



IIITD: System Management 2011

This blog is to provide a forum for students enrolled in Systems Management Course at IIT-Delhi to have a meaningful discussion related to the course.

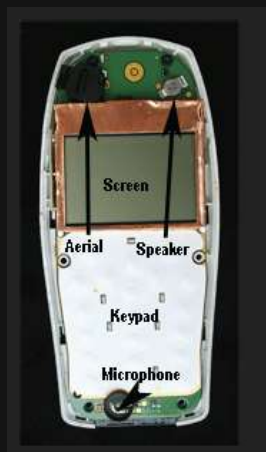
Saturday, 1 October 2011

COMPONENTS INSIDE A MOBILE PHONE

Mobile phones are most used and familiar device based on their complexity per cubic inch. Modern digital cell phones can process millions of calculations per second in order to compress and decompress the voice stream. They are essentially miniature, specialized computers. Both regular mobile phones and smartphones have the same basic components that allow them to take and make calls.

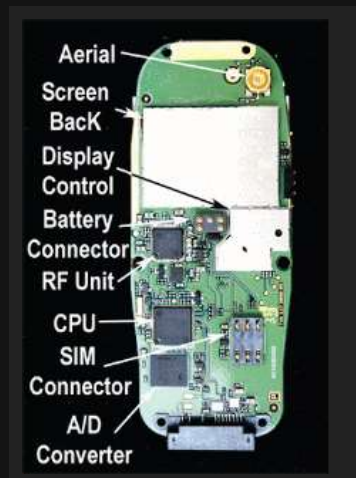


Following are the basic mobile phone components:



CIRCUIT BOARD

The circuit board of the cell phone is essentially the brain of the operation. The circuit board allows all other parts of the cell phone to communicate with one



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another, and keeps the cell phone working. Circuit boards consist of a few computer chips. There are both digital-to-analog and analog-to-digital conversion computer chips within the circuit board. They convert audio signals going out from analog to digital, and then they convert the audio signals from digital back into analog.



Microprocessor

A mobile phone's microprocessor is its most crucial component. Like a CPU in a computer, it processes input from the keypad and speaker and output to the microphone and display screen. It also runs all the programs installed on the phone, such as the address book, stopwatch and music player programs. If the mobile phone has a camera installed on it, it will also connect to the microprocessor. The DSP is a "Digital Signal Processor" – a highly customized processor designed to perform signal manipulation calculations at high speed. This DSP is rated at about 40 MIPS (Millions of Instructions per Second) and handles all the signal compression and decompression. The microprocessor and memory handle all of the housekeeping chores for the keyboard and display, deal with command and control signaling with the base station and also coordinate the rest of the functions on the board.



Flash Memory and ROM Chips

Tools for Web Crawling

PEER TO PEER COMMUNICATION In these days, it has b...

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Followers

The flash memory and ROM components of the cell phone circuit board serve as a storage location for the phone. They store the customizable options of the cell phone, as well as the entire operating system. The power and radio frequency sections of the circuit board work on the phone recharging as well as its management of power. It also controls several hundred FM channels, as well. The RF amplifiers focus on signals that go in and out of the phone's antennae.

Flex Cable Wires

These are wires that is made into a flat thin wires used as an interface to connect from one circuit or components to another. It is called "Flex" means Flexible others also called it a "ribbon wire".



Antenna

The antenna allows a mobile phone to take and receive calls. Similar to a radio antenna, the antenna in a mobile phone can pick up electromagnetic waves of certain frequencies. These waves are similar in frequency to microwaves, or high-frequency radio waves. The signal is then relayed to the microprocessor and relayed to the speaker as a sound wave. Between the antenna and the microprocessor sits the transmitter, or the component responsible for taking the recording, turning it into an electromagnetic wave and releasing the signal.

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Battery

Lithium ion batteries are sometimes used, as they are lighter and do not have the voltage depression that nickel metal-hydrate batteries do. Many mobile phone manufacturers have now switched to using lithium polymer battery as opposed to the older lithium ion. The main advantages of this being even lower weight and the possibility to make the battery a shape other than strict cuboid. A cell phone may also have a secondary backup battery for running the clock. As a cell phone clock usually synchronizes its time with a central server, this is only needed in low-signal areas. Formly, the most common form of mobile phone batteries they have a low size and weight.



Power Management Unit Block.

The PMU block provides power to the various sections of the IC so that a single

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- Unknown
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power source from the host can be used, employing internal regulators for each power domain.



Speaker and Microphone
























A mobile phone also contains a speaker and microphone, both of which are directly connected to the microprocessor. The speaker transmits sound to the phone user, while the microphone picks up the user's speech. Mobile phones that contain a music player also use the speaker to play music. Sound from a mobile phone can also be diverted into headphones or a handset.



SIM Card

A Subscriber Identification Module (SIM) is the primary mode of permanent storage in a cell phone. It stores your identifying information, including your phone number and service provider. This ensures when someone dials your number, the phone knows the call is for you and connects you to the caller. If you transfer this card between phones, the new phone will respond to that number instead of the old one. A cell phone without a SIM card cannot be used to make or receive calls. Some SIM cards also store ringtones and other user data; however, they do not store very much data compared to other storage devices such as micro SD cards.



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-  Rohan Garg
-  devansh & anirudh
-  Siddhant Jain
-  Romil Bhardwaj
-  Nishtha
-  Charupriya Sharma

SIM CARD READER

When you switch on your phone with a "live" SIM card inside, the subscriber information on the chip inside the SIM card is read by the SIM card reader and then transmitted digitally to the network via the RF unit. The same route is followed when you hit the Call button (and its variants) on the cellphone: the number you've inputted is instantly and digitally transferred to the network for processing.



CODEC (compressor/decompressor) AND RF UNIT

This DSP's voice processing is done in tandem with highly sophisticated compression technique mediated by the "CODEC" (compressor/decompressor) portion of the cell phone. The CODEC chipset instantly transfers compressed information to the cell phone's Radio Frequency (RF) unit. This RF unit, which is essentially the transmit and receive section of the cell phone, then sends out the voice or data information via the cell phone antenna, over the air and on to the nearest cellular base station - and ultimately to your call destination.



DISPLAY

The mobile display shows all our call, phone, signal and network

information. Virtually all mobile phones have an integrated display device, some with touchscreen function. The mobile phone's screen is shielded with copper around the edges to isolate it from radio interference and the internal housing of the phone's aerial. The main measurements for screen size varies greatly by model. Manufacturers use different methods to specify display size, usually width and height in pixels or the diagonal measured in inches.



HOPE THE GIVEN INFORMATION HELPS YOU IN MOBILE BASED RESEARCH PROGRAMMES IN FUTURE.

Posted by abhishek lakra at 10/01/2011 11:29:00 pm



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