

## MariaDB Database Server

Microsoft Access is not really designed with multiple users in mind. In fact, there is barely any support for multiple user access at all. MariaDB, on the other hand, is very similar to Access (they are both SQL relational databases) but has much better support for multiple user access. In order to accomplish this however, we need to put the MariaDB database on a dedicated server, which is essentially a computer that does nothing else but host the database. Multi-user support in MariaDB is basically made possible by the ability for the database to directly use the server's computing resources (CPU and RAM) without competing with other programs that would compete with it on a general purpose laptop.

Users access the database remotely through a frontend client on their laptops, which connects to the server via wifi (a local network, not connected to the internet). Microsoft Access or an R Shiny interface can be setup as a frontend client when doing data entry and/or querying. However the data is not stored in Access or R, it actually resides on a microSD card on the server - when we make changes or run a query on the client, they are being implemented remotely. The use of a dedicated server enables us to (a) keep things unified in a central directory, (b) allow multiple users to access and update the database simultaneously, thanks to the use of hardware resources that enable data to be constantly updated with greater efficiency, (c) maintain scheduled, automated and properly-named backups on a separate drive connected to the network.

## Raspberry Pi

Raspberry Pi is perfect for this task. It is a small, low-powered and low-cost computer that is commonly used among the maker, hacker and DIY community. It is very well suited for single-purpose computing. Slightly bigger than a credit card and costing only 30\$ (I have one that I haven't used yet that I will donate to the project), you can connect (or not connect) any peripherals that support your purpose. Below is a design plan for how I envision our set-up to look. All of this can be stored in a toolbox and assembled in a matter of minutes. I would ensure that the database initialized upon startup, so that we don't even need a display, mouse or keyboard to get started.

**This is essentially a DIY remote database kit.**

