Techno Tips

My $5.00 Computer

By Antonio Hernández

The title is correct. The computer that I am using to write this article cost five dollars. The monitor is excluded from that price, but the computer can connect to any available television set or spare computer monitor.

I remember back in 1984 when I purchased my first IBM Personal Computer (PC). I was one of the early adopters and it cost me over four thousand dollars, with some software included. How could it then be possible that more than 30 years later you can purchase a more powerful and totally functional computer, with operating system and software, for a fraction of that cost?

There are several reasons that explain this:

- There has been a change from one transistor to several ones in a capsule or "Chip" and the large-scale-integration (LSI) of these components in one chip. Today this has evolved in a way that you can have systems (processor and peripheral components) fully functional in a chip.
- Large scale production of integrated electronic components drives down the cost of producing each chip.
- Moor's Law: every 18 months, the electronic components in a chip will double.
- Engineers' ingenuity

For these reasons, every day we have faster, more powerful computers with larger data storage capacities that you couldn't have dreamed of when the first computers were available on the market. The use of personal computers has been pervasive in our everyday life due to the use of the internet and as a preferred mechanism for communication through email and electronic messages.

Throughout this fast evolution, one of the most important breakthroughs in the line of miniaturization was the production of the System on a Chip (SoC) Module, along with the idea of a professor at Cambridge University, who was looking for low-cost computer platforms for his students to get involved in computer science. With this idea in mind, he began a project in 2011

for production of 10,000 boards nicknamed "Raspberry Pi Model A." The impact and demand for these boards was of such magnitude that, on its release day, mail orders were placed for 100,000 boards. http://www.raspberrypi.org
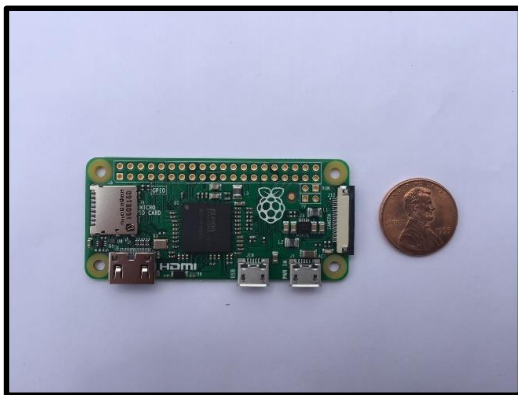
The objective of the project was to have a product available for under US $30. This Raspberry Pi circuit board would include all of the options to be used as a fully operational computer, including general purpose processing capabilities, RAM -

Figure 1. Raspberry Pi Zero