

1 Android Debug Bridge: ADB

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1.2 Introducción

- O **Android Debug Bridge ADB** é unha utilidade que permite comunicarse cun dispositivo virtual ou real.
- Esta composto dun servidor que sempre está funcionando no ordenador real e lánzase cando se inicia Eclipse ou cando se executa **adb start-server**. Este servidor sempre escoita nun porto impar comezando no 5555.
- O comando atópase no cartafol do SDK en **platform-tools/adb**.
- Funciona do mesmo xeito nos tres SOs.
- Máis información en: <http://developer.android.com/tools/help/adb.html>

1.3 Dispositivos conectados

- Dispositivos conectados

```
admin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb
Android Debug Bridge version 1.0.31

  -a                    - directs adb to listen on all interfaces for a connection
  -d                    - directs command to the only connected USB device
                        - returns an error if more than one USB device is present.
  -e                    - directs command to the only running emulator.
                        - returns an error if more than one emulator is running.
  -s <specific device> - directs command to the device or emulator with the given
                        - serial number or qualifier. Overrides ANDROID_SERIAL
                        - environment variable.
  -p <product name or path> - simple product name like 'sooner', or
                        - a relative/absolute path to a product
                        - out directory like 'out/target/product/sooner'.
                        - If -p is not specified, the ANDROID_PRODUCT_OUT
                        - environment variable is used, which must
                        - be an absolute path.
  -H                    - Name of adb server host (default: localhost)
  -P                    - Port of adb server (default: 5037)
  devices [-l]          - list all connected devices
                        - ('-l' will also list device qualifiers)
  connect <host>[:<port>] - connect to a device via TCP/IP
                        - Port 5555 is used by default if no port number is specified.
  disconnect [<host>[:<port>]] - disconnect from a TCP/IP device.
                        - Port 5555 is used by default if no port number is specified.
                        - Using this command with no additional arguments
                        - will disconnect from all connected TCP/IP devices.

device commands:
  adb push <local> <remote> - copy file/dlr to device
  adb pull <remote> [<local>] - copy file/dlr from device
  adb sync [ <directory> ] - copy host->device only if changed
                        - ('-l' means list but don't copy)
                        - (see 'adb help all')
  adb shell [ ]            - run remote shell interactively
  adb shell <command>      - run remote shell command
  adb emu <command>        - run emulator console command
  adb logcat [ <filter-spec> ] - View device log
  adb forward --list       - list all forward socket connections.
```

A execución do comando `<ruta sdk>/platform-tools/adb` amosa a axuda do mesmo.

```
admin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb devices
List of devices attached
emulator-5554    device

admin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb devices -l
List of devices attached
emulator-5554    device product:sdk_x86 model:Android_SDK_built_for_x86 device:generic_x86
```

`<ruta sdk>/platform-tools/adb devices` amosa os dispositivos reais e virtuais conectados ao ordenador. Co parámetro `-l` amosa o tipo de dispositivo.

1.4 O shell do dispositivo

- Permite executar comandos dentro do dispositivo android.
- Android está baseado en Linux, por tanto poderanse executar moitos dos comandos dese SO nun dispositivo android.
- **Importante:** Para acceder en modo root en AVDs con versións de android 7 ou superior débese executar antes de entrar nel: **adb root**.

- adb shell

```
ladmin@ubase: ~  
ladmin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb shell  
root@generic_x86:/ #
```

<ruta sdk>/platform-tools/adb shell permite conectarse á consola do dispositivo. Olla que neste exemplo hai un só dispositivo conectado, logo veremos como se actúa cando hai dous ou máis.

```
ladmin@ubase: ~  
ladmin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb shell  
root@generic_x86:/ #  
root@generic_x86:/ # pwd  
/  
root@generic_x86:/ #
```

A consola do dispositivo e a execución do comando **pwd**.

```
ladmin@ubase: ~  
root@generic_x86:/ # df  
Filesystem      Size      Used      Free  Blksize  
/dev            249.5M    84.0K    249.4M   4096  
/mnt/secure     249.5M     0.0K    249.5M   4096  
/mnt/asec       249.5M     0.0K    249.5M   4096  
/mnt/obb        249.5M     0.0K    249.5M   4096  
/system         287.1M    287.1M     0.0K   4096  
/data           194.0M    11.7M    182.3M   4096  
/cache          64.0M     1.1M    62.9M   4096  
/storage/sdcard 126.0M     8.5K    126.0M   512  
/mnt/secure/asec 126.0M     8.5K    126.0M   512  
root@generic_x86:/ #
```

A execución do comando **df** para ver os puntos de montaxe, os seus tamaños e consumos de espazo.

```
ladmin@ubase: ~  
root@generic_x86:/ # mount  
rootfs / rootfs ro,relatime 0 0  
tmpfs /dev tmpfs rw,seclabel,nosuid,relatime,nodev 755 0 0  
devpts /dev/pts devpts rw,seclabel,relatime,nodev 0 0 0  
proc /proc proc rw,relatime 0 0  
sysfs /sys sysfs rw,seclabel,relatime 0 0  
selinuxfs /sys/fs/selinux selinuxfs rw,relatime 0 0  
debugfs /sys/kernel/debug debugfs rw,relatime 0 0  
tmpfs /mnt/secure tmpfs rw,seclabel,relatime,nodev 700 0 0  
tmpfs /mnt/asec tmpfs rw,seclabel,relatime,nodev 755,gid=1000 0 0  
tmpfs /mnt/obb tmpfs rw,seclabel,relatime,nodev 755,gid=1000 0 0  
/dev/block/mtdblock0 /system yaffs2 ro,seclabel,relatime 0 0  
/dev/block/mtdblock1 /data yaffs2 rw,seclabel,nosuid,nodev,relatime 0 0  
/dev/block/mtdblock2 /cache yaffs2 rw,seclabel,nosuid,nodev,relatime 0 0  
/dev/block/vold/179:0 /storage/sdcard vfat rw,direct,nosuid,nodev,noexec,relatime,uid=1000,gid=1015,mask=0702,dmask=0702,allow_utime=0020,codepage=cp437,iocharset=iso8859-1,shortname=mixed,utf8,errors=remount-ro 0 0  
/dev/block/vold/179:0 /mnt/secure/asec vfat rw,direct,nosuid,nodev,noexec,relatime,uid=1000,gid=1015,mask=0702,dmask=0702,allow_utime=0020,codepage=cp437,iocharset=iso8859-1,shortname=mixed,utf8,errors=remount-ro 0 0  
tmpfs /storage/sdcard/.android_secure tmpfs ro,seclabel,relatime,size=0k,nodev 0 0  
root@generic_x86:/ #
```

A execución do comando **mount** que amosa en que directorios están montado os dispositivos físicos. Observar onde está montada a tarxeta SD, o formato de ficheiros, a codificación de caracteres, etc.

```

ladmin@ubase: ~
root@generic_x86:/ # ls -l
drwxr-xr-x root root 2013-10-26 03:25 acct
drwxrwx--- system cache 2013-10-25 11:49 cache
dr-x----- root root 2013-10-26 03:25 config
lrwxrwxrwx root root 2013-10-26 03:25 d -> /sys/kernel/debug
drwxrwx--x system system 2013-10-25 13:10 data
-rw-r--r-- root root 116 1969-12-31 19:00 default.prop
drwxr-xr-x root root 2013-10-26 03:25 dev
lrwxrwxrwx root root 2013-10-26 03:25 etc -> /system/etc
-rw-r--r-- root root 8753 1969-12-31 19:00 file_contexts
-rw-r----- root root 495 1969-12-31 19:00 fstab.goldfish
-rwxr-x--- root root 359680 1969-12-31 19:00 init
-rwxr-x--- root root 2660 1969-12-31 19:00 init.goldfish.rc
-rwxr-x--- root root 19930 1969-12-31 19:00 init.rc
-rwxr-x--- root root 1795 1969-12-31 19:00 init.trace.rc
-rwxr-x--- root root 3915 1969-12-31 19:00 init.usb.rc
drwxrwxr-x root system 2013-10-26 03:25 mnt
dr-xr-xr-x root root 2013-10-26 03:25 proc
-rw-r--r-- root root 2109 1969-12-31 19:00 property_contexts
drwx----- root root 2013-08-01 05:04 root
drwxr-x--- root root 1969-12-31 19:00/sbin
lrwxrwxrwx root root 2013-10-26 03:25 sdcard -> /storage/sdcard
-rw-r--r-- root root 611 1969-12-31 19:00 seapp_contexts
-rw-r--r-- root root 63747 1969-12-31 19:00 sepolicy
d---r-x--- root sdcard_r 2013-10-26 03:25 storage
dr-xr-xr-x root root 2013-10-26 03:25 sys
drwxr-xr-x root root 2013-08-01 04:31 system
-rw-r--r-- root root 272 1969-12-31 19:00 ueventd.goldfish.rc
-rw-r--r-- root root 4824 1969-12-31 19:00 ueventd.rc
lrwxrwxrwx root root 2013-10-26 03:25 vendor -> /system/vendor
root@generic_x86:/ #

```

Is -l amosa o contido en formato lista do directorio actual: o raíz. Na carpeta data ...

```

ladmin@ubase: ~
root@generic_x86:/ # cd data
root@generic_x86:/data #
root@generic_x86:/data # ls
app
app-asec
app-lib
app-private
backup
bugreports
dalvik-cache
data
dontpanic
drm
local
lost+found
media
mediadrn
misc
nativebenchmark
nativetest
property
resource-cache
security
ssh
system
user
root@generic_x86:/data #

```

... está outra carpeta chamada data que ...

```

ladmin@ubase: ~
root@generic_x86:/data # cd data
root@generic_x86:/data/data # ls
com.android.backupconfirm
com.android.browser
com.android.calculator2
com.android.calendar
com.android.camera
com.android.certinstaller
com.android.contacts
com.android.customloca2
com.android.defcontainer
com.android.deskclock
com.android.development
com.android.development_settings
com.android.dialer
com.android.dreams.basic
com.android.email
com.android.emulator.connectivity.test
com.android.emulator.gps.test
com.android.exchange
com.android.fallback
com.android.gallary
com.android.gesture.builder
com.android.htmlviewer
com.android.inputdevices
com.android.inputmethod.latin
com.android.inputmethod.pinyin
com.android.keychain
com.android.launcher
com.android.location.fused
com.android.mms
com.android.music
com.android.packageinstaller
com.android.phone
com.android.protips
com.android.providers.applications
com.android.providers.calendar
com.android.providers.contacts
com.android.providers.downloads

```

... contén as aplicacións instaladas no dispositivo. Entre elas unha chamada **com.android.providers.contacts**.

1.4.1 Xestión dunha BBDD con sqlite3

- A modo de exemplo vaise ver como facer consultas básicas, dentro do dispositivo, co xestor **sqlite3**.
- Máis información en: <http://www.sqlite.org/>
- Vaise traballar coa bases de datos dos contactos do teléfono.

- **sqlite3**

```
ladmin@ubase: ~  
root@generic_x86:/data/data # cd com.android.providers.contacts  
root@generic_x86:/data/data/com.android.providers.contacts #  
root@generic_x86:/data/data/com.android.providers.contacts # ls  
cache  
databases  
files  
lib  
shared_prefs
```

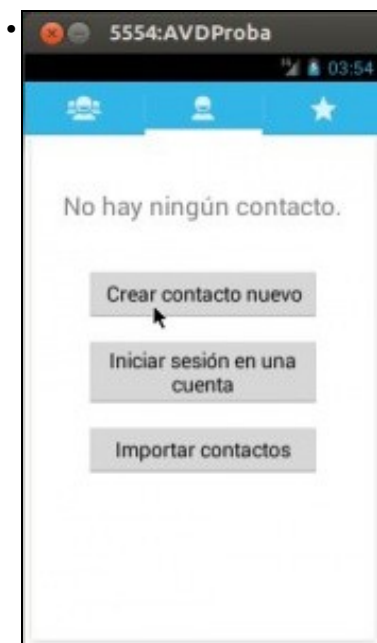
Situarse na carpeta da aplicación. Toda aplicación ten unha estrutura de ficheiros semellante. Hai un directorio chamado **databases**.

```
ladmin@ubase: ~  
root@generic_x86:/data/data/com.android.providers.contacts # cd databases/  
root@generic_x86:/data/data/com.android.providers.contacts/databases # ls  
contacts2.db  
contacts2.db-journal  
profile.db  
profile.db-journal
```

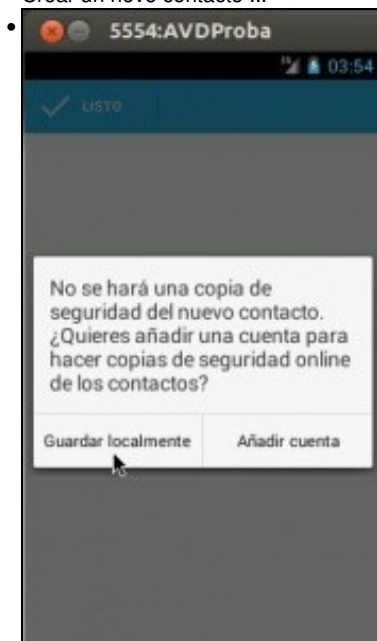
Contén un ficheiro **sqlite3** que é unha base de datos chamada **contacts2.db**.



Abrir os contactos do teléfono.



Crear un novo contacto ...



Localmente ...



Indicar o nome e o número e gardar o contacto.



Volver á axenda.



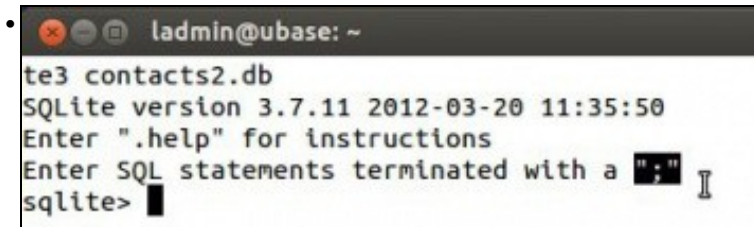
Lista de contactos.



Lanzar o xestor de Base de Datos. **sqlite3 contacts2.db**. Observar que consola se despraza cara ...



... a dereita.



Todo comando empeza por **punto "."**, salvo as sentencias sql, e estas deben rematar en **";"**.



.help amosa a axuda do xestor.

```

admin@ubase:~$ .explain TON|OFF? Turn output mode suitable for EXPLAIN on or off.
                                With no args, it turns EXPLAIN on.
.header(s) ON|OFF Turn display of headers on or off
.help Show this message
.import FILE TABLE Import data from FILE into TABLE
.indices ?TABLE? Show names of all indices
                    IF TABLE specified, only show indices for tables
                    matching LIKE pattern TABLE.
.log FILE|off Turn logging on or off. FILE can be stderr/stdout
.mode MODE ?TABLE? Set output mode where MODE is one of:
                    csv      Comma-separated values
                    column   Left-aligned columns. (See .width)
                    html     HTML <table> code
                    insert    SQL insert statements for TABLE
                    line      One value per line
                    list       Values delimited by .separator string
                    tabs      Tab-separated values
                    tcl       TCL list elements
.nullvalue STRING Print STRING in place of NULL values
.output FILENAME Send output to FILENAME
.output stdout Send output to the screen
.prompt MAIN CONTINUE Replace the standard prompts
.quit Exit this program
.read FILENAME Execute SQL in FILENAME
.restore ?DB? FILE Restore content of DB (default "main") from FILE
.schema ?TABLE? ? Show the CREATE statements
                    IF TABLE specified, only show tables matching
                    LIKE pattern TABLE.
.separator STRING Change separator used by output mode and .import
.show Show the current values for various settings
.stats ON|OFF Turn stats on or off
.tables ?TABLE? List names of tables
                    IF TABLE specified, only list tables matching
                    LIKE pattern TABLE.
.timeout MS Try opening locked tables for MS milliseconds
.vfsname ?AUX? Print the name of the VFS stack
.width NUM1 NUM2 ... Set column widths for "column" mode
.timer ON|OFF Turn the CPU timer measurement on or off
sqlite>

```

O resto da ajuda do gestor.

```

sqlite> .databases
seq  name          file
---  ---
0    main           /data/data/com.android.providers.contacts/databases/contac
sqlite>

```

.databases amosa a base de dados á que se está conectado.

```

sqlite> .show
echo: off
explain: off
headers: off
mode: list
nullvalue: ""
output: stdout
separator: "|"
stats: off
width:
sqlite>

```

.show amosa os valores para distintos parámetros de configuración, entre eles, **mode**.

```

sqlite> .tables
_sync_state      phone_lookup     view_data_usage_stat
_sync_state_metadata photo_files      view_entities
accounts         properties       view_groups
agg_exceptions   raw_contacts     view_raw_contacts
android_metadata search_index      view_raw_entities
calls            search_index_content view_stream_items
contacts         search_index_docsize view_v1_contact_methods
data             search_index_segdir view_v1_extensions
data_usage_stat  search_index_segments view_v1_group_membership
default_directory search_index_stat  view_v1_groups
deleted_contacts settings          view_v1_organizations
directories        status_updates    view_v1_people
groups           stream_item_photos view_v1_phones
mime_types       stream_items      view_v1_photos
name_lookup      v1_settings       visible_contacts
nickname_lookup  view_contacts     voicemail_status
packages         view_data
sqlite>

```

.tables amosa as táboas da BD.

```

sqlite> select * from raw_contacts
...> ;
1|1||0|2|1|0|1|0|0|0|0|0|AA_Casa|AA_Casa|40||0|AA_Casa|A|1|AA_Casa|A|1|0|
sqlite>

```



```
sqlite> select * from view_v1_phones;  
1|1|0|(986) 000-111|1||111000689|AA_Casa|AA_Casa||||0||0|0||||  
sqlite>
```

```

.mode MODE ?TABLE      Set output mode where MODE is one of:
  csv                  Comma-separated values
  column               Left-aligned columns. (See .width)
  html                 HTML <table> code
  insert               SQL insert statements for TABLE
  line                 One value per line
  list                 Values delimited by .separator string
  tabs                 Tab-separated values
  tcl                  TCL list elements

```

```
sqlite> .mode line
sqlite> select * from raw_contacts;
      _id = 1
      account_id = 1
      sourceid =
raw_contact_is_read_only = 0
      version = 2
      dirty = 1
      deleted = 0
      contact_id = 1
      aggregation_mode = 0
      aggregation_needed = 0
      custom_ringtone =
      send_to_voicemail = 0
      times_contacted = 0
      last_time_contacted =
      starred = 0
      display_name = AA_Casa
      display_name_alt = AA_Casa
      display_name_source = 40
      phonetic_name =
      phonetic_name_style = 0
      sort_key = AA_Casa
      phonebook_label = A
      phonebook_bucket = 1
      sort_key_alt = AA_Casa
      phonebook_label_alt = A
      phonebook_bucket_alt = 1
      name_verified = 0
      sync1 =
      sync2 =
      sync3 =
      sync4 =

sqlite> |
```

```
sqlite> .exit
1|root@generic_x86:/data/data/com.android.providers.contacts/databases #
```

```

root@generic_x86: /data/data/com.android.providers.contacts/databases # exit
ladmin@ubase:~$ ls
Descargas  Escritorio  Imaxes  Música  Ubuntu One  workspace
Documentos  examples.desktop  Modelos  Público  Vídeos
ladmin@ubase:~$

```

```
ladmin@ubuntu:~$ ls
Descargas  Escritorio  Imaxes  Música  Ubuntu One  workspace
Documentos  examples.desktop  Modelos  Público  Videos

ladmin@ubuntu:~$ /opt/android-sdk-linux/platform-tools/adb shell ls
acct
cache
config
d
data
default.prop
dev
etc
file_contexts
fstab.goldfish
init
init.goldfish.rc
init.rc
init.trace.rc
init.usb.rc
mnt
proc
property_contexts
root
sbin
sdcard
seapp_contexts
sepolicy
storage
sys
system
ueventd.goldfish.rc
ueventd.rc
vendor
ladmin@ubuntu:~$
```

Con **adb shell comando** execútase o comando na consola do dispositivo e a saída amósase na consola do ordenador.

Nota: Se queremos reiniciar o dispositivo teremos que executar, dentro do shell, as seguintes ordes:

- ◊ stop
- ◊ start

Con isto faremos o 'efecto' de reiniciar. Isto é necesario no caso de ter un servizo que se executa cando se acende o dispositivo Android e queiramos comprobar o seu funcionamento.

1.5 Sacar ficheiros do dispositivo

- Outra das funcionalidades que nos permite é sacar ficheiros/carpetsas do dispositivo.

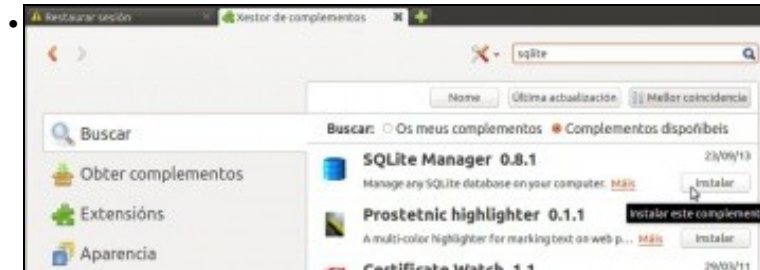
- adb pull

```
ladnin@ubase: ~  
ladnin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb pull /data/data/com.android.providers.contacts/databases/contacts2.db
```

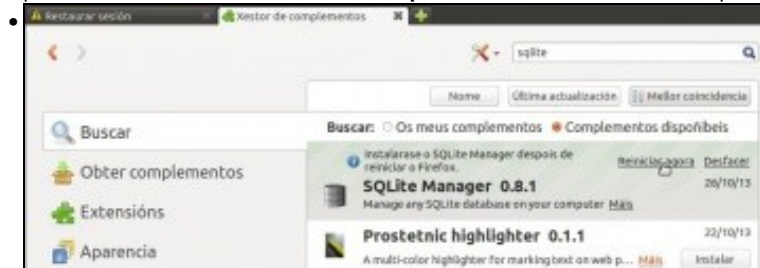
Neste caso sácase do dispositivo a BD anterior de contactos: **contacts2.db**. Co parámetro: **adb pull**. (<ruta sdk>/platform-tools/adb pull /data/data/com.android.providers.contacts/databases/contacts2.db)

```
ladnin@ubase: ~  
ladnin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb pull /data/data/com.android.providers.contacts/databases/contacts2.db  
1263 KB/s (307200 bytes in 0.237s)  
ladnin@ubase:~$ ls  
contacts2.db  Escritorio      Modelos  Ubuntu One  
Descargas    examples.desktop Música    Videos  
Documentos   Imaxes          Público  workspace  
ladnin@ubase:~$
```

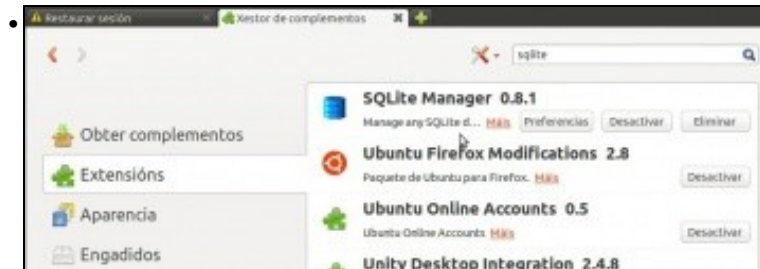
Observar a BD **contacts2.db** no cartafol do ordenador.



Existen moitos xestores para manipular BBDD sqlite3, neste caso vaise instalar no ordenador un complemento no Mozilla Firefox e así vale para os tres SOs. Ir **Ferramentas->Complementos** en Firefox. Buscar **sqlite** e instalar o complemento **Sqlite Manager**



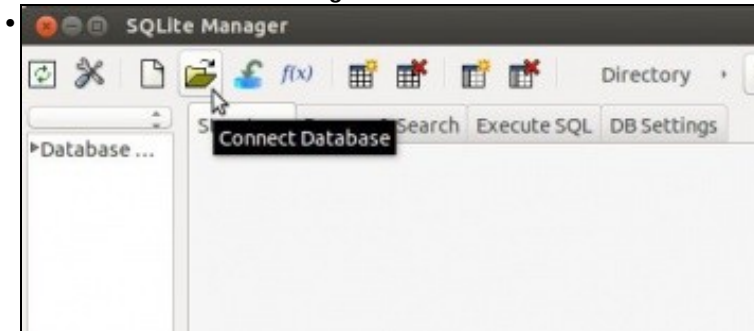
Reiniciar o Firefox.



Complemento instalado e activo.



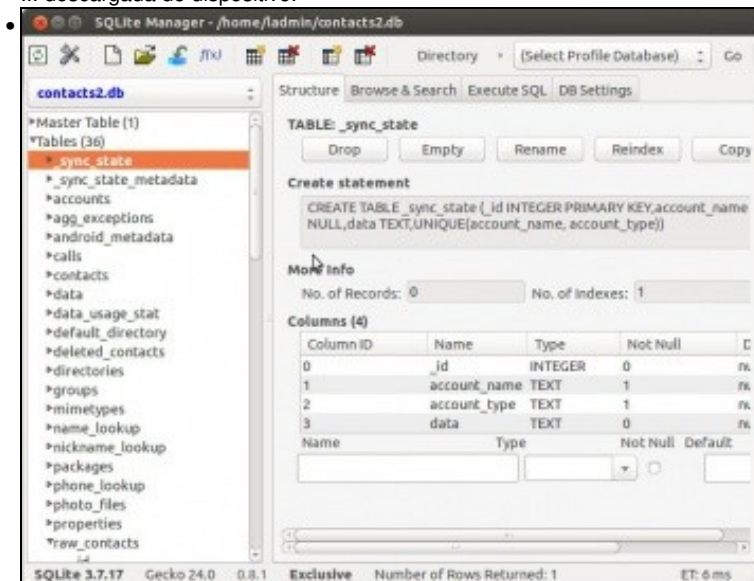
En **Ferramentas->SQLite Manager** ábrese o xestor de BBDD.



Conectar á BD ...



... descargada do dispositivo.



Agora pódese manipular a BD.

1.6 Instalar unha aplicación

- As aplicacións instalables teñen extensión **apk** como se verá na UNIDADE 2 do curso: **adb install**.
- Neste caso vaise baixar de internet un visor PDF moi sinxelo para Android.

- adb install



Descargar o .apk do visor PDF de <http://sourceforge.net/projects/andpdf/files/>



A aplicación descargada.



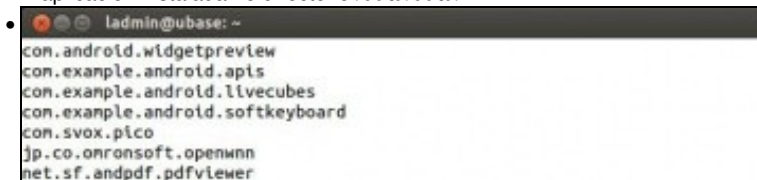
<ruta sdk>/platform-tools/adb install Descargas/AndroidPdfViewer_1_0_1.apk instalará o paquete no dispositivo.



A aplicación instalada.



A aplicación instalada no directorio **/data/data/** ...

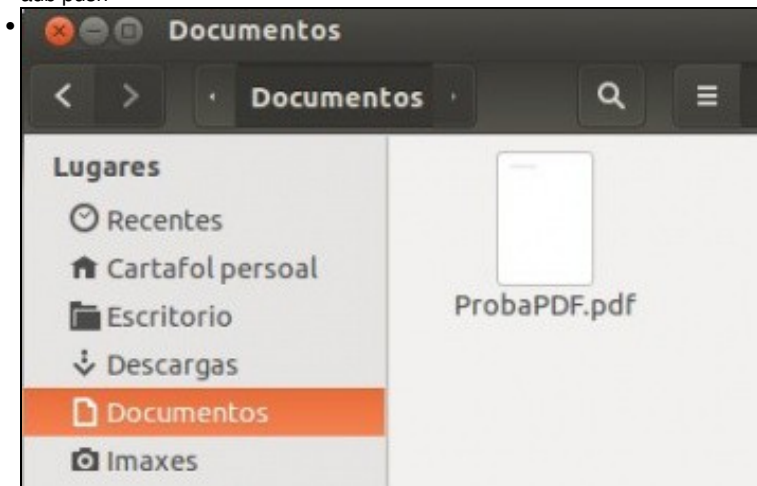


... do dispositivo.

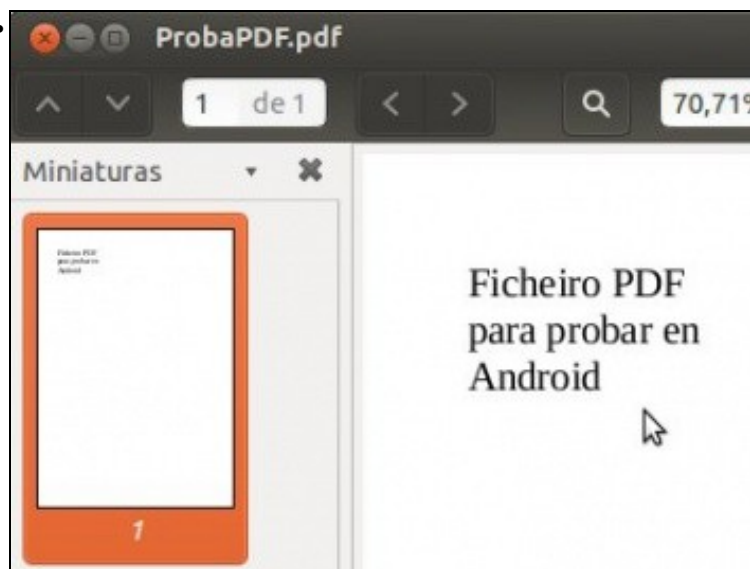
1.7 Introducir ficheiro no dispositivo

- Ao igual que se sacan ficheiros do dispositivo tamén se poden introducir ficheiros no mesmo: **adb push**.

- adb push



Crear un documento PDF de proba ou escoller un xa feito.



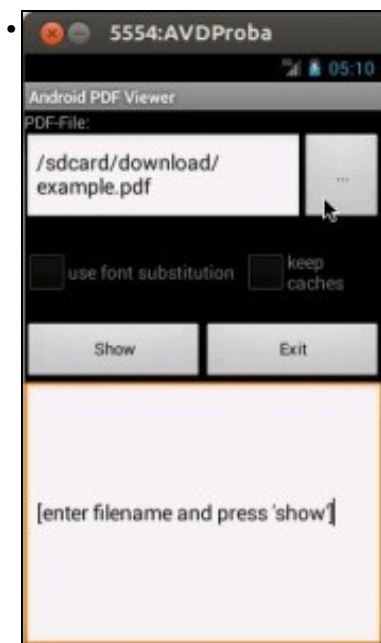
O contido do documento PDF.

-

Imos introducilo no directorio asociado á SD card: **sdcard**

-

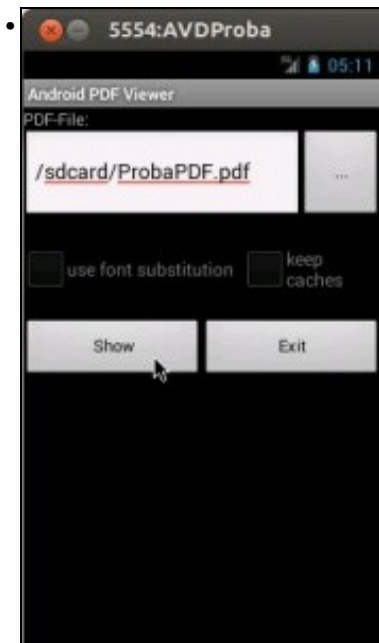
<ruta sdk>/platform-tools/adb push Documentos/ProbaPDF.pdf /sdcard/



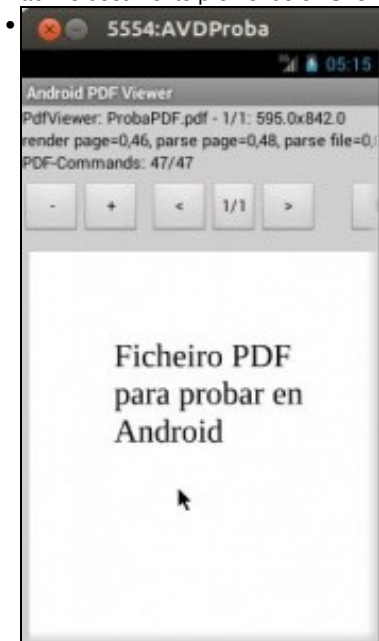
Abrir o visor de PDFs no dispositivo e navegar ...



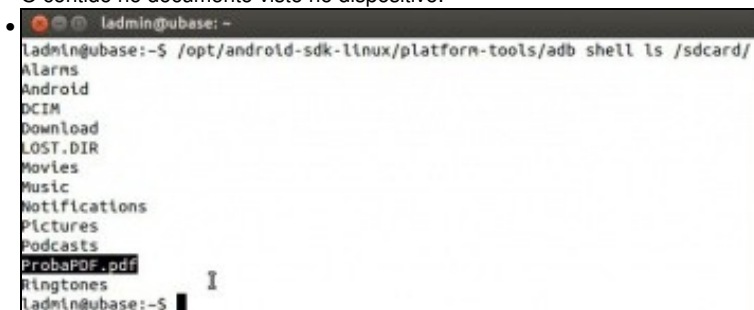
até /sdcard e



abrir o documento premendo en **show**.



O contido no documento visto no dispositivo.



adb shell ls /sdcard amosa que o documento está na tarxeta SD.

1.8 Desinstalar unha aplicación do dispositivo

- Ao igual que se pode instalar unha aplicación tamén se pode desinstalar: **adb uninstall**.
- Tamén se pode realizar de modo gráfico.

- adb uninstall



En modo gráfico desinstálase unha aplicación mantendo pulsada e arrastrándoa ao lixo. Vaise realizar con adb.

```
admin@ubase: ~
con.android.widgetpreview
con.example.android.apis
con.example.android.livecubes
con.example.android.softkeyboard
con.svox.pico
jp.co.onronsoft.openwnn
net.sf.andpdf.pdfviewer
```

En /data/data podemos ver o nome da aplicación.

```
admin@ubase: ~
ladningubase:~$ /opt/android-sdk-linux/platform-tools/adb uninstall net.sf.a
ndpdf.pdfviewer
Success
```

<ruta sdk>/platform-tools/adb uninstall net.sf.andpdf.pdfviewer

1.9 Varios dispositivos

- Até agora só traballamos con adb cun só dispositivo. Como actuar cando hai máis dun dispositivo real ou virtual?.

- Varios dispositivos



Crear un segundo AVD: **AVDProba2**.



Iniciar os 2 AVDs.

```
ladmin@ubase: ~  
ladmin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb kill-server  
ladmin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb devices  
* daemon not running. starting it now on port 5037 *  
* daemon started successfully *  
List of devices attached  
emulator-5554 device  
emulator-5556 device
```

Parar o servidor adb: **<ruta sdk>/platform-tools/adb kill-server**

```
ladmin@ubase: ~  
ladmin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb devices  
List of devices attached  
emulator-5554 device  
emulator-5556 device  
  
ladmin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb -s emulator-5556 shell ls  
acct  
cache  
config
```

Buscar os dispositivos conectados: **adb devices**. Observar como se inicia o servidor adb.

```
ladmin@ubase: ~  
ladmin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb devices  
List of devices attached  
emulator-5554 device  
emulator-5556 device  
  
ladmin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb -s emulator-5556 shell ls  
acct  
cache  
config
```

Agora, cando hai máis dun dispositivo, para conectarse a un concreto hai que especificalo, sexa este real ou virtual: usando o parámetro **-s nome do dispositivo**. Neste caso **adb -s emulator-5556 shell ls** amosa o contido da raíz do segundo AVD.

1.10 Conectar un dispositivo físico

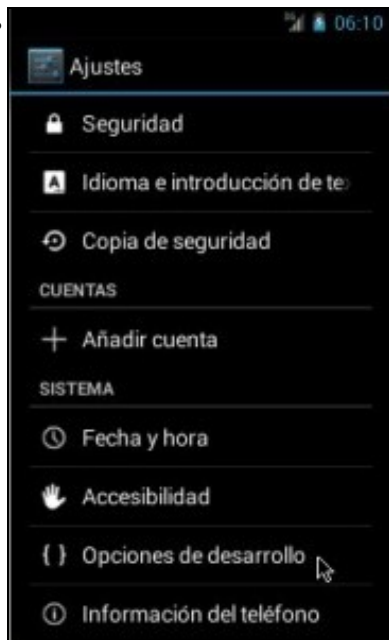
- Agora tócalle a quenda aos dispositivos físicos.
- Hai que habilitar a **Depuración USB**
- Dispositivo físico



Se non aparece en **Ajustes->{ } Opciones de desarrollo**. Ir a **Ajustes -> Información del teléfono**.



Pulsar 7 veces sobre **Número de compilación** e xa aparece ...



... { } **Opciones de desarrollo**. Premer nesa opción. En versións máis antigas ir a **Ajustes-> Aplicaciones->Desarrollo**



Habilitar **Depuración USB**



Aceptar as advertencias.

```
admin@ubase: ~
admin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb devices -l
List of devices attached
emulator-5554      device product:sdk_x86 model:Android_SDK_built_for_x86
emulator-5556      device product:sdk_x86 model:Android_SDK_built_for_x86
20e62b4d           device usb:1-2
```

<ruta sdk>/platform-tools/adb devices -l amosa o nome dos dispositivos e onde está conectado.

```
admin@ubase: ~
admin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb devices
List of devices attached
emulator-5554      device
emulator-5556      device
20e62b4d           device

admin@ubase:~$ /opt/android-sdk-linux/platform-tools/adb -s 20e62b4d shell ls
efs
config
cache
```

<ruta sdk>/platform-tools/adb -s nome-dispositivo é para interactuar con ese dispositivo, neste caso físico.

1.10.1 Conectar un dispositivo físico en Windows

- En Linux e OS X non é preciso instalar o driver do dispositivo para conectarse a el, pero en Windows si.
- Neste caso vaise usar de exemplo un dispositivo físico Samsung.

- Dispositivo físico en Windows

```
C:\Windows\system32\cmd.exe

c:\Program Files (x86)\Android\android-sdk\platform-tools>adb devices
* daemon not running. starting it now on port 5037 *
* daemon started successfully *
List of devices attached

c:\Program Files (x86)\Android\android-sdk\platform-tools>
```

Conectamos o dispositivo físico ao ordenador Windows e <ruta sdk>/platform-tools/adb devices non amosa nada.

Tools & SDKs

Samsung Android USB Driver for Windows

May 5, 2011

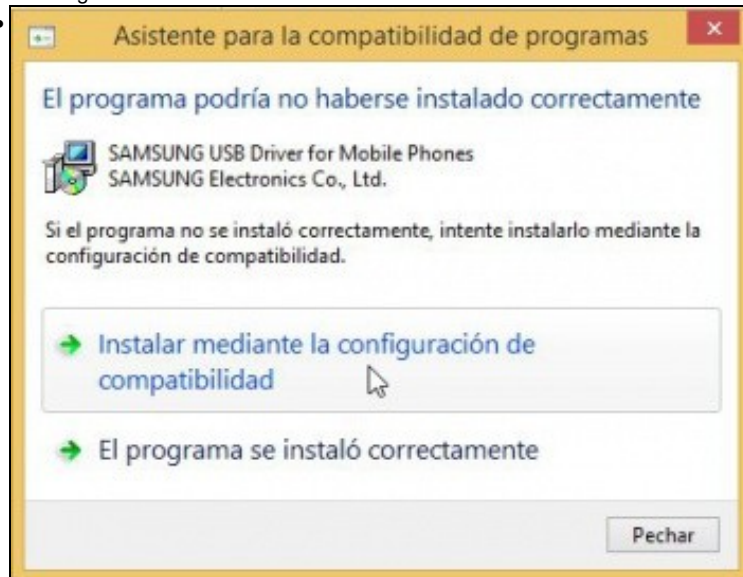
 [SAMSUNG_USB_Driver_for_Mobile_Phones.zip \(25.32MB\)](#)

The USB Driver for Windows is available for download in this page. You need the driver only if you are on Windows and want to connect a Samsung android device to your development environment over USB.

Neste caso buscamos o driver do dispositivo.



Descargalo e instalalo.



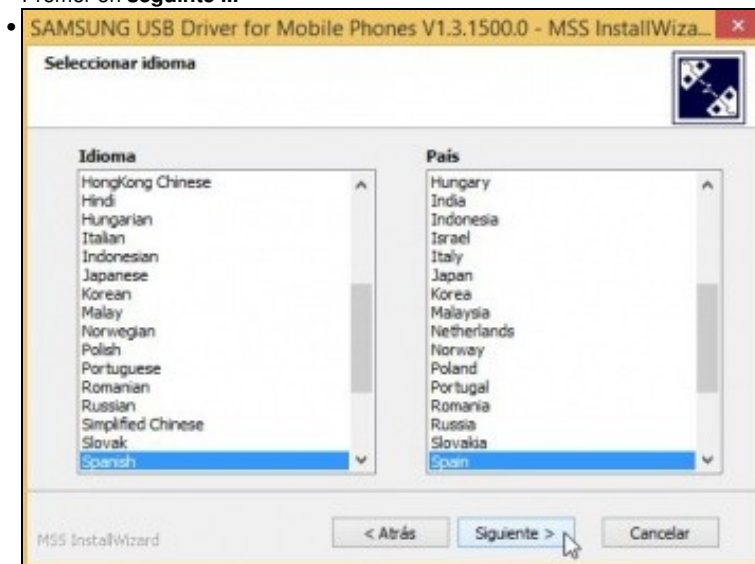
Aceptar as advertencias que amose.



Seguir aceptando ...



Premer en **siguiente ...**



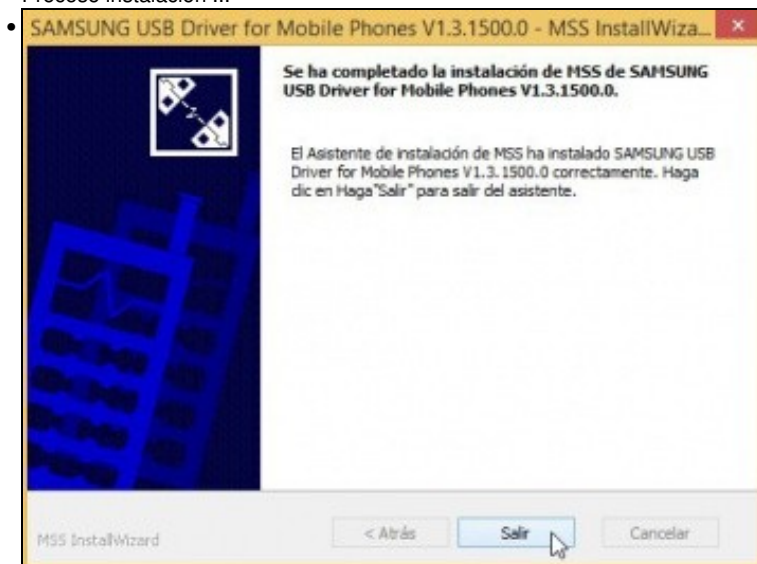
Seleccionar o que indique ...



Instalar ...



Proceso instalación ...



Rematar instalación.



Aceptar por última vez.

```
C:\Windows\system32\cmd.exe

c:\Program Files (x86)\Android\android-sdk\platform-tools>adb devices
* daemon not running. starting it now on port 5037 *
* daemon started successfully *
List of devices attached
20e62b4d    device

c:\Program Files (x86)\Android\android-sdk\platform-tools>
```

<ruta sdk>/platform-tools/adb devices amosa o dispositivo físico conectado ao ordenador.

-- Ángel D. Fernández González e Carlos Carrión Álvarez -- (2020).