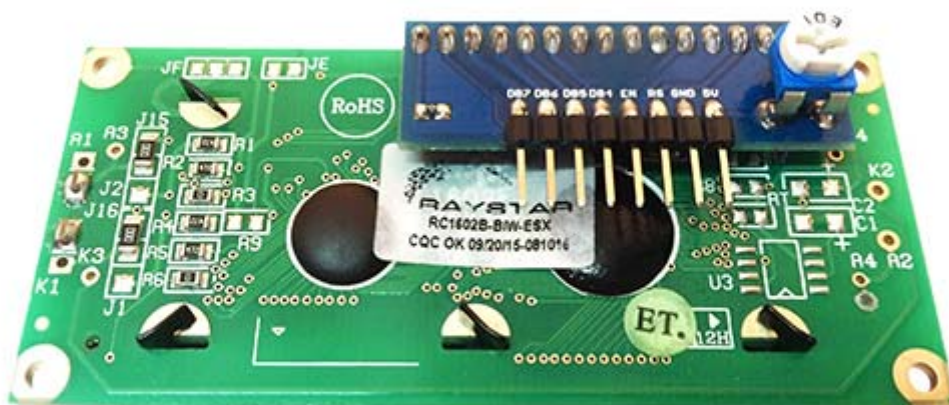
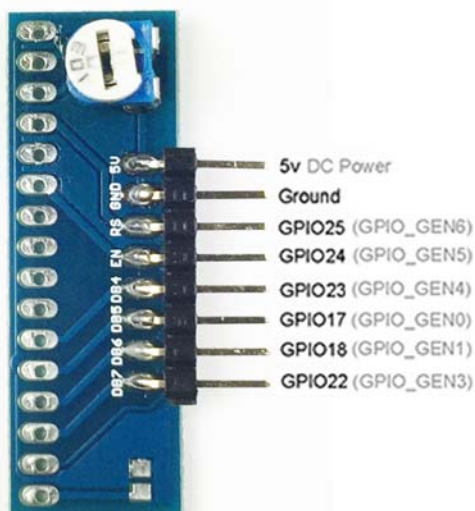




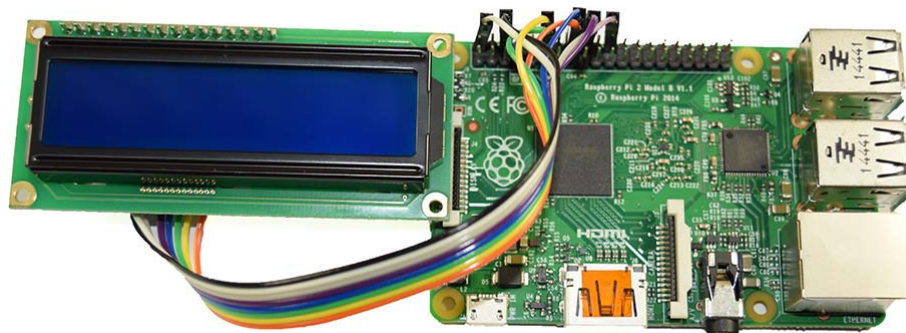
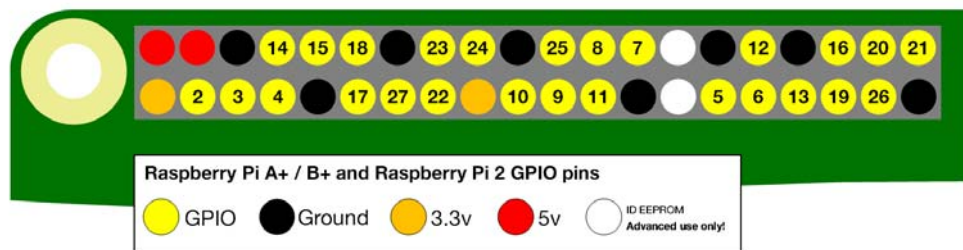
LCD-ul poate sa afiseze **16 caractere pe 2 randuri**, are backlight de culoare albastra, si dispune de un backpack care permite ajustarea luminozitatii si conectarea la Raspberry Pi utilizand 8 [fire mama-mama](#).

16x2 LCD Brick pentru Raspberry Pi



Raspberry Pi 2 GPIO Header

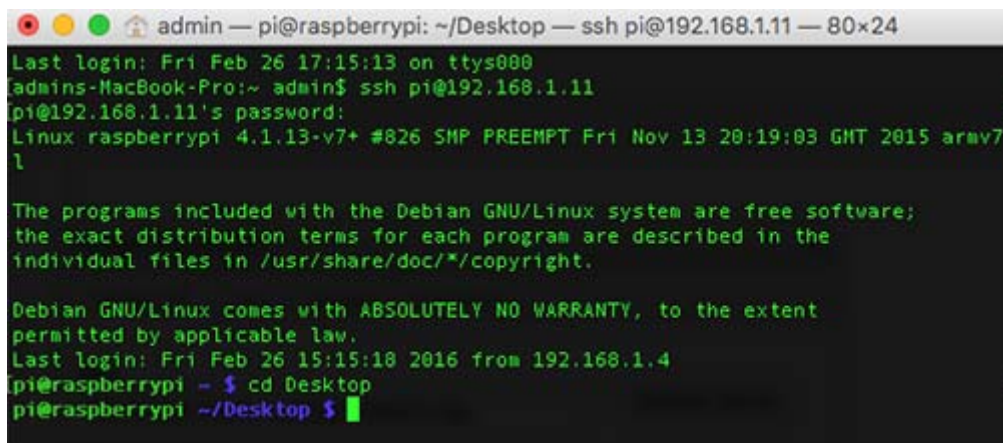
Pin#	NAME	NAME	Pin#
01	3.3v DC Power	DC Power 5v	02
03	GPIO02 (SDA1 , I ² C)	DC Power 5v	04
05	GPIO03 (SCL1 , I ² C)	Ground	06
07	GPIO04 (GPIO_GCLK)	(TXD0) GPIO14	08
09		(RXD0) GPIO15	10
11	GPIO17 (GPIO_GEN0)	(GPIO_GEN1) GPIO18	12
13	GPIO27 (GPIO_GEN2)	Ground	14
15	GPIO22 (GPIO_GEN3)	(GPIO_GEN4) GPIO23	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 (I ² C ID EEPROM)	(PC 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



Mai in jos sunt instructiunile necesare pentru a rula codul sursa in Python.

1. Logheaza-te prin SSH la Raspberry si navigheaza catre directorul Desktop.

\$ cd Desktop



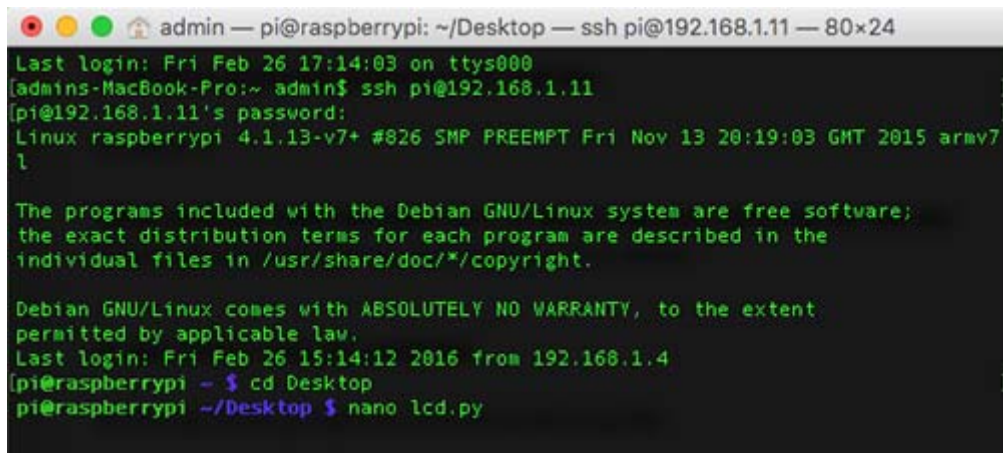
```
admin — pi@raspberrypi: ~/Desktop — ssh pi@192.168.1.11 — 80x24
Last login: Fri Feb 26 17:15:13 on ttys000
[admins-MacBook-Pro:~ admin$ ssh pi@192.168.1.11
pi@192.168.1.11's password:
Linux raspberrypi 4.1.13-v7+ #826 SMP PREEMPT Fri Nov 13 20:19:03 GMT 2015 armv7l

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 Feb 26 15:15:18 2016 from 192.168.1.4
pi@raspberrypi ~ $ cd Desktop
pi@raspberrypi ~/Desktop $
```

2. Creaza un fisier numit lcd.py si copiaza codul de mai jos cu copy paste.

\$ sudo nano lcd.py



```
admin — pi@raspberrypi: ~/Desktop — ssh pi@192.168.1.11 — 80x24
Last login: Fri Feb 26 17:14:03 on ttys000
[admins-MacBook-Pro:~ admin$ ssh pi@192.168.1.11
pi@192.168.1.11's password:
Linux raspberrypi 4.1.13-v7+ #826 SMP PREEMPT Fri Nov 13 20:19:03 GMT 2015 armv7l

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permitted by applicable law.
Last login: Fri Feb 26 15:14:12 2016 from 192.168.1.4
pi@raspberrypi ~ $ cd Desktop
pi@raspberrypi ~/Desktop $ nano lcd.py
```

```
import RPi.GPIO as GPIO
import time
```

```
LCD_RS = 25
LCD_E = 24
LCD_D4 = 23
LCD_D5 = 17
LCD_D6 = 18
LCD_D7 = 22
```

```
LCD_WIDTH = 16
LCD_CHR = True
LCD_CMD = False
```

```
LCD_LINE_1 = 0x80
LCD_LINE_2 = 0xC0
```

```
E_PULSE = 0.0005
E_DELAY = 0.0005
```

```
def main():
```

```
    GPIO.setmode(GPIO.BCM)
```

```
GPIO.setup(LCD_E, GPIO.OUT)
GPIO.setup(LCD_RS, GPIO.OUT)
GPIO.setup(LCD_D4, GPIO.OUT)
GPIO.setup(LCD_D5, GPIO.OUT)
GPIO.setup(LCD_D6, GPIO.OUT)
GPIO.setup(LCD_D7, GPIO.OUT)
```

```
lcd_init()
```

```
while True:
```

```
    lcd_string("ROBOFUN.RO",LCD_LINE_1,2)
    lcd_string("Raspberry PI 2",LCD_LINE_2,2)
```

```
def lcd_init():
```

```
    lcd_byte(0x33,LCD_CMD)
    lcd_byte(0x32,LCD_CMD)
    lcd_byte(0x06,LCD_CMD)
    lcd_byte(0x0C,LCD_CMD)
    lcd_byte(0x28,LCD_CMD)
    lcd_byte(0x01,LCD_CMD)
    time.sleep(E_DELAY)
```

```
def lcd_byte(bits, mode):
```

```
    GPIO.output(LCD_RS, mode)
```

```
    GPIO.output(LCD_D4, False)
    GPIO.output(LCD_D5, False)
    GPIO.output(LCD_D6, False)
    GPIO.output(LCD_D7, False)
    if bits&0x10==0x10:
        GPIO.output(LCD_D4, True)
    if bits&0x20==0x20:
        GPIO.output(LCD_D5, True)
    if bits&0x40==0x40:
        GPIO.output(LCD_D6, True)
    if bits&0x80==0x80:
        GPIO.output(LCD_D7, True)
```

```
lcd_toggle_enable()
```

```
    GPIO.output(LCD_D4, False)
    GPIO.output(LCD_D5, False)
    GPIO.output(LCD_D6, False)
    GPIO.output(LCD_D7, False)
    if bits&0x01==0x01:
        GPIO.output(LCD_D4, True)
    if bits&0x02==0x02:
        GPIO.output(LCD_D5, True)
    if bits&0x04==0x04:
        GPIO.output(LCD_D6, True)
    if bits&0x08==0x08:
        GPIO.output(LCD_D7, True)
```

```
lcd_toggle_enable()
```

```
def lcd_toggle_enable():
```

```
time.sleep(E_DELAY)
GPIO.output(LCD_E, True)
time.sleep(E_PULSE)
GPIO.output(LCD_E, False)
time.sleep(E_DELAY)
```

```
def lcd_string(message,line,style):
```

```
    if style==1:
        message = message.ljust(LCD_WIDTH," ")
    elif style==2:
        message = message.center(LCD_WIDTH," ")
    elif style==3:
        message = message.rjust(LCD_WIDTH," ")
```

```
    lcd_byte(line, LCD_CMD)
```

```
    for i in range(LCD_WIDTH):
        lcd_byte(ord(message[i]),LCD_CHR)
```

```
if __name__ == '__main__':
```

```
    try:
        main()
    except KeyboardInterrupt:
        pass
    finally:
        lcd_byte(0x01, LCD_CMD)
        lcd_string("www.RoboFun.ro",LCD_LINE_2,2)
        GPIO.cleanup()
```

3.Foloseste comanda Ctrl + O pentru a salva modificarile si Ctrl + X pentru a inchide editorul de text.

```
admin — pi@raspberrypi: ~/Desktop — ssh pi@192.168.1.11 — 80x45
GNU nano 2.2.6 File: lcd.py

import RPi.GPIO as GPIO
import time

LCD_RS = 25
LCD_E  = 24
LCD_D4 = 23
LCD_D5 = 17
LCD_D6 = 18
LCD_D7 = 22

LCD_WIDTH = 16
LCD_CHR = True
LCD_CMD = False

LCD_LINE_1 = 0x80
LCD_LINE_2 = 0xC0

E_PULSE = 0.0005
E_DELAY = 0.0005

def main():

    GPIO.setmode(GPIO.BCM)
    GPIO.setup(LCD_E, GPIO.OUT)
    GPIO.setup(LCD_RS, GPIO.OUT)
    GPIO.setup(LCD_D4, GPIO.OUT)
    GPIO.setup(LCD_D5, GPIO.OUT)
    GPIO.setup(LCD_D6, GPIO.OUT)
    GPIO.setup(LCD_D7, GPIO.OUT)

    lcd_init()

    while True:

        lcd_string("ROBOFUN.RD",LCD_LINE_1,2)
        lcd_string("Test Number One",LCD_LINE_2,2)

def lcd_init():

^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^I To Spell
```

4.Ruleaza programul.

\$ sudo python lcd.py

```
admin — pi@raspberrypi: ~/Desktop — ssh pi@192.168.1.11 — 80x24
Last login: Fri Feb 26 17:15:13 on ttys000
[admins-MacBook-Pro:~ admin$ ssh pi@192.168.1.11
pi@192.168.1.11's password:
Linux raspberrypi 4.1.13-v7+ #826 SMP PREEMPT Fri Nov 13 20:19:03 GMT 2015 armv7l

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pi@raspberrypi ~ $ cd Desktop
pi@raspberrypi ~/Desktop $ nano lcd.py
pi@raspberrypi ~/Desktop $ sudo python lcd.py
```

