Instructions: Install LiveSHOW on the RaspberryPi

What is needed:

- Computer (Windows/Mac/Linux)
- Screen with suitable HDMI cable. The Raspberry Pi (4 and 5) has a micro HDMI connection
- USB keyboard and mouse
- Fast micro SD card with at least 32 GB (e.g. SanDisk Extreme)
- Raspberry Pi
- Internet access

Before we start:
The file system of the Raspberry Pi differs from the file system of Windows/Mac.
This has the following effects:

- Files should always be copied from Windows/Mac to the Raspberry Pi using a USB stick. Copying files directly to the SD card via an SD card reader can go wrong.
- Files with special characters and/or umlauts can be used under Windows/Mac, but if, for example, a liveSHOW project with such files is copied to the Raspberry Pi, it may not be possible to open them.
  Always make sure that file names (sound files, media files, project names) do not contain any special characters or umlauts!!!
  The underscore is the only special character allowed.

Step 1: Write the Raspberry Pi OS to the SD card (on the computer)
The Raspberry Pi Imager can be used for this, instructions are available at
https://www.raspberrypi.com/software/
The Raspberry Pi 4 and 5 are 64-bit computers, so the 64-bit image should be selected. As the interface is required later for the liveSHOW, the desktop version of the image must be selected, not the headless version.

The Raspberry Pi Imager offers the option of making a few settings before writing to the SD card. By default, the user name "pi" and the password "raspberry" used to be used automatically. It is recommended for beginners to use this, as there are many older instructions for the Raspberry Pi on the Internet.
In any case, you should remember the user name and password well.

Step 2: Starting the Raspberry Pi for the first time
After the Raspberry Pi OS image has been written to the SD, the SD card must be inserted into the Raspberry Pi

As the Raspberry Pi OS does not automatically activate VNC, a screen, keyboard and mouse must be connected to the Raspberry Pi.
(Alternatively, you could also use SSH to make the initial settings, but this requires prior knowledge of how to operate the terminal).

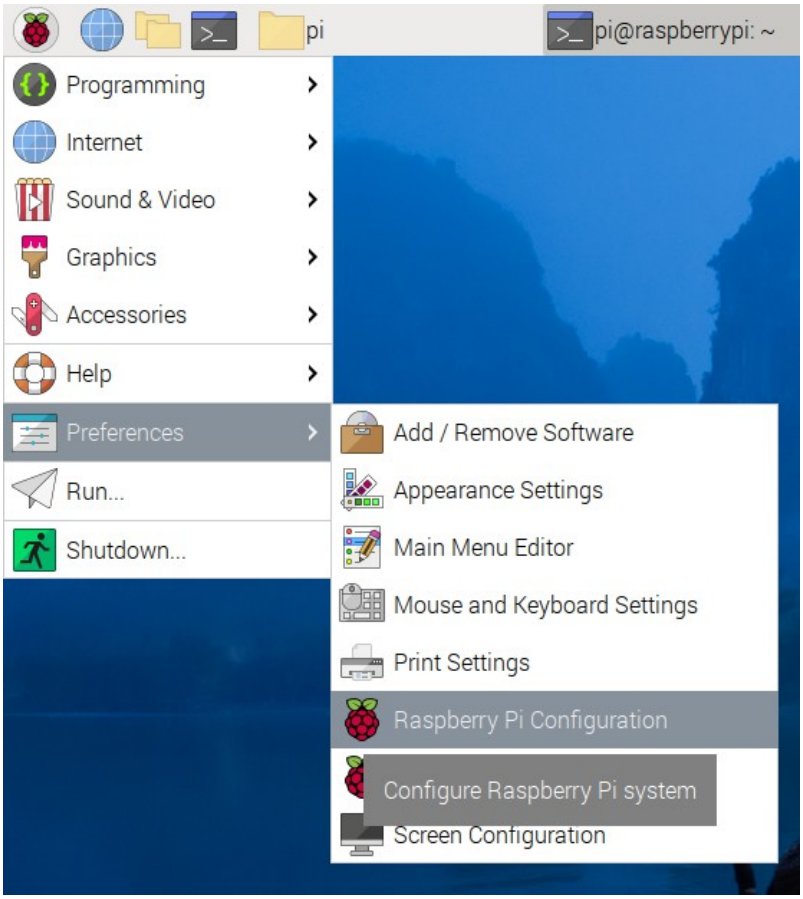
Now the RasperryPi can be supplied with power, it starts automatically. The boot process may take a while the first time.

Once the boot process is complete, further settings must be made.

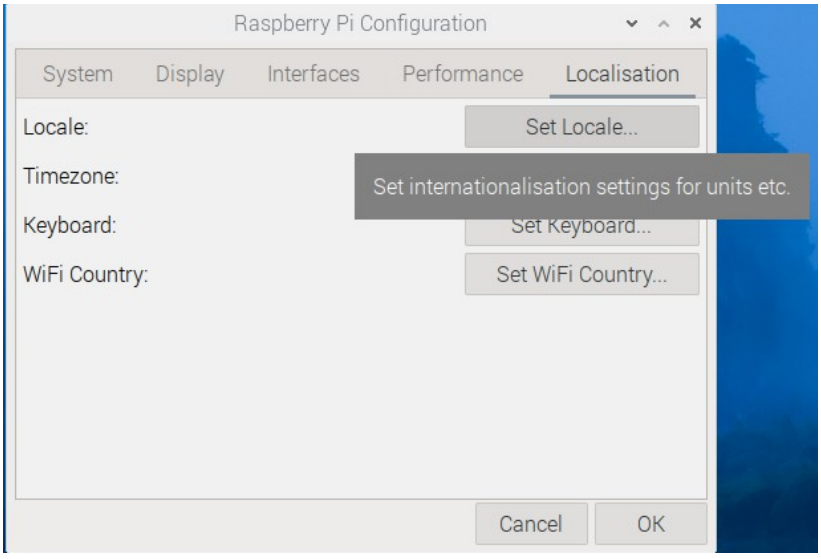
Step 3: Set language, keyboard and interfaces

This can be done with the user interface (without terminal).

- Open Raspberry Pi settings

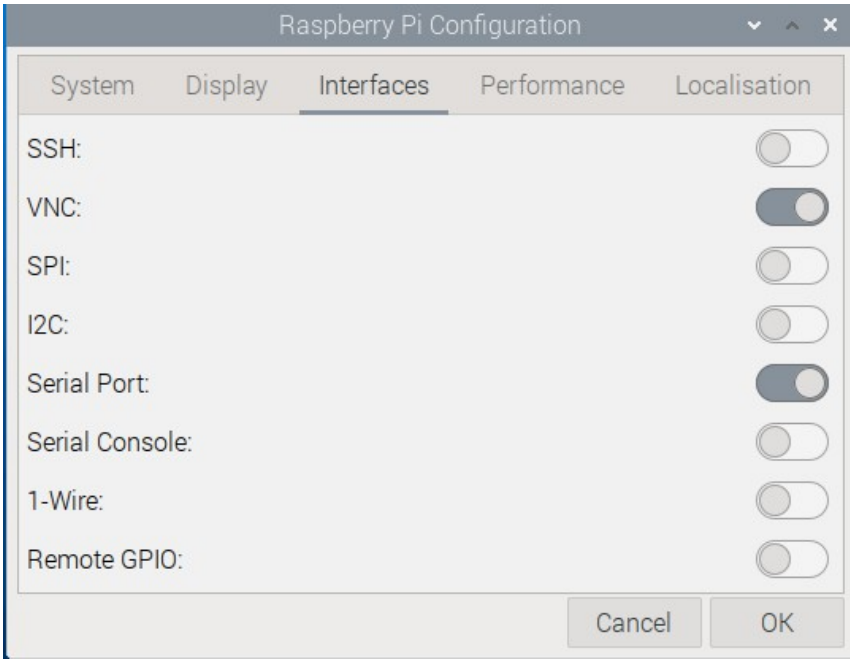


- Set the language under Localization
  Click on 'Set Locale' and select yor language (e.g. en English)



- As keyboard set 'Generic 101 key PC'

- As WiFi Country set your country
- Set the interfaces (serial port) and optionally VNC



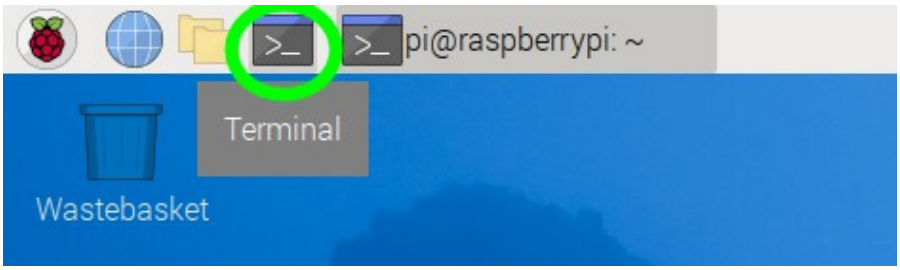
  Serial Port must be activated and you can optionally activate VNC.

- Confirm with OK and restart the Raspberry Pi

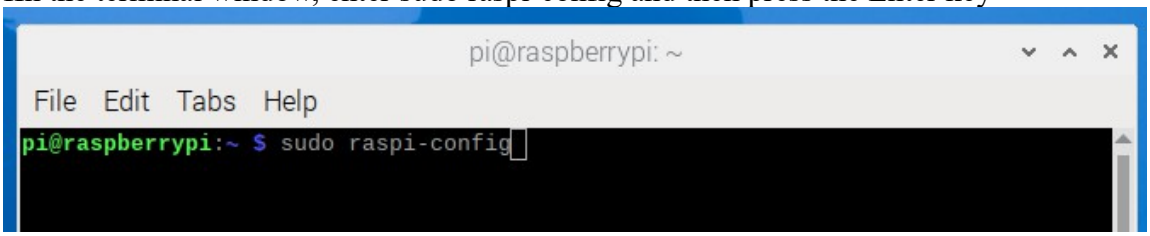
Note on VNC: You can use VNC to operate the Raspberry Pi from another computer without having to connect a keyboard/mouse or a screen to the Raspberry Pi. A VNC server runs on the Raspberry Pi, a VNC client must be installed on the other computer. The computer and the Raspberry Pi must be connected via a network. More detailed instructions can be found on the Internet. The simplest option would be to connect the computer and the Raspberry Pi with a LAN cable.

Not all settings can be made in the user interface; the raspi-config tool, which can be called up via the terminal, is required in any case.

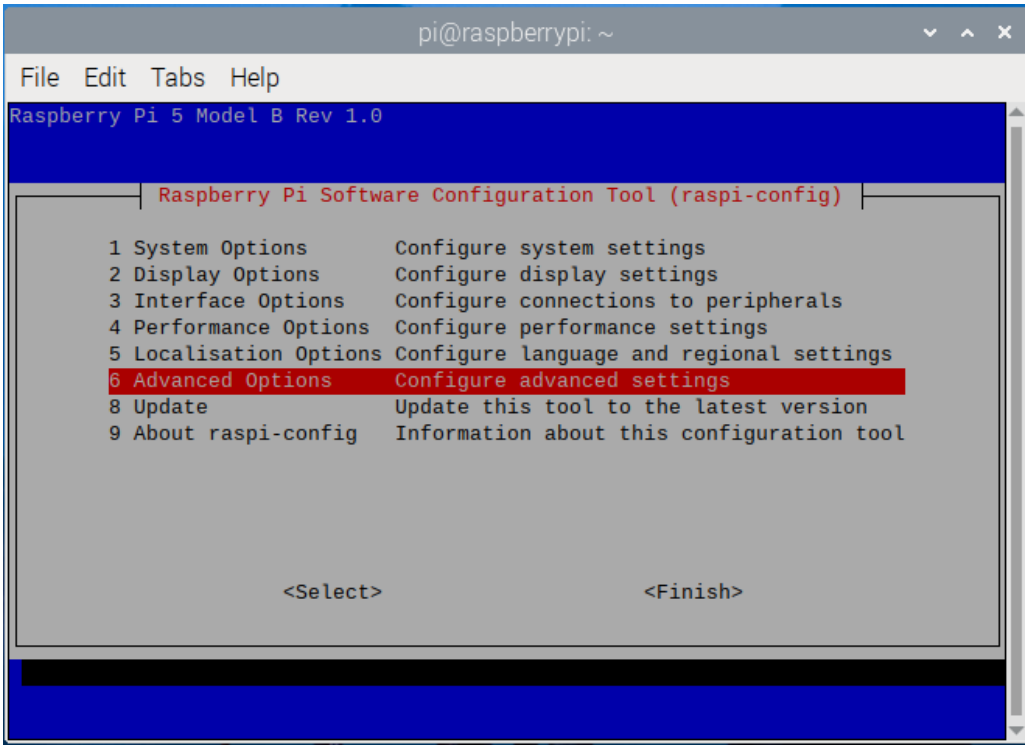
- Start terminal window



- IIn the terminal window, enter sudo raspi-config and then press the Enter key



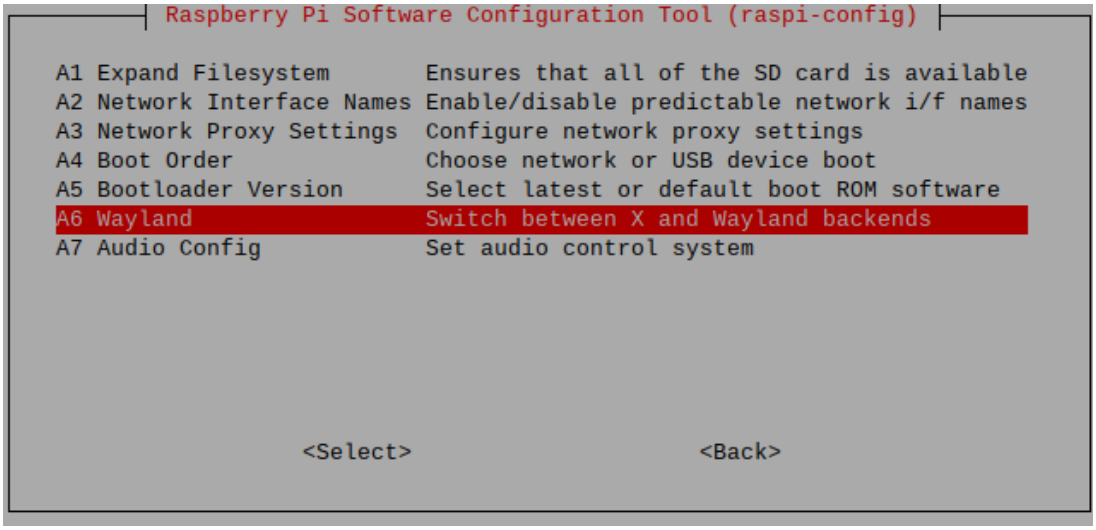
- The raspi-config window opens in which you can navigate using the arrow keys on the keyboard.
  Arrow up-down Navigation through menu entries
  Arrow left-right Menu entries - Select - Finish
  A menu entry can be selected with the Enter key.
  (the mouse does not work here)



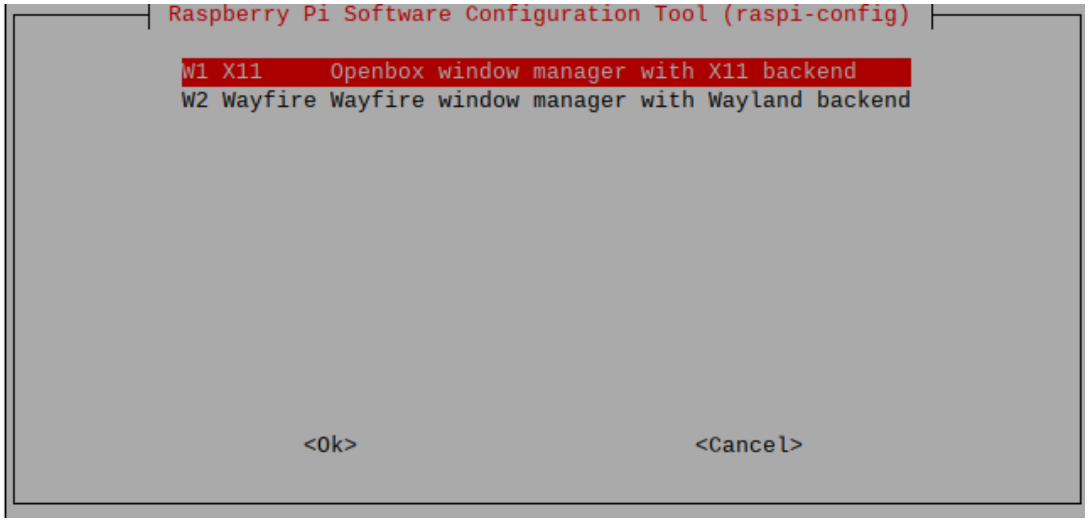
Step 4: Set up the X11 user interface

The Raspberry Pi OS is supplied with two user interfaces (Wayland or X11). The X11 user interface must be set for the liveSHOWsoftware.

- IIn the raspi-config tool, select the ***Advanced Options*** menu item
- Then select the ***Wayland*** menu item



- Then select the X11 menu item

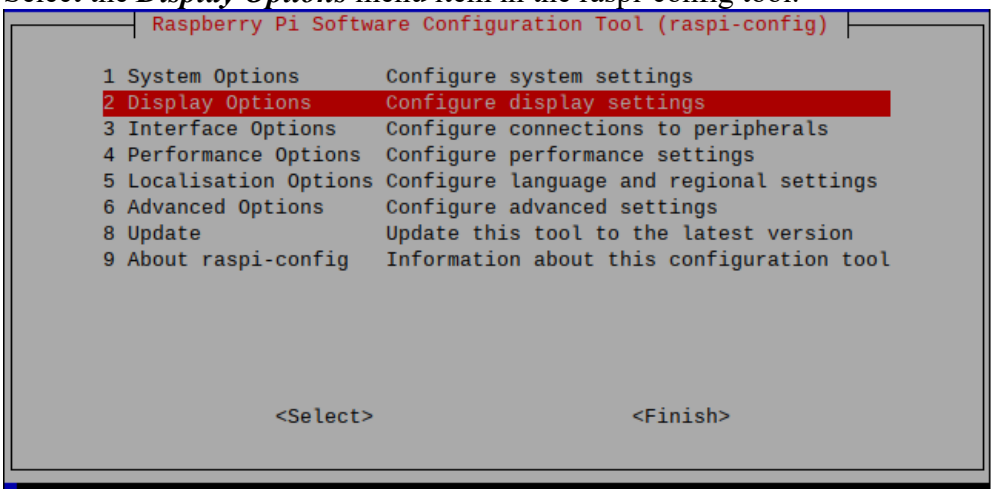


- Then navigate to OK and press the enter key and confirm OK
- Then navigate to <Finish> and press the enter key.
  Confirm the question as to whether the Rasperry Pi should be restarted (rebooted) with <Yes>.

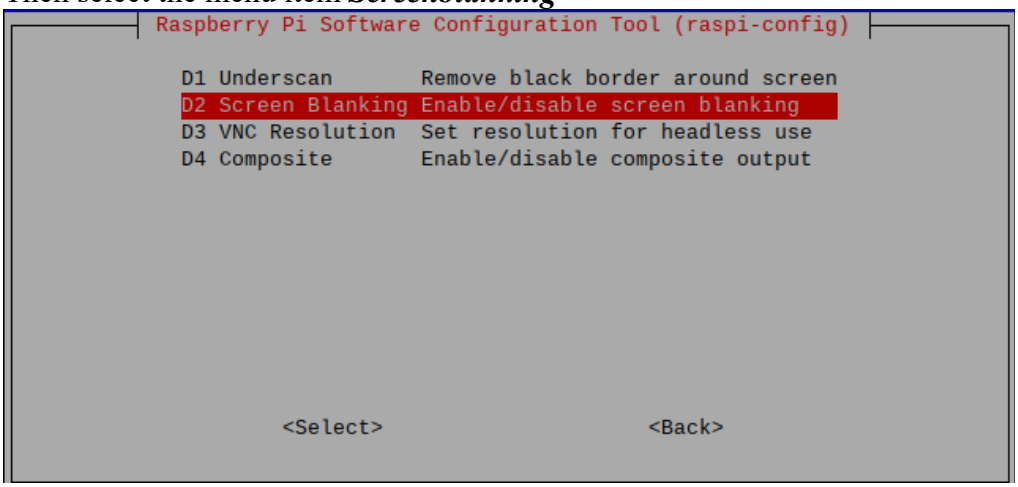
Once the Rasperry Pi has restarted, further settings can be made.

Optional step 5: Deactivate screen saver (screen blanking)
The Raspberry Pi will switch off the HDMI screen after approx. 10 minutes of inactivity (screen saver). This can be prevented.

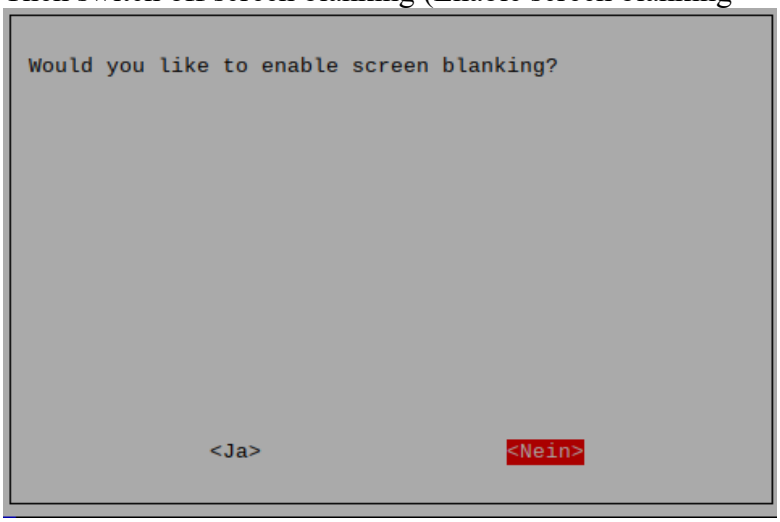
- Select the ***Display Options*** menu item in the raspi-config tool.



- Then select the menu item ***Screenblanking***



- Then switch off screen blanking (Enable screen blanking → <no>)

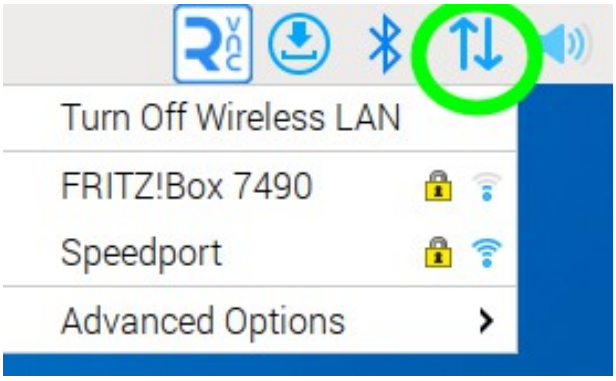


After the Raspberry Pi has restarted, it must be connected to the Internet.

Step 6: Connect the Raspberry Pi to the Internet.

To do this, the Raspberry Pi must be connected to a network that has Internet access.

- Either plug a LAN cable that is connected to the Internet router into the Raspberry Pi
- Or connect the Raspberry Pi to the Internet router via WLAN



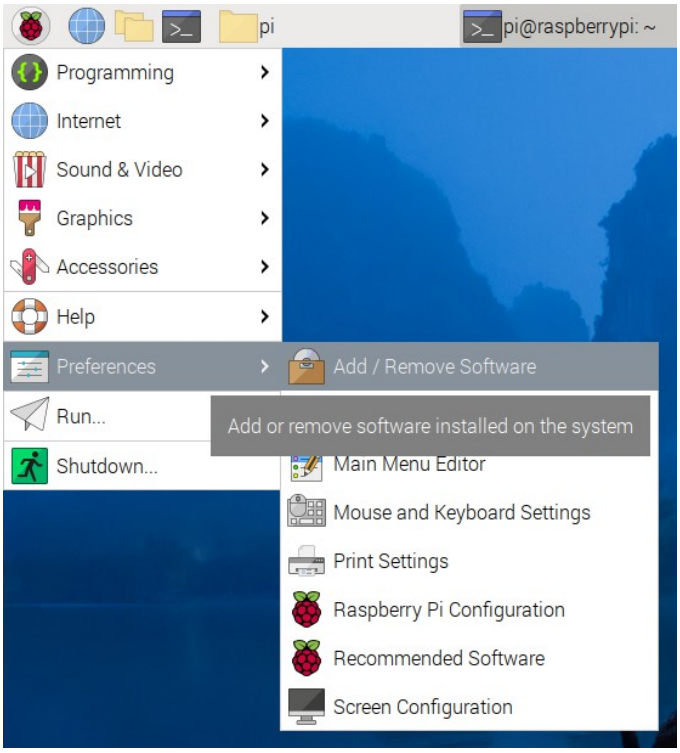
Step 7: Update Raspberry Pi
It is recommended to download the latest updates, this can be done via the terminal window.

- Start terminal window - see above
- Enter s***udo apt update*** in the terminal window, press Enter and wait until the file lists are updated.
  Enter ***sudo apt upgrade*** in the terminal window, press Enter and wait until all updates have been installed.
- After the updates have been installed, restart the Raspberry Pi

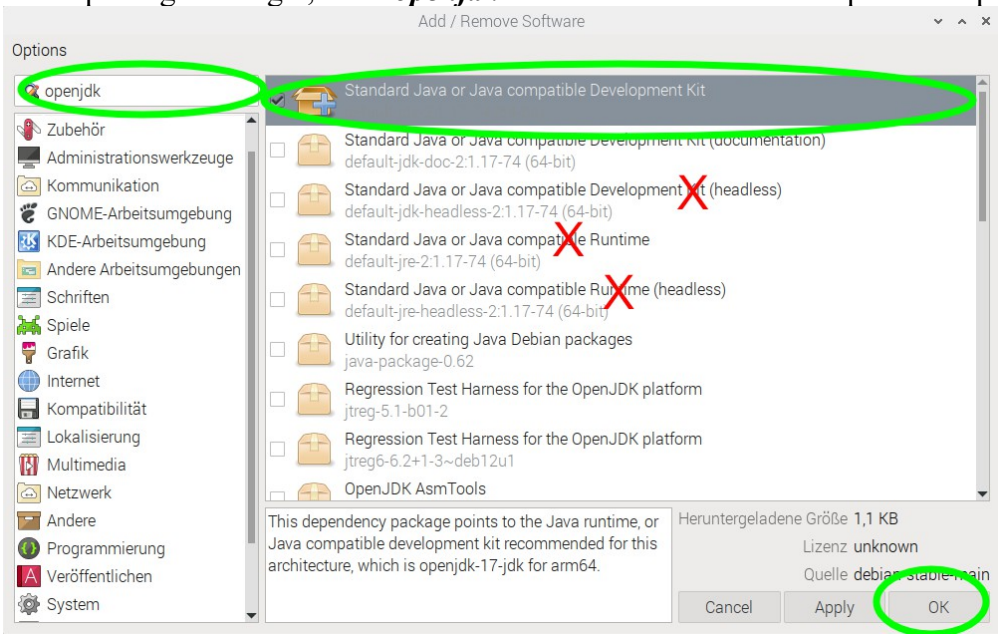
After the Raspberry Pi has restarted, Java can be installed. The Raspberry needs an Internet connection for this!

Step 8: Install Java (OpenJDK Java JDK),
The full Java JDK and not the headless Java JDK must be installed. If you follow the descriptions on the Internet, this usually leads to the headless JDK being installed and not the full JDK.

- Open the package manager (Add/Remove Software) under Raspberry settings



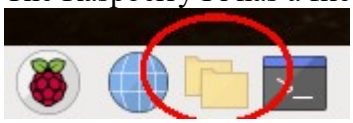
- In the package manager, enter ***openjdk*** in the search field at the top left and press Enter.



- In the list on the right, check the box next to ***Standard Java Development Kit.*** Please make sure that the headless kit or the runtime is not selected!!!
- Confirm with OK at the bottom, Java will then be installed.

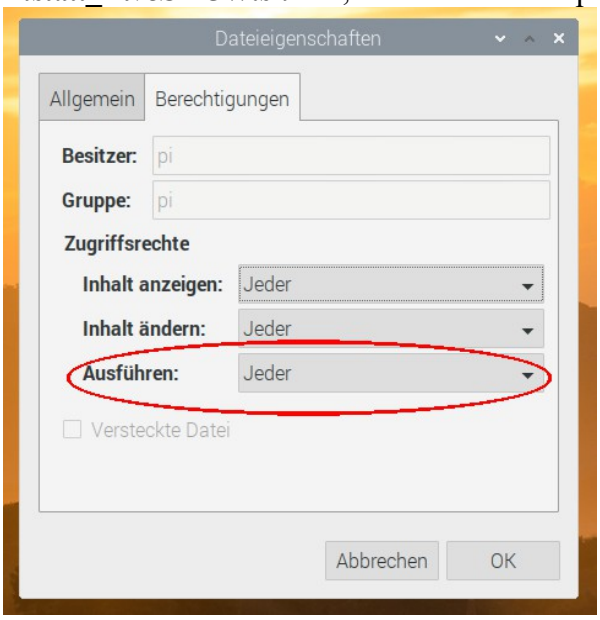
The liveSHOW software can now be installed. The following steps are similar for the liveSHOW_Media or liveSHOW_Midi software.

Step 9: Install liveSHOW
Java must be installed beforehand - see above.
The Raspberry Pi has a file explorer, as is usual in all operating systems.

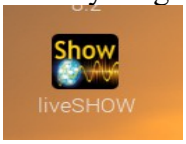


- Go to www.liveSHOWsoftware.de and download the file liveSHOW_Linux.zip under Downloads Installation and unzip it.
  (This can also be done on a normal computer, the unzipped folder can be copied to the Raspberry Pi using a USB stick),
  A suitable location on the Raspberry Pi would be the download folder.
  (/home/pi/Downloads)

- In the unpacked folder, the execution rights must now be assigned to the Install_LiveSHOW.sh file.
  Open the unzipped folder on the Raspberry Pi and then right-click on the ***Install_LiveSHOW.sh*** file, then click on Properties.



  Then select '***Everyone***' under ***Execute*** in the Permissions tab and confirm with OK.
- Now you can double-click on the Install_LiveSHOW.sh file with the left mouse button and then click on 'Execute'.
- If everything went well, the liveSHOW icon will now appear on the desktop.



- The software can be started by double-clicking on the liveSHOW icon with the left mouse button.
- Double-click on 'Uninstall_liveSHOW.sh' in the file explorer if you want to uninstall the liveSHOWsoftware.
- Double-click on 'makeautostart_liveSHOW.sh' to add the liveSHOWsoftware to the autostart directory of the Raspberry Pi. The liveSHOWsoftware is then started automatically

when the Raspberry Pi is started.
- Double-click on 'removeautostart_liveSHOW.sh' will remove the liveSHOWsoftware from the autostart directory of the Raspberry Pi.

Step 9 can be repeated for the liveSHOW_Media and liveSHOW_Midi software.

Install possible updates:

If you want to install an update of the liveSHOW software later, the new 'liveSHOW_Linux.zip' must be downloaded and unpacked.
(This can also be done on a normal computer; the unzipped folder can be copied to the Raspberry Pi using a USB stick),

As described above, the execution rights for the files Install_LiveSHOW.sh and Uninstall_liveSHOW.sh must first be set.

Now the old version should be uninstalled by double-clicking with the left mouse button on the file Uninstall_liveSHOW.sh.

The new version can then be installed by double-clicking on the Install_LiveSHOW.sh file.

You may now need to set up the autostart by double-clicking with the left mouse button on the file makeautostart_liveSHOW.sh.

An update of the liveSHOW_Media and the liveSHOW_Midi software can be installed in the same way.

Further settings

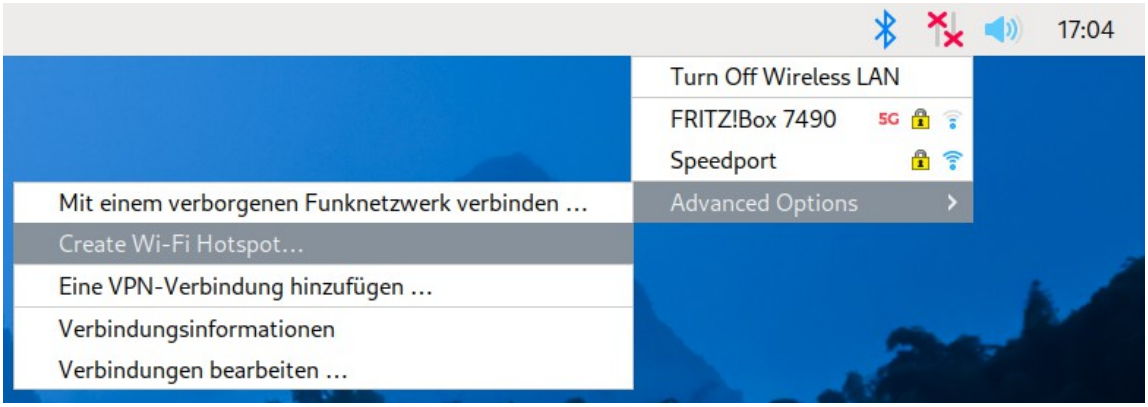
Hide Taskbar

- If you want to use the liveSHOW_Media software on the Raspberry Pi, you should hide the taskbar, otherwise it will be in the way of the full screen.
  Right-click in the taskbar and then click on Taskbar settings. Then click on the Advanced tab.
  Now you can select Hide the taskbar when inactive and set the 'Size...' to 0 Pixel.

RasperryPi as WLAN-Hotspot

If you want to use the Android remote control app for the liveSHOWsoftware, the Raspberry Pi and the Android device must be connected via a Wi-Fi hotspot.
Since the Raspberry Pi automatically reconnects to a previously connected Wi-Fi hotspot, it may be uncertain which hotspot the connection is established with (especially if the Raspberry Pi has already been connected to different hotspots).
A more secure method is to set up the Raspberry Pi as a hotspot and connect the Android device to the Raspberry Pi's hotspot.

- Right-click on the network icon in the taskbar, then click on 'Advanced Options' and then click on 'Create Wlan Hotspot'.



- Enter an SSID name (network name) in the hotspot window. Set the security to 'WPA & WPA2 Personal' and enter a key (password)

Then click on 'Create'.

ATTENTION: Please remember the SSID name and the key well and pay attention to upper/lower case!!!

The hotspot is now active and the Android device can be connected to the hotspot.
To ensure that the hotspot is also active when the Raspberry Pi is restarted, a command must be entered in the terminal:

- Start terminal window - see above.
- Enter the following command:
  sudo nmcli connection modify xxxxxx connection.autoconnect yes
  then press the enter key

  (xxxxxx must be replaced with the previously assigned SSID name)

The hotspot should now be active automatically after restarting the Raspberry Pi.

Note on Android remote control (LiveShowCientRemote.apk)
If an Android device is connected to an access point without Internet access, the Android device must be set to **airplane mode** and then WLAN must be activated again. Otherwise there may be connection problems.

Special Features of the Raspberry Pi

Power supply
The Raspberry Pi 5 requires more power than its forerunners. If many power-hungry devices are connected to the USB ports, the new powerful power supply unit of the Raspberry Pi 5 must be used.
Tests have shown that when using an external USB sound card and a DMX USB interface, the power supply unit of the Raspberry Pi 4 was sufficient. A power bank that delivers a stable 3 A was also sufficient. The USB outputs are then limited to 600 mA.
This should definitely be tested thoroughly.

Sound
The Raspberry Pi 5 does not have a headphone output. The internal sound card provides the sound signal via the HDMI output.
If you want to connect speakers, you have two options:

- Bluetooth speakers can be paired with the Raspberry Pi via Bluetooth.
- An external USB sound card is used and the speaker is connected to the external sound card.

In the liveSHOW software, the internal sound card is always displayed (DirectSound defasult 32 channels).
External USB sound cards may also be listed.
It is recommended that you always select the internal sound card in the liveSHOWsoftware and then select the corresponding speaker in the taskbar of the Raspberry Pi by right-clicking on the sound icon. Sound Profiles can also be clicked here, where sound cards can be switched on/off.

FLIC 2 Button

Unfortunately, the FLIC 2 buttons are not recognized via the Bluetooth settings of the user surface. However, they can be connected via the terminal. The prerequisite for this is that the FLIC button is set to universal mode and key keys, i.e. the FLIC button functions like a keyboard.

Attention: The FLIC button must not already be connected to another device!!! The connection to another device must first be disconnected or the other devices (computer, etc.) must be shut down.

1. ISwitch on Bluetooth in the taskbar of the Raspberry Pi if Bluetooth is deactivated
2. Start the terminal and enter the following command: **sudo bluetoothctl**
   Press the return key
3. A message *agent registered* should appear and the text in front of the text cursor changes to [bluetooth}=
   If this is not the case, you can try to shut down the Raspberry Pi and repeat the last steps after a restart.
   Alternatively, you can also try to switch on the agent with the ***agent on*** *command.*
4. Enter the following command: **scan on**
   Press the return key
   All Bluetooth devices found will now be listed one by one.
5. Press the FLIC button once, it should now appear in the list of Bluetooth devices found:
   Device xx.xx.xx.xx.xx.xx FLIC
   xx.xx.xx.xx.xx.xx is the MAC address of the FLIC button (each Bluetooth device has its own address)
6. Enter the following command: **connect xx.xx.xx.xx.xx.xx**
   (for xx:.. the displayed address of the FLIC button must be used)
   Press the return key
7. Now a message *Attempting to connect to xx.xx.xx.xx.xx.xx* should appear and after a short time *Connection successful*
8. To exit the settings, enter **exit** and press the return key. The terminal window can now be closed.
9. The FLIC button now also appears in the taskbar of the Raspberry Pi surface (left-click on the Bluetooth symbol). There you can also disconnect / reconnect or remove the FLIC button.

Create a backup copy (image) of the SD card:

An SD card only has a limited number of write cycles; if a lot of files are often written to the SD card, it could fail. You should therefore always create a backup copy of the SD card.

Backups of an SD card are created by saving the SD card as an image on your PC. An image is a 1:1 copy of the SD card, so the image requires as much space as the size of the SD card. For example, if you have a 128 GB SD card, the image will also be 128 GB in size, regardless of how much space is still available on the SD card!

Tip: The use of Pishrink will be explained later, if you install Pishrink before creating the image, it will also be included in the image later - see below.

What you need:

- USB stick with free space of at least the size of the SD card
- SD card reader on the PC
- Image software on the PC for reading and writing SD cards
  Examples
  Windows: Win32Diskimager https://sourceforge.net/projects/win32diskimager/
  MAC OS: ApplePiBaker https://apple-pi-baker.de.malavida.com/mac/

Steps:

1. remove the SD card from the Raspberry Pi
   The Raspberry Pi should be disconnected from the power supply!
2. connect the USB stick to the PC
3. insert the SD card into the card reader of the PC
4. create an image of the SD card using the image software.
   Depending on the size of the SD card, this can take a relatively long time.

Problem:
SD cards vary in size, even if the same size is printed on them. A 4 GB SD card could also be only 3.9 GB in size.
To be able to write an image to an SD card, the SD card must have storage space corresponding to the image size.
If a 32 GB image is written to a 128 GB SD card, only 32 GB will be available later. With the Raspberry Pi, you could use raspi-config to expand the storage space to the full SD card size, but there is also a more elegant way - pishrink.sh (see https://github.com/Drewsif/PiShrink).

Pishrink.sh is a script that compresses an existing image file. This means that the backup will also take up considerably less space. In addition, when compressing, the image is set to expand to the full SD card size the first time it is started with the Raspberry Pi.

1. copy the image file you have just created from the PC to a USB stick
2. insert the SD card back into the Raspberry Pi and start it.
3. pishrink must first be installed on the Raspberry Pi if this has not already been done:
   Open the terminal on the Raspberry Pi (see above) and execute the following commands one after the other (this is also described on the pishrink homepage (https://github.com/Drewsif/PiShrink).

   wget https://raw.githubusercontent.com/Drewsif/PiShrink/master/pishrink.sh
   (press enter)
   chmod +x pishrink.sh

(press enter)
sudo mv pishrink.sh /usr/local/bin
(press enter)

4. insert the USB stick with the image of the SD card into the Raspberry Pi. In the file explorer you can see the path to the USB stick (usually media/pi/*stickname*)
5. start the terminal on the Raspberry Pi and switch to the folder on the USB stick in which the image was saved.

   cd /media/pi/*USB-Stickname/ImageFolder*
   (hen press the Enter key)

   Tip: if you start typing a command etc. in the terminal and then press the Tab key, a command or the next possible folder will be completed.

6. start Pishrink in the terminal:

   sudo pishrink *ImageFileName*
   (then press the Enter key)

   Now it takes until the image file is compressed.
7. eject the USB stick.
8. *tthe image file on the USB stick is now compressed and can now be copied to the PC (the previously created and uncompressed image file on the PC can be deleted).*

   The compressed image file could be written to a new SD card using the image software (or with the Raspberry Pi Imager).
   If the new SD card is inserted into the Raspberry Pi and the Raspberry Pi is then supplied with power, the new SD card is automatically expanded to the SD card size during the first boot process and you have everything as on the old SD card, including all Raspberry Pi settings.
   Or you can use the new SD card to operate another Raspberry Pi.

   Attention: You will not be able to use an image from a Raspberry Pi 5 on a Raspberry Pi 4 - and vice versa.