Prekshak - Documentation

Prerequisites

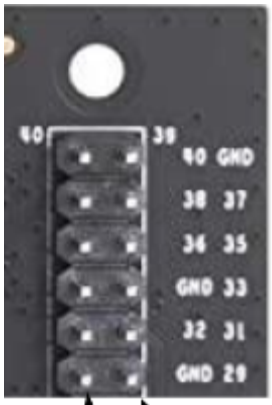
- Connect the Buzzer to Nvidia Jetson Nano

Below image refers to the pins (on the far right side) shown in the above image.

Jetson Nano Dev-Board Expansion Header

Alt Function	Linux(BCM)	Board Label			Board Label	Linux(BCM)	Alt Function
DAP4_DOUT	78(21)	D21	40	39	GND		
DAP4_DIN	77(20)	D20	38	37	D26	12(26)	SPI2_MOSI
UART2_CTS	51(16)	D16	36	35	D19	76(19)	DAP4_FS
		GND	34	33	D13	38(13)	GPIO_PE6
LCD_BL_PWM	168(12)	D12	32	31	D6	200(6)	GPIO_PZ0
		GND	30	29	D5	149(5)	CAM_AF_EN
		D1/ID_SC	28	27	D0/ID_SD		
SPI1_CS1	20(7)	D7	26	25	GND		
SPI1_CS0	19(8)	D8	24	23	D11	18(11)	SPI1_SCK
SPI2_MISO	13(25)	D25	22	21	D9	17(9)	SPI1_MISO
		GND	20	19	D10	16(10)	SPI1_MOSI
SPI2_CS0	15(24)	D24	18	17	3.3V		
SPI2_CS1	232(23)	D23	16	15	D22	194(22)	LCD_TE
		GND	14	13	D27	14(27)	SPI2_SCK
DAP4_SCLK	79(18)	D18	12	11	D17	50(17)	UART2_RTS
		RXD/D15	10	9	GND		
		TXD/D14	8	7	D4	216(4)	AUDIO_MCLK
		GND	6	5	SCL/D3		
		5V	4	3	SDA/D2		
		5V	2	1	3.3V		

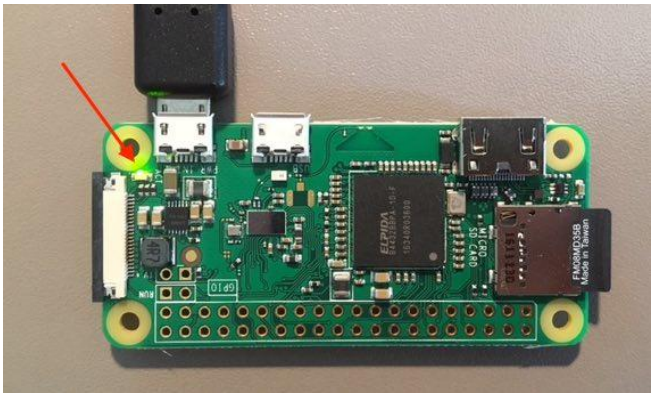
- Connect white wire of the buzzer to the pin no. 29 on the jetson nano. Connect black wire of the buzzer to pin no. 30. Pin 30 refers to GND (ground) pin, which is on the left of pin 29 (Look at the below image, which is a cropped version of the first image). Please refer to shown images while attaching these pins.



Connect white wire of buzzer here

Connect black wire of buzzer here

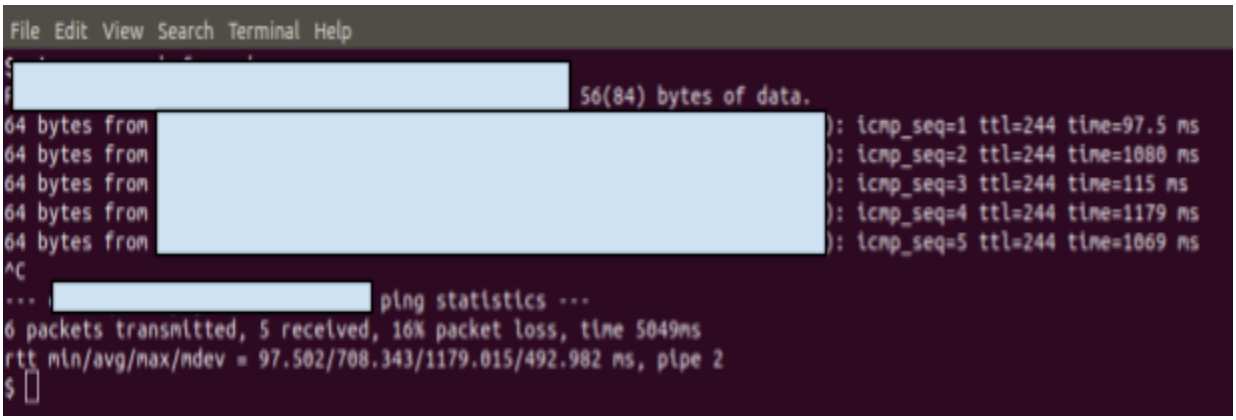
- Turn on the Raspberry Pi Zero
  - Attach power source to the Raspberry Pi Zero.
  - Turn on the power source.
  - Wait for 3-4 minutes till the device boots.
  - Verify if it is ON, by checking the yellow light is ON,



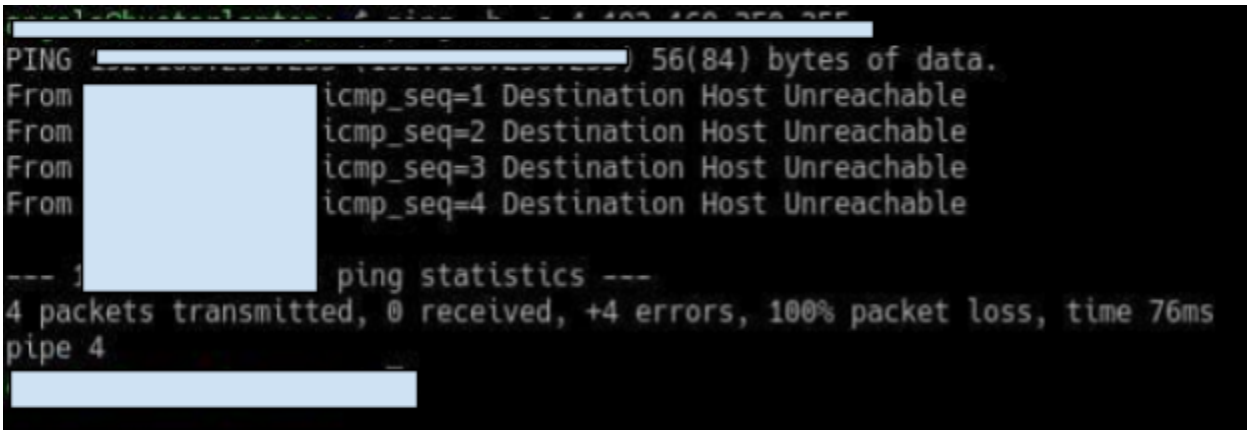
If it's OFF that means the device has not turned ON.

- Turn on Jetson Nano
  - Attach keyboard, mouse, display cable, WiFi dongle and power source to Jetson Nano.
  - Turn on the power source to start the Jetson Nano.
- Verify that Nano & Raspberry is able to communicate
  - Once opened, write "*ping 10.0.0.145*" and press Enter.

  - Press **Ctrl + C** after 20 seconds to stop executing this command.
  - If it's successfully able to ping, a response similar to below image will be shown. Means Jetson Nano and Raspberry Pi Zero are able to communicate to each other.



  - Failure response will look like the below image. That means Nano and Raspberry Pi Zero are not able to communicate to each other. To mitigate this issue, check if both of them are turned on properly, look at steps 2 & 3 in the Prerequisites section. Keep doing this step till you get a successful response shown above.



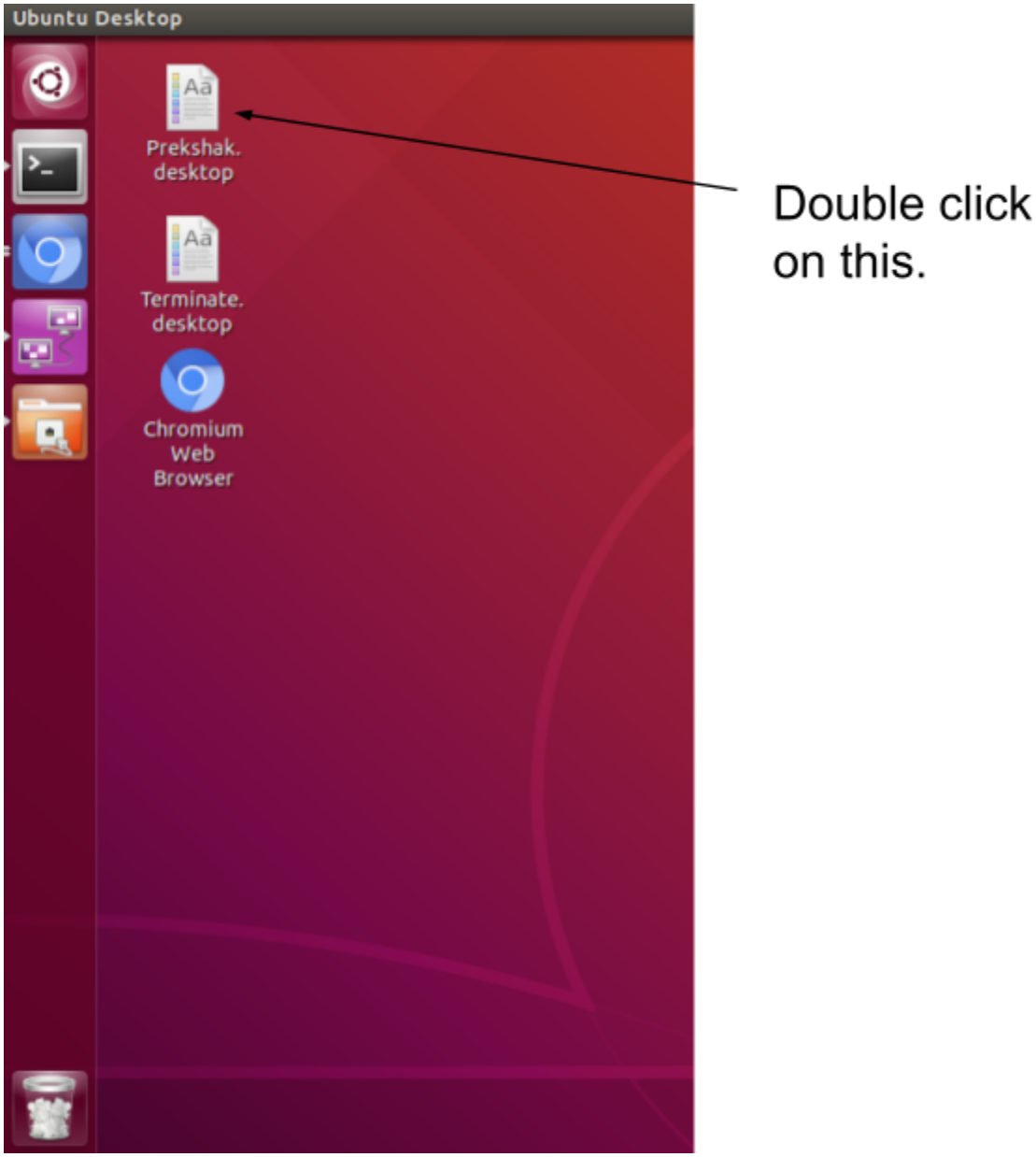
- *Prekshak will run even if the Raspberry Pi Zero is not ON or Unreachable. The Raspberry Pi Zero will vibrate if it is successfully connected with the Prekshak application on Nvidia Jetson Nano.*

How to turn on the Prekshak Application

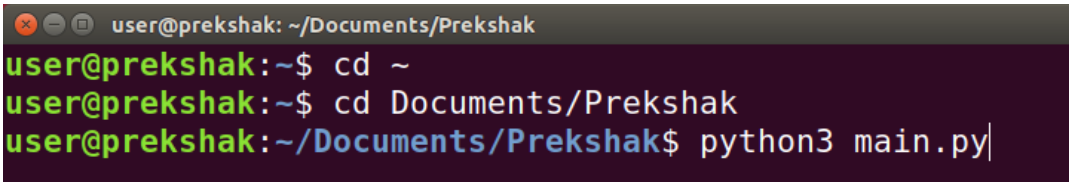
- Configure below flags by editing */home/user/Documents/Prekshak/Config.py* file.

```
...

# FLAGS

VIBRATE_FLAG = False
BUZZER_FLAG = False
SPEAKER_FLAG = False
```

  Change this flag value to “**True**” to turn on that particular flag. Keep it to default if you don't want any of the listed functionalities (All False).
- Double click on the desktop icon called “Prekshak” to turn it on, wait for some time till the GUI shows up.

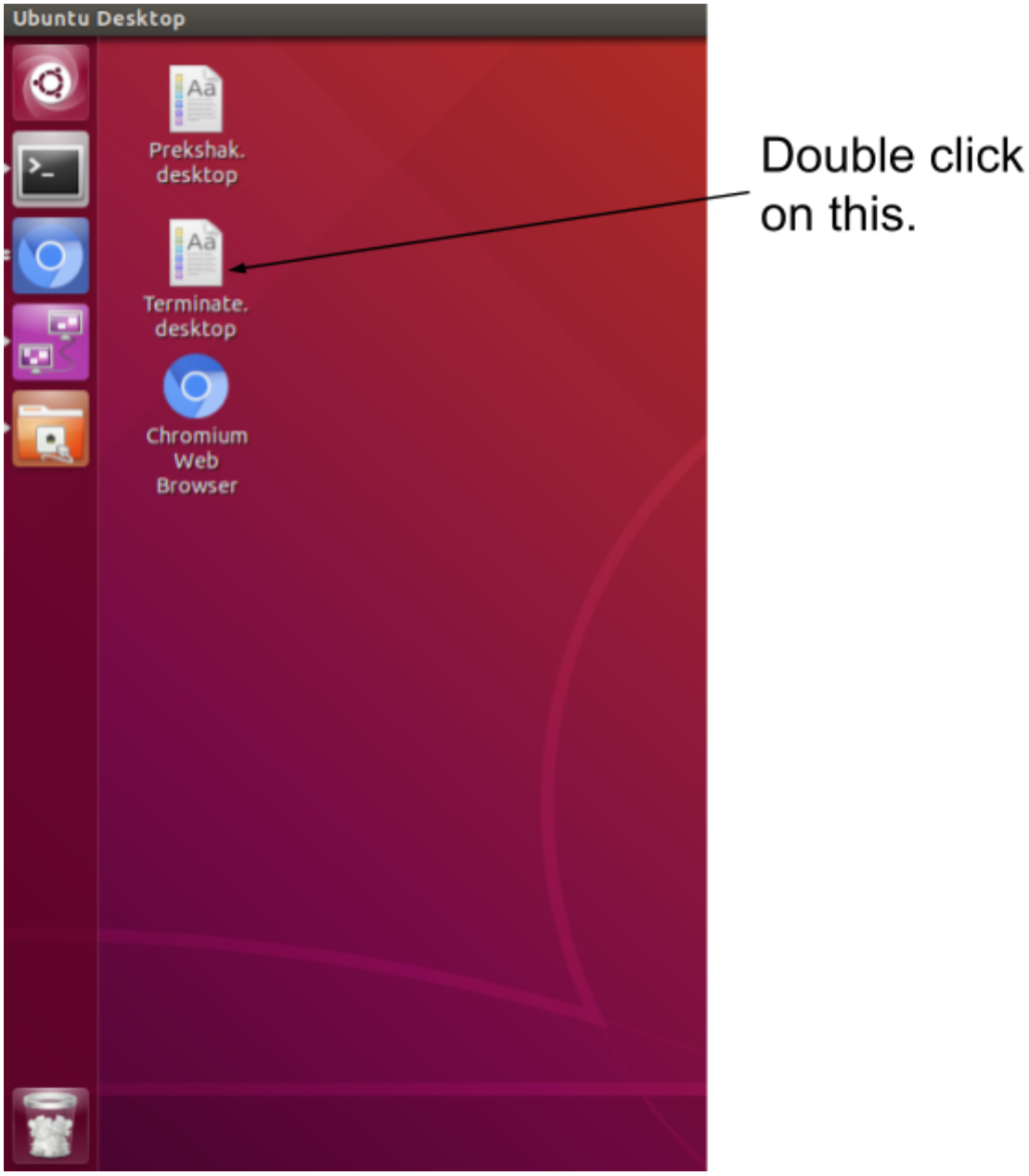


- After waiting for some time, if GUI is not showing up follow below steps to run the application,
    1. Open up terminal.(shortcut: Ctrl + Alt + T) If the shortcut is not working try to search “terminal” in the search bar. (shortcut: Windows key).
    2. Once opened, write “*cd ~*” and press Enter.
    3. Then, write “*cd Documents/Prekshak*” and press Enter.
    4. Write “*python3 main.py*” and press Enter. This command will turn on the application.



How to close the Prekshak Application

- There is a “quit” option inside the “File” button. File button will be located somewhere around the top left corner of the screen.
- Put the cursor on this button, and the “quit” button will show up. Click on it to close the application.
- Afterwards click on the desktop icon titled “Terminate”. This will turn off all the processes to our application which are running in the background.



- If somehow application is not closing properly follow below steps to turn off the application,
    1. Open up terminal.(shortcut: Ctrl + Alt + T) If the shortcut is not working try to search “terminal” in the search bar (shortcut: Windows key).
    2. Once opened, write “*cd ~*” and press Enter.
    3. Then, write “*bash terminate.sh*” and press Enter. This command will close the application.

Raspberry Pi Vibration:

- Display all available networks in Wi-Fi
  nmcli dev wifi
- Connect to Jetson Nano Hotspot
  nmcli device wifi connect test-ap password PASSWORD
- Auto Connect Jetson Nano Hotspot using following Command
  nmcli device set wlan0 autoconnect yes