

Back-To-The-Future Clock



Just in time for the 4th of July weekend in 1985, Universal Pictures released the motion picture “*Back to the Future*.” At a cost of \$19+ Million, the movie went on to gross nearly \$400 Million.

In addition to the high return on the investment, the movie created a nearly cult-like following. The most iconic artifact from the movie was a 1982 DeLorean.

This car was a nuclear-powered time machine with a time-circuit that displayed the departure time, current time, and destination time. This was programmable by a small keypad. The device was located in front of the dashboard between the two seats.

As a clock aficionado, the time-circuit is begging to be repurposed as a desktop clock. There are several examples of Makers who have taken this on over the years.

I found a very interesting example of this on *Thingiverse*¹ by a very creative Maker named *jeje95*. His implementation includes a very realistic 3D printed case, and three rows of colored LED displays.

Powered by an Arduino and a real-time-clock (RTC) circuit, this clock is a fine example of the Maker community ingenuity.

This clock was beckoned me to hack it, and I took on the challenge.

Here is my list of this clocks' short-comings:

- You have to program it to set the times
- It cannot connect to the Internet (No NTP)
- It is not configurable
- The AM LED's are inoperable
- It provides no user interface
- You cannot connect to it (ssh)
- There is no way to hack it without effort

Little did I know how much work it would take to take this brilliant idea to the next level.

The journey required me to learn how to program a web service (e.g. flask) and a whole lot of other skills.

Here is the list of my BTF clock features:

- Dumped the Arduino for a Pi Zero
- Accurate RTC with rechargeable battery
- Hosts a wireless access point (AP)
- Hosts a configuration web server
- Acts as a managed WiFi client
- Synchronized time with Internet NTP
- Programmable time settings
- AM & PM LED's are active
- Brightness controls
- Sleep mode to blank display at night
- Hackable
- Installation script included
- Detailed documentation

The result of my efforts is a clock that really gets people's attention when they see it. Not only that, they can easily set the last-departure-date and destination-date with their smart phones.

This is great for parties or any celebration where a previous or future date is significant.

To build the clock, you will need the following:

- Access to a 3D printer to print the case
- The parts on the BOM list
- Minimal soldering skills
- Ability to install Raspbian on a SD card
- A desire to learn
- A fair amount of effort

If you are an experienced Maker, this project may not be much of a challenge for you.

If you know your way around a Raspberry Pi, but have not stretched your skills, this project is perfect for you.

If you **MUST** have this clock on your desk, and you have limited Maker skills, you **CAN** build this clock. It might take some effort, but the detailed documentation will guide you.

This project was designed for fun. It is not a commercial product. All trademarks and copyrights of *Universal Pictures* are honored here. It is a tribute to the brilliance of the filmmakers.

¹ <https://www.thingiverse.com/thing:2980120>