DIY DEVICES

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DIY Cellphone

The DIY Cellphone is a working (albeit basic) cellphone that you can make yourself. It can make and receive phone calls and text messages, store names and phone numbers, and display the time. It builds on the hardware and software in the Arduino GSM Shield but extends it with a full interface, including display, buttons, speaker, microphone, etc. The source files for the cellphone are hosted on GitHub (hardware, software), which also includes an issue list where you can file bug reports or request enhancements.

VARIATIONS

There are two main variants of the DIY cellphone: one that uses a black and white LCD like those found on old Nokia phones and one that uses an eight-character matrix of red LEDs. The LCD shows more information (six lines of fourteen characters) but breaks over time. The variant with the LED matrix is harder to use but the display is more robust.

MAKING THE PHONE

Making the DIY cellphone can be a fairly involved process but it doesn't necessarily require specific electronics expertise. You'll need to order the circuit board and electronics components (about $200 total) and have access to some other electronics tools. There's a good amount of fine hand soldering to be done: about 60 components, mostly surface-mount, which can take from one to five or ten hours, depending on your experience. Programming and, especially, debugging the phone can take a while – again, depending on your experience and how much goes wrong. Making the case requires some plywood and veneer, along with access to a laser cutter (or you can find your

own way to enclosure the circuit board). In short, this is a difficult but
potentially do-able project.

DESIGN FILES

The design files and source code for the cellphone can be found on GitHub:

- Hardware: damellis/cellphone2hw
- Software: damellis/cellphone2

Next: Ordering the Circuit Board **»**

14 Responses to "DIY Cellphone"

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1. *Jake* says:
   February 16, 2015 at 7:53 pm

   This looks like a very interesting project that I'd certainly like to try out, but
   as for choosing which variation to get, you said that the LCD breaks over
   time… About how long does it last before breaking? I'm debating whether
   to just replace it when it breaks for the $4 it costs on eBay, but if it's gonna
   break a lot, it's not worth it. I'd just like a general time frame, such as it'll
   last a few months, it'll last a year, it'll last around five years, etc. Thanks!

   Reply

   - *admin* says:
     February 16, 2015 at 8:55 pm

     It broke after about a month of being carried in my pocket every day. If
     you're not going to use it full time, or will carry it in a gentler way, it will
     probably last much longer.

     Reply

2. *Peter Jenkins* says:
   [May 25, 2015 at 6:05 pm](May 25, 2015 at 6:05 pm)

   This is a really neat project. Is the finished product suitable for full time
   use as a primary communications device?

   How's the battery life?

   Is it comfortable to carry in a pocket?

   Reply

3. *admin* says:
   [May 25, 2015 at 7:43 pm](May 25, 2015 at 7:43 pm)

   Thanks! I've been using one of these for more than two years now. It
   works well, as long as you're okay with the limited functionality. (There is a
   phone book and alarm clock, and you can send and receive both phone
   calls and text messages.) The battery lasts about a day and a half or two
   days. The phone fits reasonably well in a pocket.

   Reply

4. *allandnnn* says:
   June 20, 2015 at 8:06 pm

   Is this end game or are you looking to improve it will there be a diy
   Windows/android variations. Are there any interested in moving to a slim
   always with you variant like a hidden earing cellphone that operates via

Bluetooth and WiFi recharged by Thermoelectric generator that sends the screen to a diy glasses setup and glove or arm band touchpad I bet it could be done for only a couple hundred or less

Reply

- *admin* says:
  June 21, 2015 at 7:04 pm
  I'm not planning on working on any smart phone (e.g. Android) versions at this point. It might be more complex than is feasible for an individual hobbyist.

  Smaller form factors would be cool but it might be hard to get reasonable battery life in that kind of size (and the components required are somewhat big). It would be interesting in experiment with, though.

  Reply

5. *Duncan* says:
   July 18, 2015 at 12:27 am
   Impressive work! What is the difference (weight, size, battery life) between the version with an lcd screen and the basic version?

   Reply

   - *admin* says:
     July 19, 2015 at 7:39 pm
     There's not much difference along those lines. The main difference is that the LED matrix is more robust, lower resolution, and more expensive than the LCD.

     Reply

6. *Johnathan* says:
   July 20, 2015 at 6:41 pm
   I wan to build one of these I need a complete list of components please

   Reply

   - *admin* says:
     July 20, 2015 at 8:55 pm
     The components are listed in the PDFs linked from the "getting the parts" page.

     Reply

7. *Jay* says:
   July 28, 2015 at 4:09 pm
   Cool project! However, there are fully featured phones that are less than $200, and $20 phones with similar functionality. I'd try to help with making a case if it can handle calls, voicemail, text, was smaller (blackberry pearl size), cheaper than $50, and with hotspot feature on 4g lte gsm.

   Reply

8. *Garnet* says:
   August 26, 2015 at 8:43 pm
   David – or others: I'd like to help update this design from the M10 GSM Module to a 4G-capable cell module that would accept virtually any SIM card globally, perhaps a Quectel EC20 (http://media.wix.com/ugd/d9dfe6_360c5596dc0f4c4fa3b7812dd6f1cf54.pdf)

or something like a ZTE ME3860
(http://www.ztewelink.com/…/produc…/module/20140811/2235.html) – or
any other highly compatible cellular module. I have some funds available
to develop this – please give me a shout if you're interested in doing this
or know somebody that would be interested in taking this on.

Reply

9. *Tim* says:
   October 3, 2016 at 2:44 pm
   Has there been any activity on this project lately? I have the parts for two
   phones, but I'd like to add Bluetooth, as it is illegal to drive and talk without
   a hands-free solution.

   I seem to remember the forums being active before (a couple years ago,
   probably), but now I'm met with 403's when I try to access it. I haven't
   found any archives of it either.

   Reply

   o *admin* says:
      October 3, 2016 at 5:54 pm
      I haven't made any updates to the project lately. The forum was getting
      too much spam, so I took it down. Adding bluetooth sounds like a cool
      project, and potentially not too difficult with the right components.

      Reply

Leave a Reply

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