➤ `sudo apt-get install git openjdk-7-jre-headless tar`



let's install the Minecraft server

STEP 5



INSTALLING MINECRAFT

- `wget "https://hub.spigotmc.org/jenkins/job/BuildTools/50/artifact/target/BuildTools.jar" -O BuildTools.jar`



let's run the Minecraft server

STEP 6



RUN MINECRAFT SERVER

➤ `sudo java -Xmx512M -jar BuildTools.jar --rev latest`

LOG ON TO THE RASPBERRY PI SERVER

➤ `op [your username]`

STOP COMMAND LINE OR GAME

➤ `op /stop`



let's configure the Minecraft server

STEP 7



CHANGE PROPERTIES OF THE MINECRAFT SERVER

➤ `sudo nano server.properties`

```
#Minecraft server properties
level-name=world
level-type=DEFAULT
enable-query=false
allow-flight=false
announce-player-achievements=true
server-port=25565
max-world-size=29999984
enable-rcon=false
level-seed=
force-gamemode=false
server-ip=
network-compression-threshold=256
max-build-height=256
spawn-npcs=true
white-list=false
spawn-animals=true
hardcore=false
snooper-enabled=true
resource-pack-sha1=
online-mode=true
resource-pack=
pvp=true
difficulty=1
enable-command-block=false
gamemode=0
player-idle-timeout=0
max-players=20
max-tick-time=60000
spawn-monsters=true
generate-structures=true
view-distance=10
motd=A Minecraft Server
```

MINECRAFT SERVER PROPERTIES

- `enable-query = false`
- `enable-rcon = false`
- `gamemode = 0`

MINECRAFT SERVER PROPERTIES

- generator-settings =
- hardcore = false
- level-type = DEFAULT
- max-build-height = 20

MINECRAFT SERVER PROPERTIES

- `max-players = 5`
- `max-world-size = 1000`
- `motd = H4K Minecraft Server`
- `online-mode = true`

MINECRAFT SERVER PROPERTIES

- `pvp = false`
- `snooper-enabled = false`
- `view-distance = 5`

MINECRAFT SERVER PROPERTIES

- `server-ip=`
- `server-port=25565`
- `resource-pack=`
- `white-list=false`

MINECRAFT SERVER PROPERTIES

- `spawn-animals = true`
- `spawn-monsters = true`
- `spawn-npcs = false`
- `spawn-protection = 16`



parents

STEP 8



STUFF YOU NEED TO DO @ HOME

- Port forwarding on your home router
- whitelist your friends (config file)
- don't forget to change the IP (it's hardcoded right now)



let's play

STEP 9



RASPBERRY PI COMMANDS

.....

Key	Action
W	Forward
A	Left
S	Backward
D	Right
E	Inventory
Space	Jump
Double Space	Fly / Fall
Esc	Pause / Game menu
Tab	Release mouse cursor

- Use your mouse to look around.
- Press 'E' for inventory.
- With the sword in your hand, you can click on blocks in front of you to remove them (or to dig). With a block in your hand, you can use right click to place that block in front of you, or left click to remove a block.



handy dandy
.....
STEP 10



USEFULL LINKS

- <https://www.raspberrypi.org/learning/getting-started-with-minecraft-pi/worksheet/>
- <https://www.raspberrypi.org/blog/minecraft-pi-edition-video/>
- <http://www.stuffaboutcode.com/2013/11/coding-shapes-in-minecraft.html>
- https://arghbox.files.wordpress.com/2014/04/flowerpath_a4.pdf (download all pdfs)
- <https://www.raspberrypi.org/learning/minecraft-whac-a-block-game/>

USEFULL LINKS

- <http://eu.wiley.com/WileyCDA/WileyTitle/productCd-111894691X.html>
- <https://computers.tutsplus.com/tutorials/how-to-install-noobs-on-a-raspberry-pi-with-a-mac--mac-57831>
- <http://picraftbukkit.webs.com/pi-minecraft-server-how-to>
- <https://minecraft.net/en/download/server>
- <https://www.spigotmc.org/threads/buildtools-updates-information.42865/>
- <http://www.instructables.com/id/Raspberry-Pi-Minecraft-Server/>

USEFULL LINKS

- <https://learn.adafruit.com/what-is-the-command-line>
- <https://learn.adafruit.com/an-illustrated-shell-command-primer/ls>
- <https://learn.adafruit.com/an-illustrated-shell-command-primer/changing-directories-cd>
- <https://www.raspberrypi.org/documentation/linux/usage/users.md>
- <https://www.raspberrypi.org/documentation/raspbian/updating.md>

USEFULL LINKS

- https://www.java.com/en/download/faq/whatis_java.xml
- https://en.wikipedia.org/wiki/Java_virtual_machine
- <http://minecraft.gamepedia.com/Server.properties>
- <http://www.minecraftman.com/minecraft-server-properties/>
- <http://minecraft.gamepedia.com/Superflat>