

# How-to-Guide: Cross Compile SQLite for Beaglebone Green

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## Guide has been tested on

**BeagleBone (Target): Debian 11.4**

**PC OS (host): Debian 11.5**

This document guides the user through

1. Installing SQLite in Host that is compatible for cross compiling
2. Cross Compile programs using SQLite
3. Run Cross Compiled Program in Target

**Note:** Guide not yet fully tested in SFU Surrey Linux Lab (SRYE4013). Some changes may be needed.

### Formatting:

1. Commands for the host Linux's console are show as:  

```
(host)$ echo "Hello PC world!"
```
2. Commands for the target (BeagleBone) Linux's console are shown as:  

```
(bbg)$ echo "Hello embedded world!"
```
3. Almost all commands are case sensitive.

### Revision History

- December 7, 2022: Updated with pictures

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## 1.0 Overview

This guide will go over the requirements, steps and details necessary to install the SQLite, cross compile a program and run it on the target. A terminal connection to a BeagleBone green via either serial or SSH is required. A troubleshooting section is included to cover some of the common errors with their respective remedies.

## 2.0 Setup

This guide requires a terminal connection to the BeagleBone via either serial or SSH.

### 2.1 Install SQLite3 on Debian

1. Update apt repository cache  
`(host)$ sudo apt update`
2. Install SQLite3  
`(host)$ sudo apt install sqlite3`  
`(host)$ sudo apt install libsqlite3-dev`
3. Verify Installation  
`(host)$ sqlite3 --version`

### 2.2 Install SQLite3 for ARM

1. Create a directory in the cmpt433 folder and name it *SQLite\_for\_ARM*  
`(host)$ mkdir /cmpt433/SQLite_for_ARM`
2. Download source code  
`(host)$ wget http://www.sqlite.org/2017/sqlite-autoconf-3160200.tar.gz`  
`(host)$ tar xvzf sqlite-autoconf-3160200.tar.gz`  
`(host)$ cd sqlite-autoconf-3160200/`
3. Configure for cross-compilation
4. `(host)$ ./configure --host=arm-linux --prefix=/home/{you user name}/cmpt433/SQLite_for_ARM CC=/usr/bin/arm-linux-gnueabi-gcc`
5. Build and Install  
`(host)$ make`  
`(host)$ make install`

### 2.3 Install SQLite on BeagleBone

1. Update apt repository cache  
`(bbg)$ sudo apt update`
2. Install SQLite3  
`(bbg)$ sudo apt install sqlite3`  
`(bbg)$ sudo apt install libsqlite3-dev`

3. Verify Installation

```
(bbg)$ sqlite3 --version8
```

## 3.0 Create Database and Copy over to BeagleBone

### 3.1 Create a database

1. (host)\$ sqlite3 {database\_name}.db

This will open up the new created database in SQLite terminal

```
SQLite version 3.34.1 2021-01-20 14:10:07
Enter ".help" for usage hints.
sqlite> |
```

2. In the sqlite terminal, you can create and modify sql tables

- a. Create table

```
(sqlite) CREATE TABLE contacts ( contact_id INTEGER PRIMARY KEY,
name TEXT NOT NULL, phone TEXT NOT NULL);
```

- b. Insert records in table

```
(sqlite) INSERT INTO contacts (contact_id, name, phone) VALUES (1,
"Bob", "1112223334");
```

- c. Show all records in table

```
(sqlite) SELECT * FROM contacts;
```

```
sqlite> SELECT * FROM CONTACTS;
1|Bob|1112223334
2|Lacy|1143563334
3|Mark|113546734
4|Karen|11167895634
```

- d. Delete records from table

```
(sqlite) DELETE FROM contacts WHERE name = 'Bob';
```

- e. Search for record in table

```
(sqlite) SELECT * FROM contacts WHERE name = 'Karen';
```

```
sqlite> SELECT * FROM contacts WHERE name = 'Karen';
4|Karen|11167895634
sqlite> |
```

- f. Delete table

```
(sqlite) DROP TABLE contacts;
```

## 4.0 Troubleshooting

1. Verify that a binary sqlite3 appears and libraries are placed in .libs directory:

- a. (host)\$ ls -l .libs

## 5.0 References

<https://vhernando.github.io/sqlite3-cross-compile-arm-howto>