GPIO –SHELL PROGRAMMING IN RASPBERRY PI

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The whole purpose of education is to turn mirrors into windows.
*- Harris*

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RASPBERRY PI

○ Irrespective of its size, Raspberry Pi is a powerhorse of a computer. It can drive HDMI displays, mouse, keyboard, camera – above all it runs full featured Linux distribution.

○ Not only computer it is hardware prototyping tool.

○ The Pi has **bi-directional I/O pins**, which can be used to drive LEDs, spin motors, or read button presses.

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GPIO Pinout

When referencing Pi pin numbers, there are two different numbering schemes:

- Broadcom chip-specific pin numbers (BCM)
- P1 physical pin numbers.
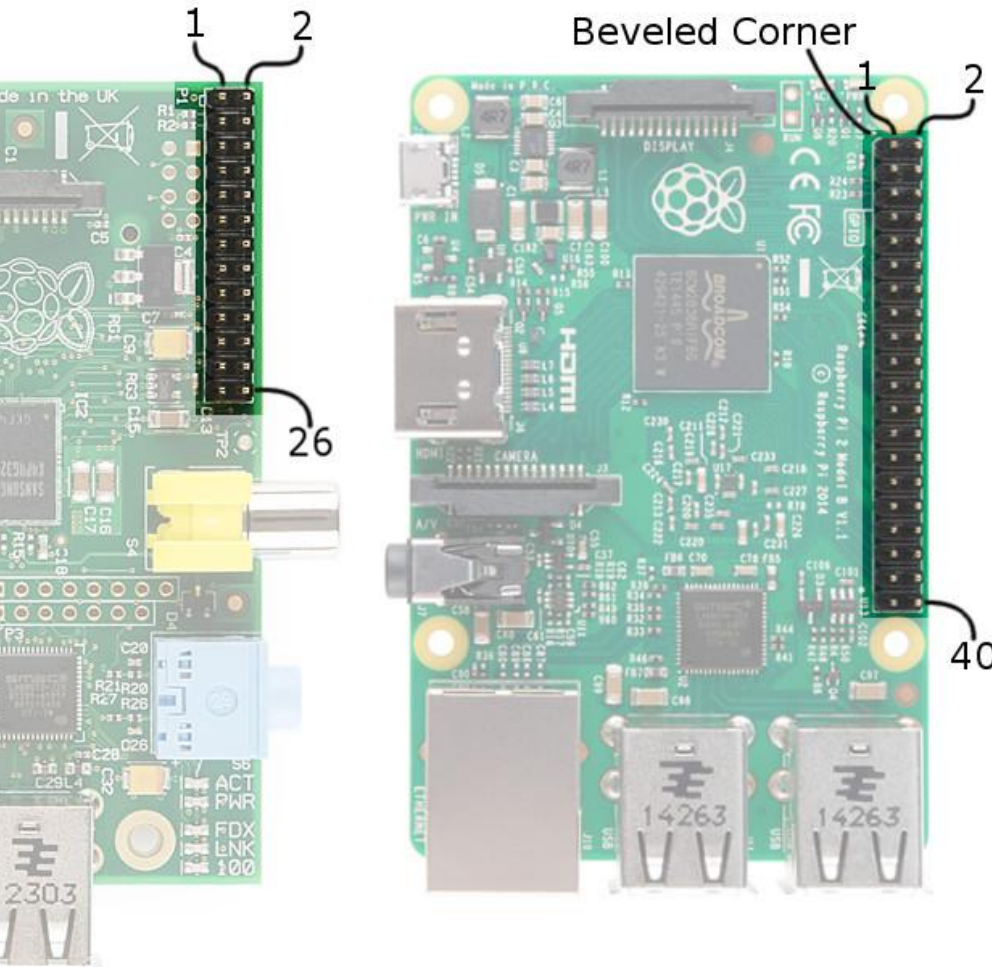
Raspberry Pi2 GPIO Header

Pin#	NAME			NAME	Pin#
01	3.3v DC Power			DC Power 5v	02
03	GPIO02 (SDA1 , I²C)			DC Power 5v	04
05	GPIO03 (SCL1 , I²C)			Ground	06
07	GPIO04 (GPIO_GCLK)			(TXD0) GPIO14	08
09	Ground			(RXD0) GPIO15	10
11	GPIO17 (GPIO_GEN0)			(GPIO_GEN1) GPIO18	12
13	GPIO27 (GPIO_GEN2)			Ground	14
15	GPIO22 (GPIO_GEN3)			(GPIO_GEN4) GPIO23	16
17	3.3v DC Power			(GPIO_GEN5) GPIO24	18
19	GPIO10 (SPI_MOSI)			Ground	20
21	GPIO09 (SPI_MISO)			(GPIO_GEN6) GPIO25	22
23	GPIO11 (SPI_CLK)			(SPI_CE0_N) GPIO08	24
25	Ground			(SPI_CE1_N) GPIO07	26
27	ID_SD (I²C ID EEPROM)			(I²C ID EEPROM) ID_SC	28
29	GPIO05			Ground	30
31	GPIO06			GPIO12	32
33	GPIO13			Ground	34
35	GPIO19			GPIO16	36
37	GPIO26			GPIO20	38
39	Ground			GPIO21	40

Early Models

Late Models

Rev. 1
26/01/2014

http://www.element14.com

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TEST WIRING PI

- WiringPi is a C library, it includes a **command-line utility** as well. It can be tested from command line:

$ gpio -g mode 18 output
$ gpio -g write 18 1
$ gpio -g write 18 0

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SHELL PROGRAM

gpio -g mode 18 output

a=0

while [$a -le 5]

do

      gpio -g write 18 1

      sleep 1

      gpio -g write 18 0

      sleep 1

      a=`expr $a + 1`

done

BUTTON INTERFACING

- **two LEDs** are connected to the **Pi's GPIO 18 and GPIO 23,** P1 connector pin numbers, that'd be pins 12 and 16.

- **button** is connected to Broadcom **GPIO 17**, aka P1 pin 11

Raspberry Pi Model 2 v1.1
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