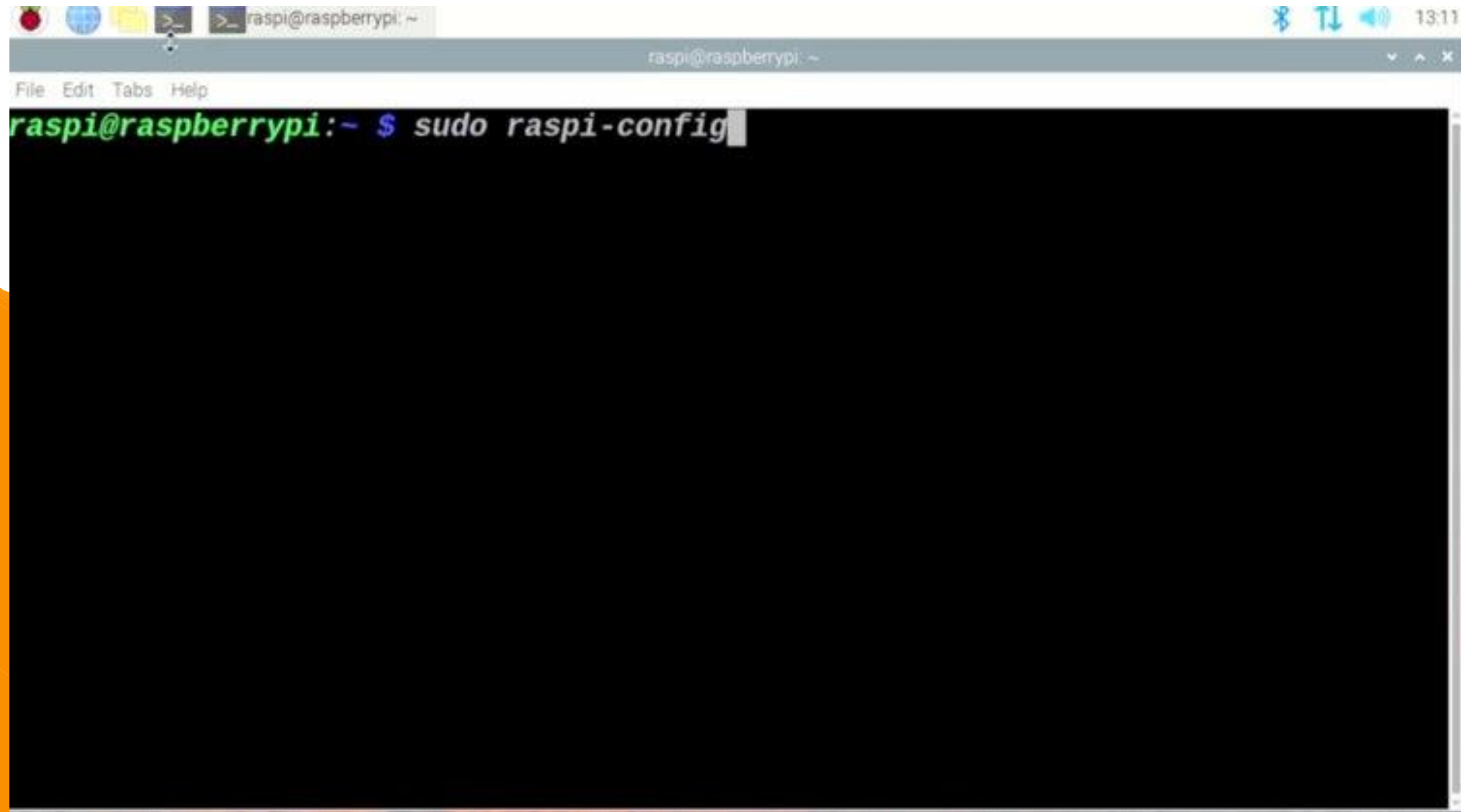




Habilitando interface I2C y protocolo SSH

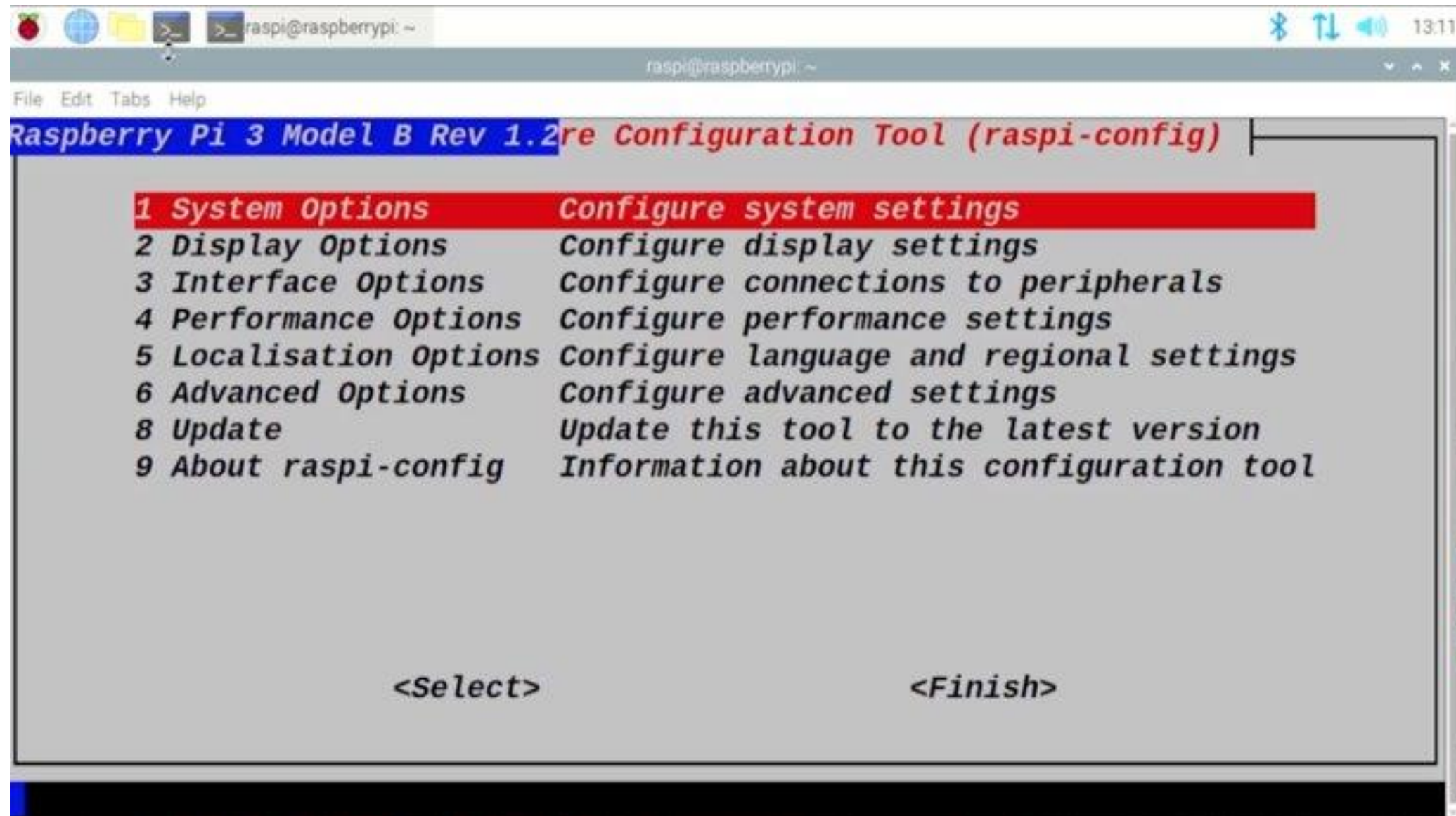
MY CLOUD SCHOOL

Una vez instalado el sistema procedemos a habilitar las interfaces de I2C , junto con el protocolo SSH. Ingresamos el comando sudo raspi-config

A screenshot of a terminal window on a Raspberry Pi. The window has a title bar with the text 'raspi@raspberrypi: ~' and standard window controls. Below the title bar is a menu bar with 'File', 'Edit', 'Tabs', and 'Help'. The main area of the terminal is black with green text. The prompt 'raspi@raspberrypi:~' is followed by a blue '\$' symbol and the command 'sudo raspi-config' which is currently being typed, with a white cursor at the end of the command. The top of the screen shows a system status bar with icons for network, volume, and the time '13:11'.

```
raspi@raspberrypi:~ $ sudo raspi-config
```

Estando dentro del menu de configuración
seleccionamos la opcion 1

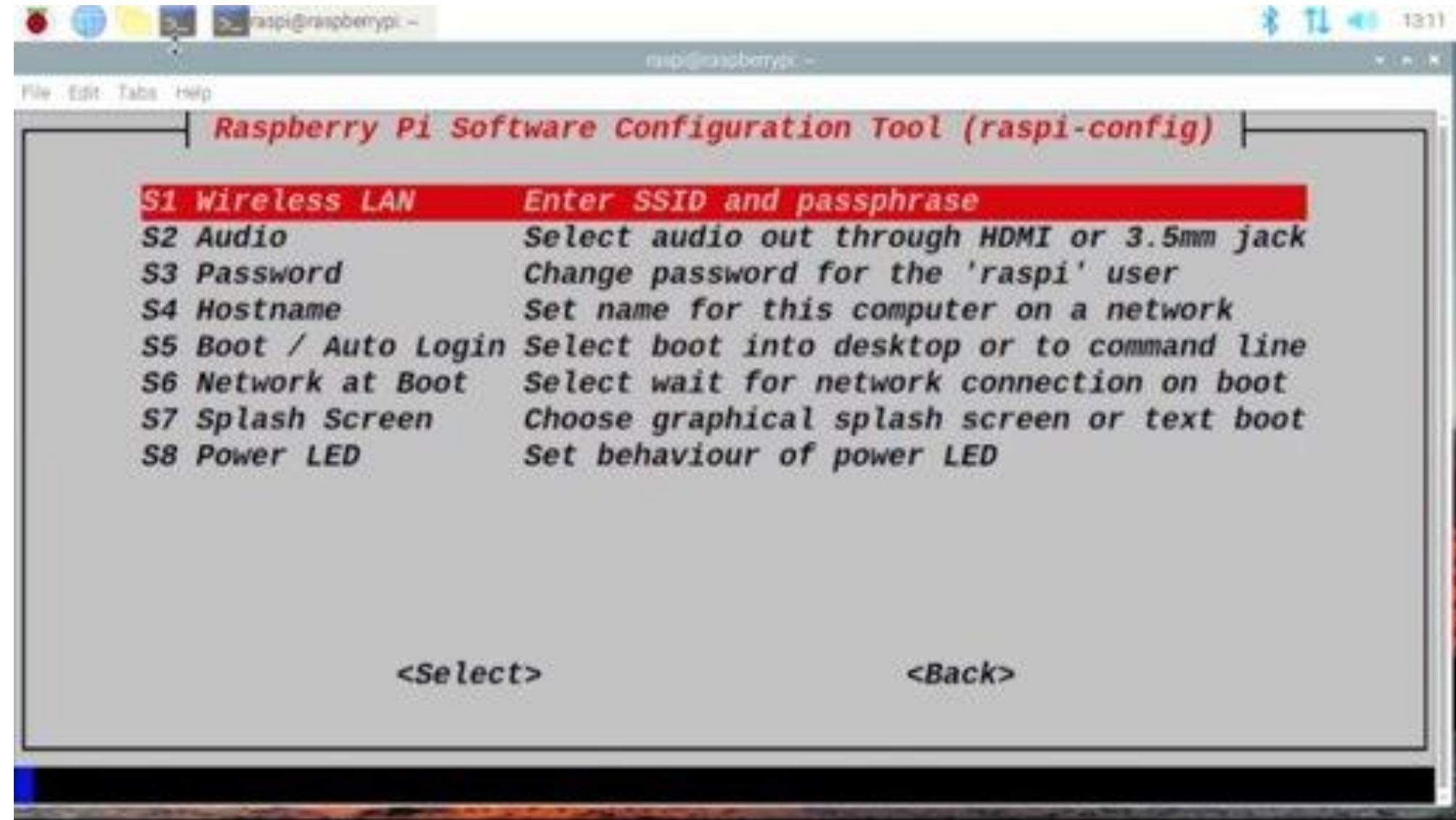
A screenshot of a terminal window on a Raspberry Pi. The window title is 'raspi@raspberrypi: ~'. The terminal shows the 'Raspberry Pi 3 Model B Rev 1.2 Configuration Tool (raspi-config)' menu. The menu is a list of options, with the first option, '1 System Options', highlighted in red. The other options are: '2 Display Options', '3 Interface Options', '4 Performance Options', '5 Localisation Options', '6 Advanced Options', '8 Update', and '9 About raspi-config'. Each option has a description to its right. At the bottom of the menu, there are two prompts: '<Select>' and '<Finish>'. The terminal window has a standard Linux desktop environment with a taskbar at the top showing icons for a file manager, terminal, and other applications. The system clock in the top right corner shows '13:11'.

```
File Edit Tabs Help
Raspberry Pi 3 Model B Rev 1.2 Configuration Tool (raspi-config)

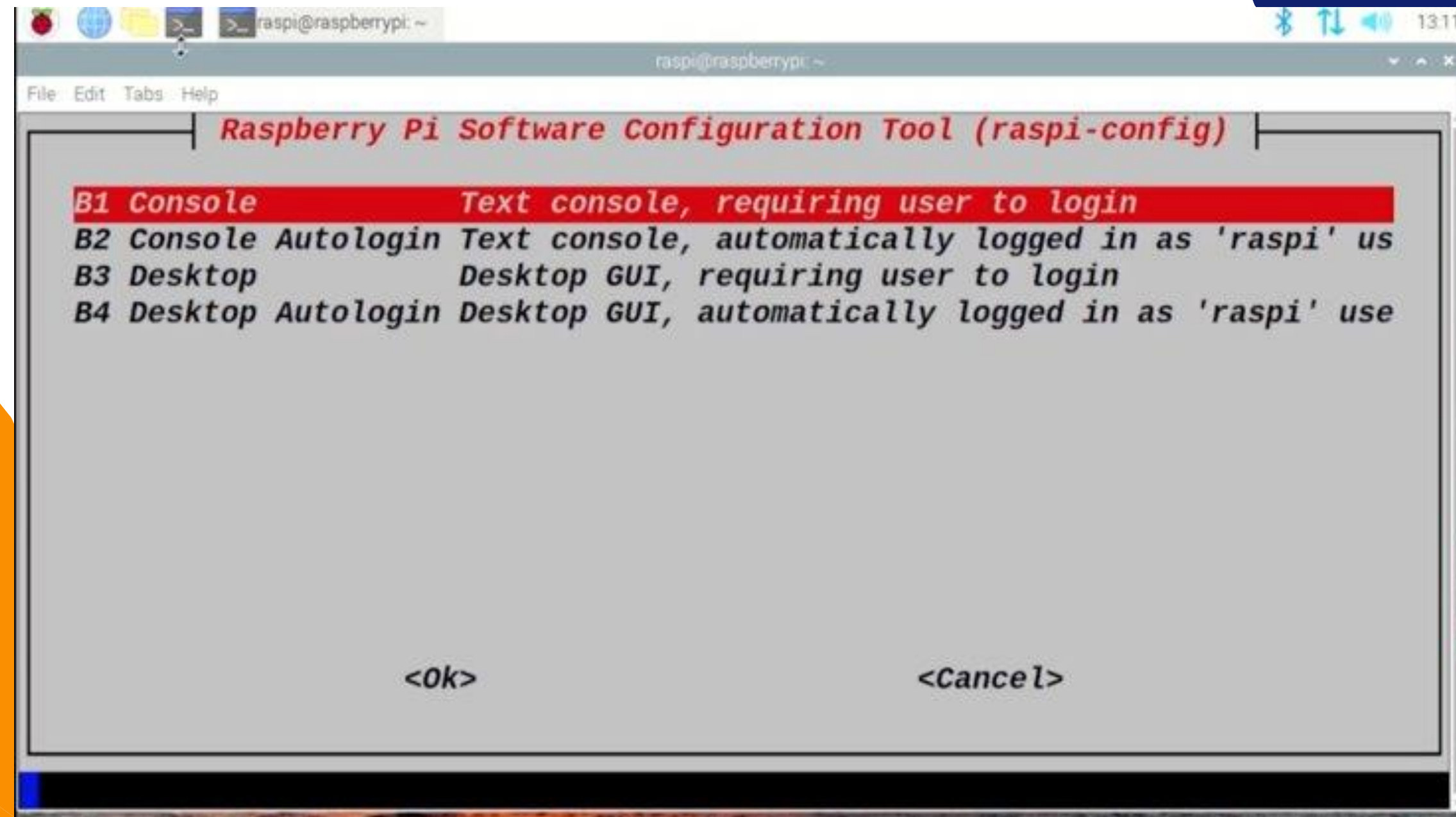
1 System Options      Configure system settings
2 Display Options     Configure display settings
3 Interface Options   Configure connections to peripherals
4 Performance Options Configure performance settings
5 Localisation Options Configure language and regional settings
6 Advanced Options    Configure advanced settings
8 Update              Update this tool to the latest version
9 About raspi-config  Information about this configuration tool

<Select>              <Finish>
```

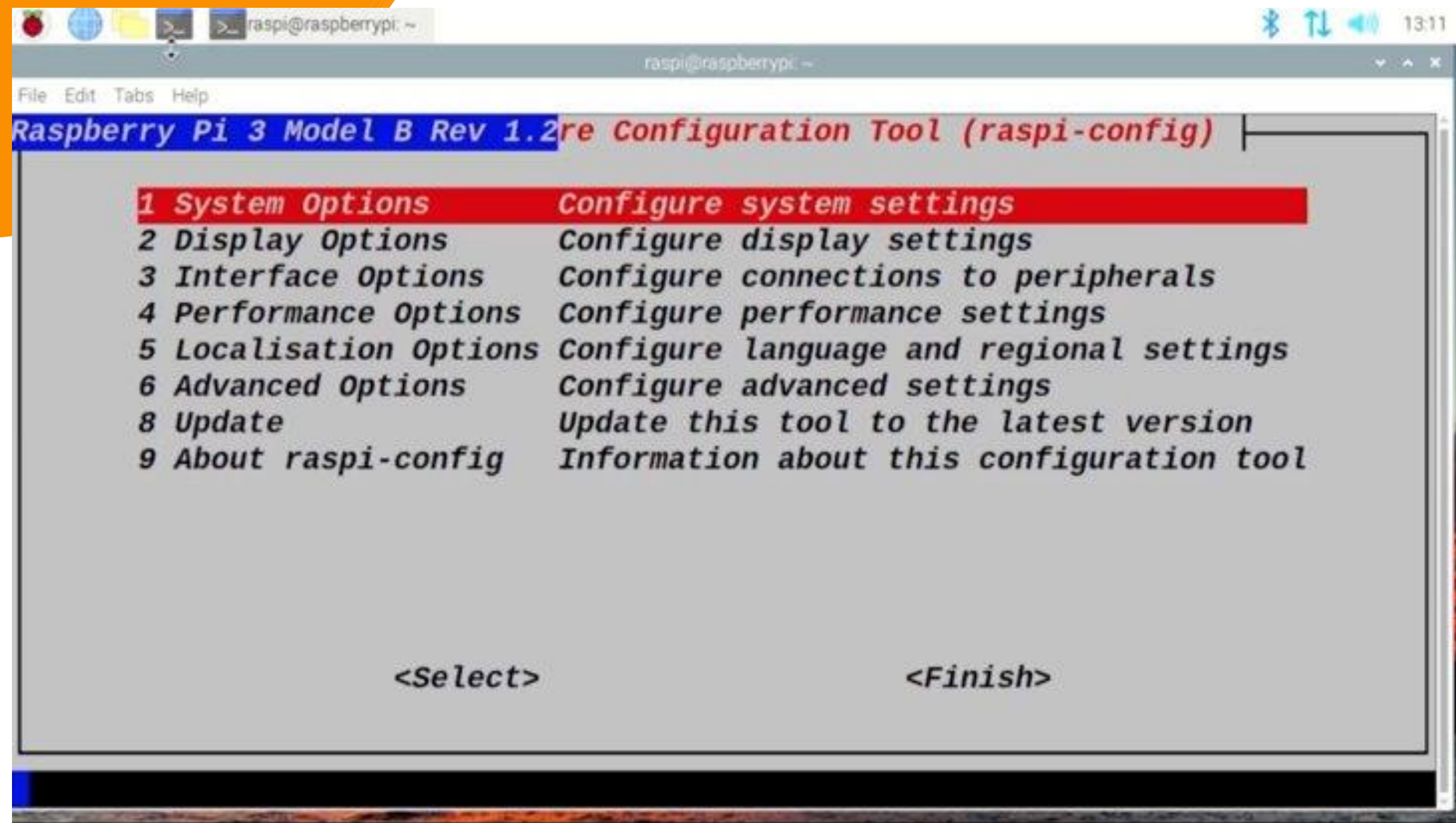
Ingresamos a la opcion S5

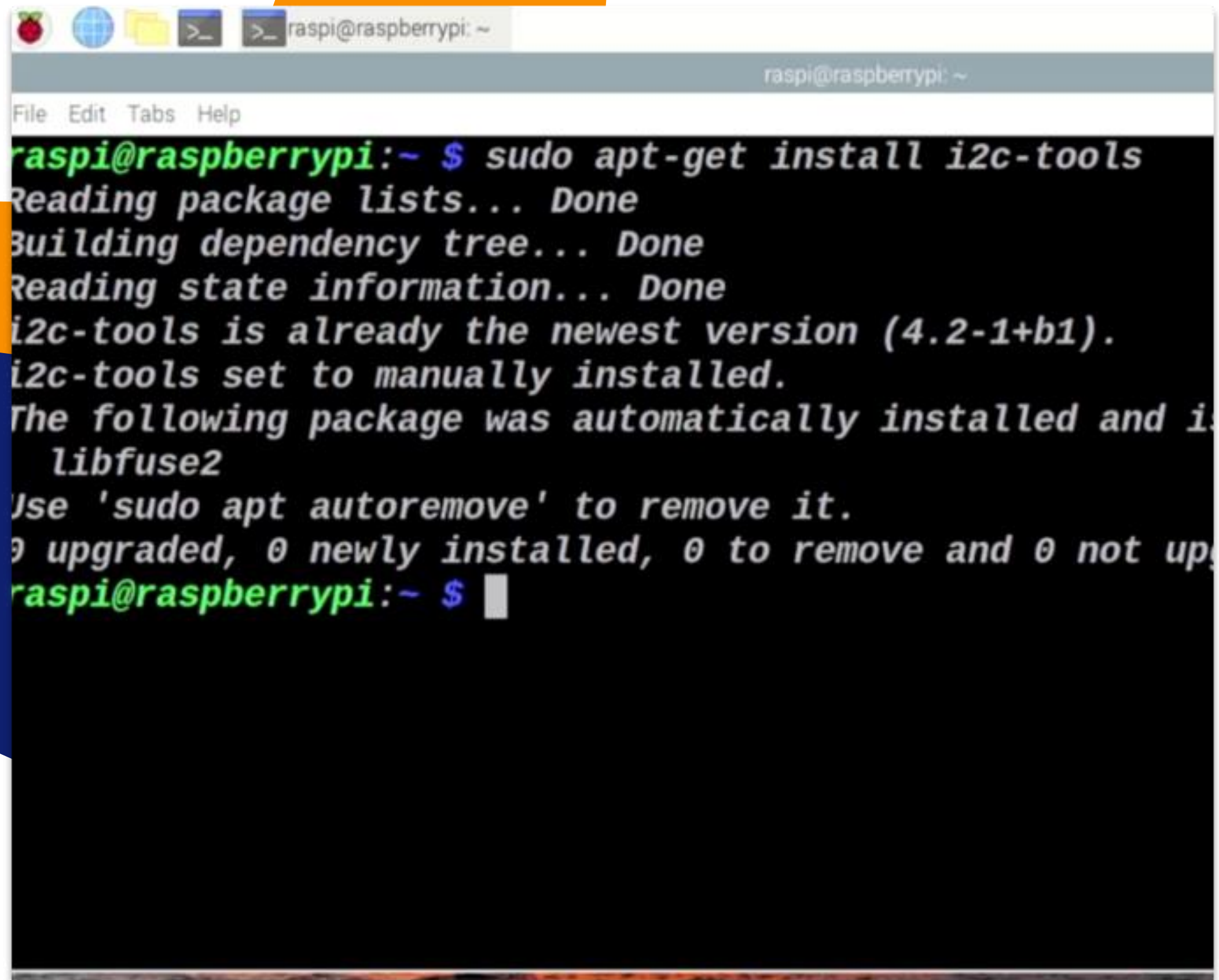


Ahora podemos deshabilitar la interfaz grafica, ya que al conectarnos a la raspberry mediante protocolo SSH no será necesaria y nos ahorrara recursos del sistema.
Selecionamos la opción B1



Nuevamente en el menú principal
seleccionamos la opción 3

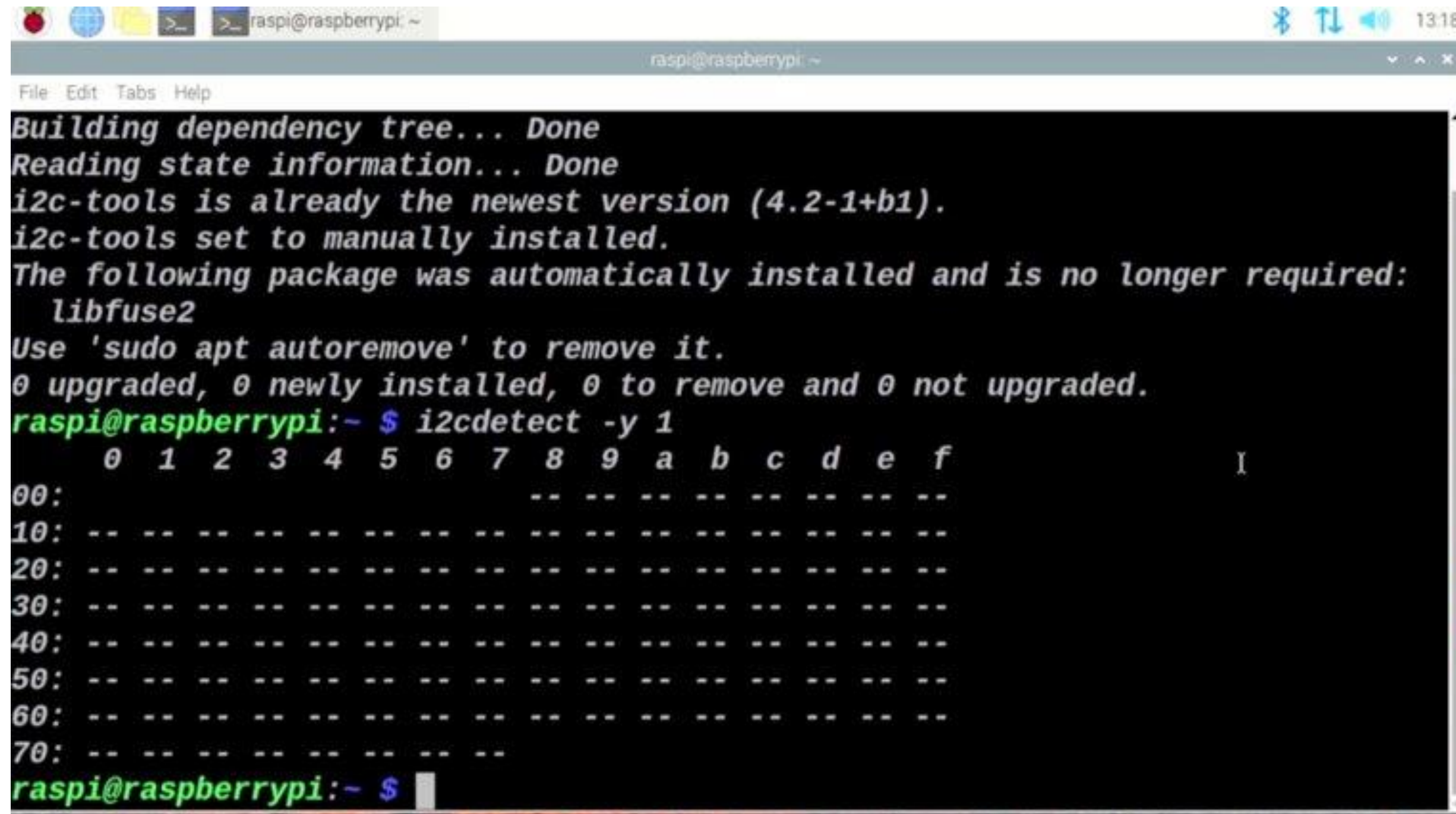


A terminal window on a Raspberry Pi. The window has a title bar with the Raspberry Pi logo and the text 'raspi@raspberrypi: ~'. Below the title bar is a menu bar with 'File', 'Edit', 'Tabs', and 'Help'. The terminal content shows the command 'sudo apt-get install i2c-tools' being executed. The output indicates that i2c-tools is already installed and is the newest version (4.2-1+b1). It also mentions that libfuse2 was automatically installed and can be removed with 'sudo apt autoremove'. The terminal ends with the prompt 'raspi@raspberrypi:~ \$' and a cursor.

```
raspi@raspberrypi:~ $ sudo apt-get install i2c-tools
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
i2c-tools is already the newest version (4.2-1+b1).
i2c-tools set to manually installed.
The following package was automatically installed and is
  libfuse2
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 0 not up
raspi@raspberrypi:~ $
```

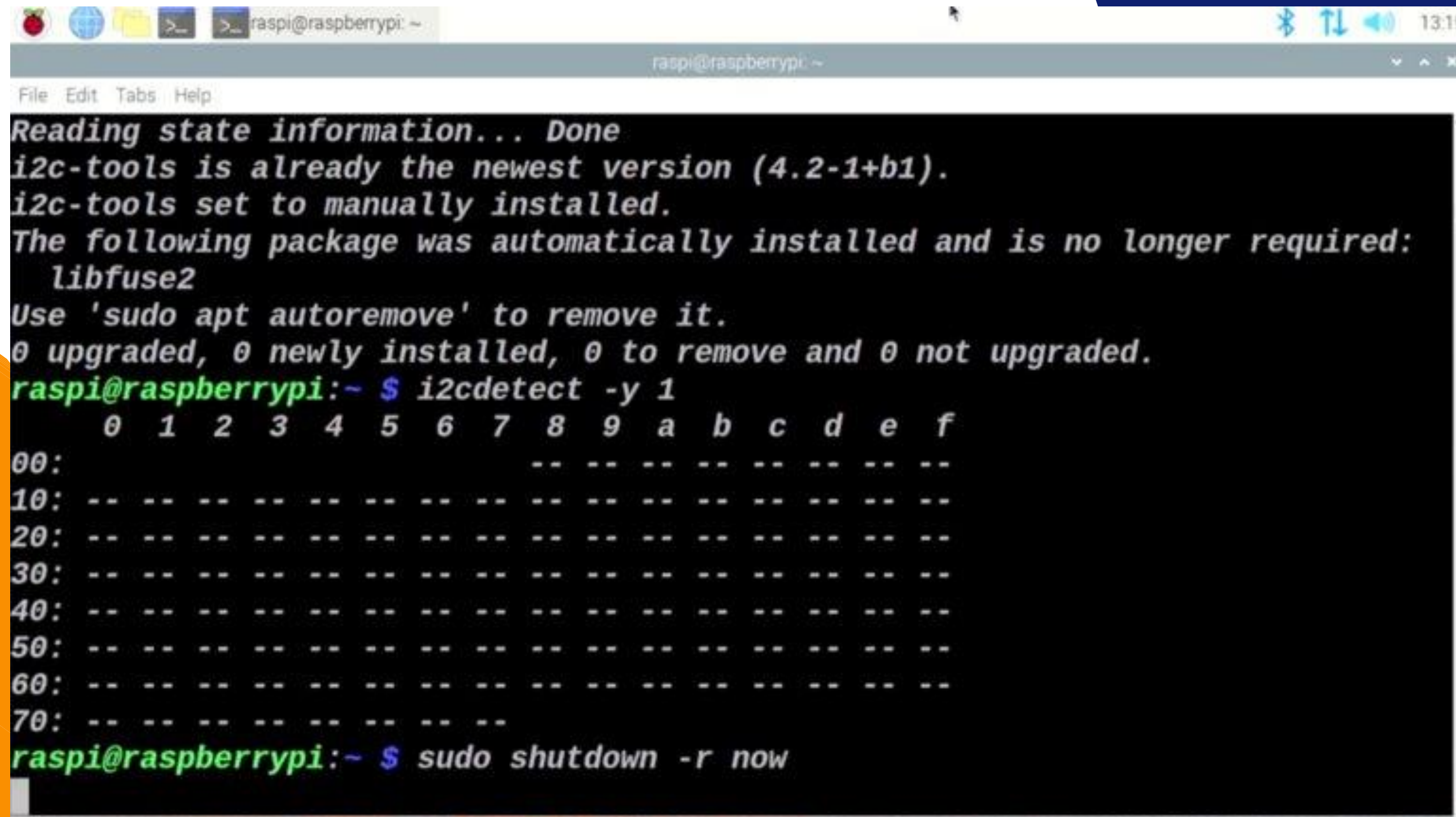
Una vez realizadas las configuraciones del Sistema, lo siguiente es habilitar la herramienta i2c tools, que nos permite verificar si los pines que estamos utilizando se encuentran activos.

Una vez instalado, podemos comprobar si los puertos se encuentran habilitados. Para ello escribimos el comando `i2cdetect -y 1`



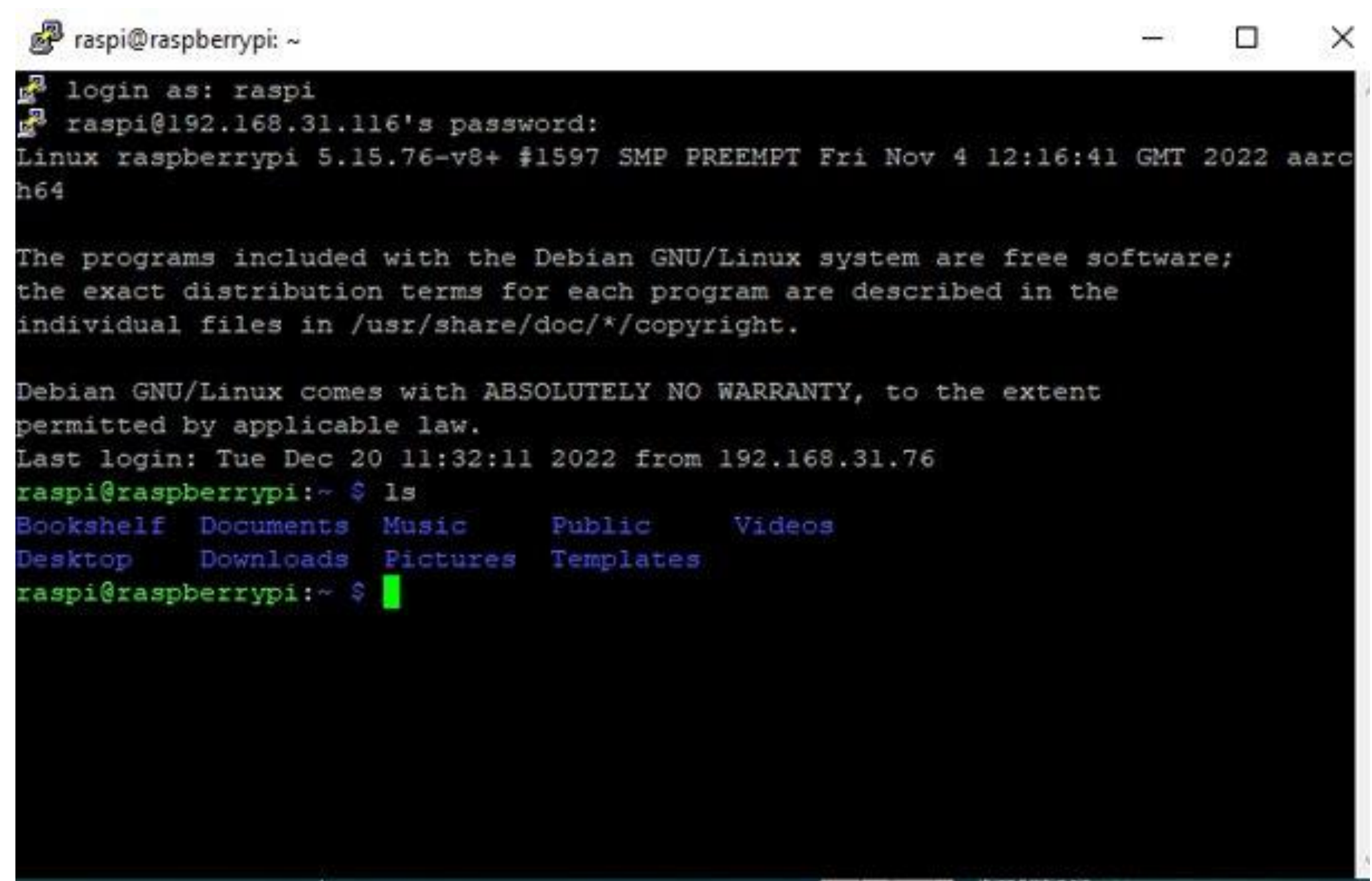
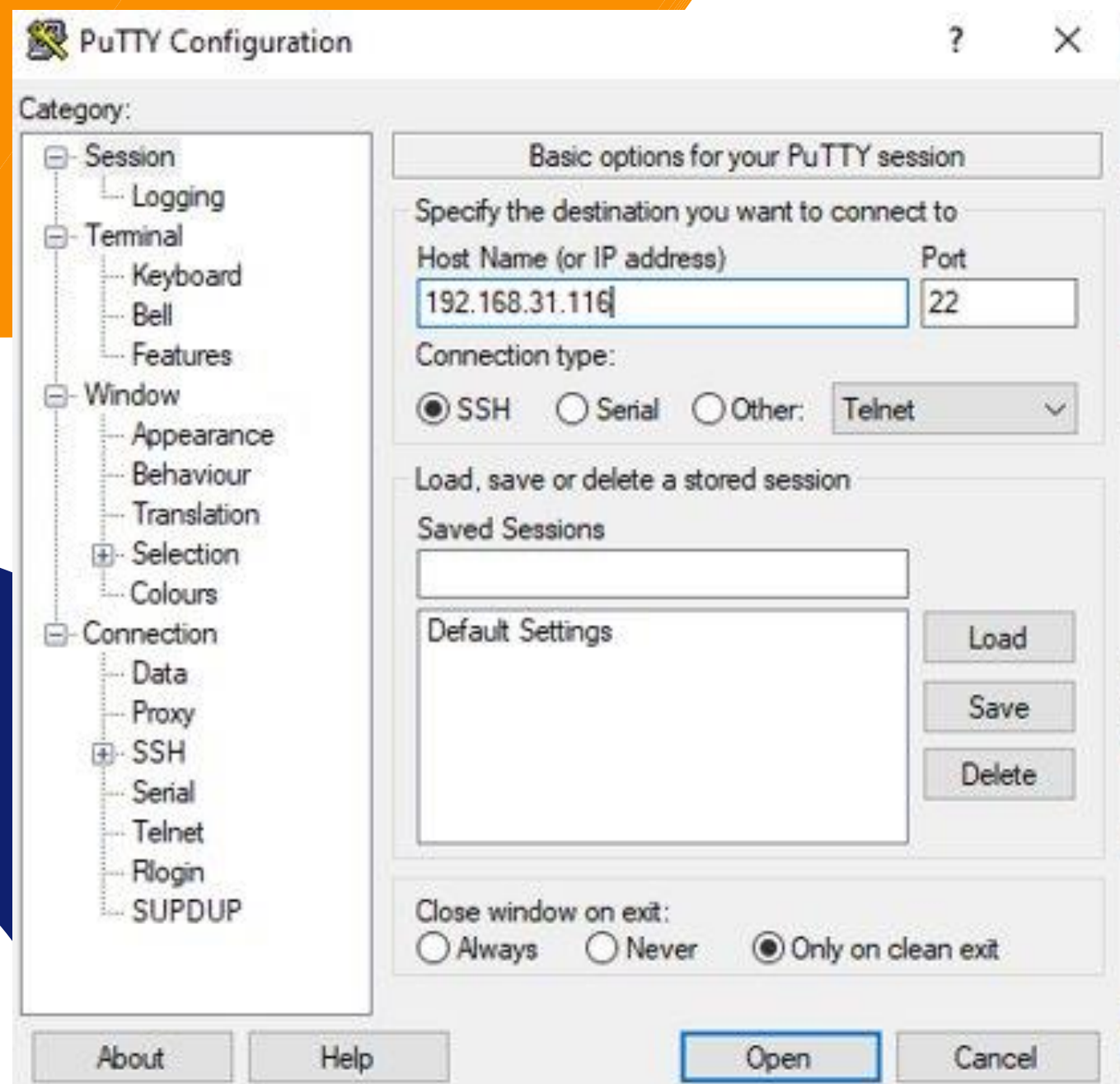
```
File Edit Tabs Help
raspi@raspberrypi: ~
Building dependency tree... Done
Reading state information... Done
i2c-tools is already the newest version (4.2-1+b1).
i2c-tools set to manually installed.
The following package was automatically installed and is no longer required:
  libfuse2
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
raspi@raspberrypi:~$ i2cdetect -y 1
   0  1  2  3  4  5  6  7  8  9  a  b  c  d  e  f          I
00:                -- -- -- -- -- -- -- --
10: -- -- -- -- -- -- -- -- -- -- -- -- -- --
20: -- -- -- -- -- -- -- -- -- -- -- -- -- --
30: -- -- -- -- -- -- -- -- -- -- -- -- -- --
40: -- -- -- -- -- -- -- -- -- -- -- -- -- --
50: -- -- -- -- -- -- -- -- -- -- -- -- -- --
60: -- -- -- -- -- -- -- -- -- -- -- -- -- --
70: -- -- -- -- -- -- -- -- -- -- -- -- -- --
raspi@raspberrypi:~$
```


Despues reiniciamos el sistema para verificar los cambios.



```
raspi@raspberrypi: ~  
File Edit Tabs Help  
Reading state information... Done  
i2c-tools is already the newest version (4.2-1+b1).  
i2c-tools set to manually installed.  
The following package was automatically installed and is no longer required:  
  libfuse2  
Use 'sudo apt autoremove' to remove it.  
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.  
raspi@raspberrypi:~ $ i2cdetect -y 1  
    0  1  2  3  4  5  6  7  8  9  a  b  c  d  e  f  
00:                -- -- -- -- -- -- -- --  
10: -- -- -- -- -- -- -- -- -- -- -- -- -- --  
20: -- -- -- -- -- -- -- -- -- -- -- -- -- --  
30: -- -- -- -- -- -- -- -- -- -- -- -- -- --  
40: -- -- -- -- -- -- -- -- -- -- -- -- -- --  
50: -- -- -- -- -- -- -- -- -- -- -- -- -- --  
60: -- -- -- -- -- -- -- -- -- -- -- -- -- --  
70: -- -- -- -- -- -- -- -- --  
raspi@raspberrypi:~ $ sudo shutdown -r now
```

Despues de haber realizado todas las configuraciones podemos reiniciar el sistema. Una vez hecho esto nuestro proximo inicio de sesion será mediante protocolo SSH, usando nuestra direccion IP. Si la conexión se hace desde Windows, podemos acceder usando la herramienta PuTTY.



Si es desde un sistema Linux, la sintaxis es:
ssh usuario@nuestraip , ej:
raspi@192.168.31.116
Finalmente nuestro password de usuario

A terminal window titled 'developer — raspi@raspberrypi: ~ — ssh raspi@192.168.31.116 — 84x15'. The terminal shows a user at a MacBook-Pro-de-Desarrollo-01 attempting to connect to a Raspberry Pi via SSH. The first attempt times out. The second attempt is successful after entering the password. The terminal displays the Raspberry Pi's OS version (Linux raspberrypi 5.15.76-v8+), the date and time (Fri Nov 4 12:16:41 GMT 2022), and the Debian GNU/Linux license text. The prompt changes from 'developer@MacBook-Pro-de-Desarrollo-01' to 'raspi@raspberrypi' after a successful login.

```
developer@MacBook-Pro-de-Desarrollo-01 ~ %  
developer@MacBook-Pro-de-Desarrollo-01 ~ % ssh raspi@192.168.31.116  
ssh: connect to host 192.168.31.116 port 22: Operation timed out  
developer@MacBook-Pro-de-Desarrollo-01 ~ % ssh raspi@192.168.31.116  
raspi@192.168.31.116's password:  
Linux raspberrypi 5.15.76-v8+ #1597 SMP PREEMPT Fri Nov 4 12:16:41 GMT 2022 aarch64  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Fri Dec 16 13:04:36 2022 from 192.168.31.76  
raspi@raspberrypi:~ $
```