

ECE

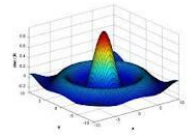


Heritage Institute Of Technology

Department of Electronics and Communication Engineering
presents



ece – DIARY



Edition : January, 2012



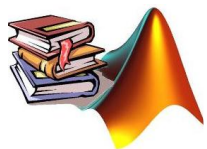
Protect Your Smartphones From Viruses



**Irritated with slow Internet connection:
use this tricks**



Speed Hacking : want to increase your download speed



*PLAY WITH
MATLAB*

Ask google to do your HACKS!
assignments and presentation



Smart Phones and Electronics & Communication



i- world - almost inseparable from the lives of thousands of gadget freaks all around the globe



Electronics And Communication Engineering



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
Heritage Institute Of Technology

PROUDLY PRESENTS

 **ece – DIARY**

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Message from



*Prof. B.B. Paira,
Director,
Heritage Institute Of Technology*

I feel delighted to learn that the students and the faculty members of the Department of ECE are bringing out an e-journal for reporting the creative activities of the department.

I heartily welcome the venture and wish the talented faculty and students a great success.

Message from



*Prof. (Dr.) Sambhunath Biswas
Deputy Director
Heritage Institute Of Technology*

I am extremely delighted to learn that the Department of Electronics & Communication Engineering of Heritage Institute of Technology is bringing out “ece - DIARY” .

I wish the venture a grand success.

Message from



*Prof. Siladitya Sen
Head Of The department
Electronics & Communication Engineering
Heritage Institute Of Technology*

I feel extremely happy to see that our ECE students have been able to bring out the first edition of the e-magazine “ece - DIARY” .

The enthusiasm and dedication of our students have given birth to this wonderful concept, which, I am sure will be appreciated by one & all.

I wish them all success in their future endeavours!

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 - ✓ *Bluetooth Remote Control.. From your mobile phone*



IRRITATED WITH SLOW INTERNET CONNECTION: USE THESE TRICKS



The telecom services have been recognized the world-over as an important tool for socio-economic development for a nation. It is one of the prime support services needed for rapid growth and modernization of various sectors of the economy. Indian telecommunication sector has undergone a major process of transformation through significant policy reforms, particularly beginning with the announcement of NTP 1994 and was subsequently re-emphasized and carried forward under NTP 1999. Driven by various policy initiatives, the Indian telecom sector witnessed a complete transformation in the last decade. It has achieved a phenomenal growth during the last few years and is poised to take a big leap in the future also.

Internet Usage and Population Statistics:



YEAR	Users	Population	% Pen.	Usage Source
1998	1,400,000	1,094,870,677	0.1%	ITU
1999	2,800,000	1,094,870,677	0.3 %	ITU
2000	5,500,000	1,094,870,677	0.5 %	ITU
2001	7,000,000	1,094,870,677	0.7 %	ITU
2002	16,500,000	1,094,870,677	1.6 %	ITU
2003	22,500,000	1,094,870,677	2.1 %	ITU
2004	39,200,000	1,094,870,677	3.6 %	C.I. Almanac
2005	50,600,000	1,112,225,812	4.5 %	C.I. Almanac
2006	40,000,000	1,112,225,812	3.6 %	IAMAI
2007	42,000,000	1,129,667,528	3.7 %	IWS
2009	81,000,000	1,156,897,766	7.0 %	ITU
2010	100,000,000	1,173,108,018	8.5 %	IWS

In this present scenario have you ever wondered how to make your internet connection faster or how to increase browsing speed? If you are trying to get things done, there is nothing like a slow connection to thwart your best efforts. But there are things you can do to browse faster – even when your internet connection is working slowly.

This article will show you how to increase your productivity when your connection is slow. Many of these steps are also good tips for how to increase the speed of browsing and of sending and receive email.



Tips to speed up your internet connection:

1. Find the browser that works for you

Most people still use Internet Explorer, even though it's not the fastest browser out there. If you are an active internet user, it would be a good idea to check out different browsers, like Chrome, Firefox, and Opera to see which one works best for your connection type and your hardware configuration. For example, Chrome is particularly good for computers that are low on RAM, as it's not as memory hungry as Firefox and IE.

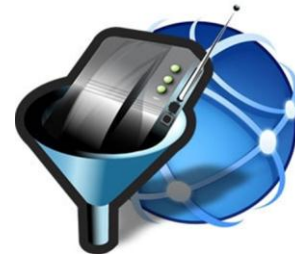


2. Tweak your router

If you are using a router, you can probably speed up internet by adjusting the router settings. There are too many routers to give specific advice, but most routers can be tweaked to open up ports and boost your Internet speed. Just check the manual for things that can be done to improve performance or use Google to find answers for your particular router.

Before you do any tweaking, check whether you are close enough to the router when you use the Internet. Being too far away from it can make the connection really slow and unstable.

Another thing you should try before changing any settings is to restart your router. Sometimes this simple action can dramatically speed up your Internet connection.



3. Prevent unauthorized access



If you are using wireless Internet connection, make sure that you are not sharing it with the whole neighbourhood. The more people use your connection, the slower it is for you. So at the very least set up a WEP password to stop unauthorised users from using your Internet connection. Or if your hardware is compatible, set up WPA encryption.

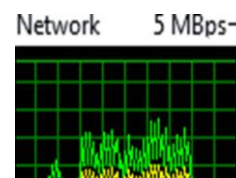


4. Calculate your bandwidth usage

There are many applications that will use you bandwidth in the background, like Windows Update, Windows Live Messenger, Skype, Real Player, Abode Reader updates, and other similar software. Most of them usually start automatically when you log on to windows and connect to the Internet as soon as there is a connection. This means that these programs use your bandwidth when you are not actually using them.

Most of these applications can be configured not to start on windows log-on or to at least ask permission to connect to the Internet.

If your Internet connection speed dropped all of a sudden for no apparent reason, check your computer for malware and spyware. Malicious software often uses you Internet connection to send information to its developers.



5. Perform some basic PC maintenance

If your computer is slow, it doesn't matter how fast your Internet connection is – everything will be slow because your computer can't cope. The answer to that is to keep your computer in good shape and perform regular maintenance like disk cleanup and defrag, registry, and other tasks like monitoring your startup items and optimizing windows services. This way you will not only speed up computer performance, but also speed up your Internet connection.



Tips to browse faster:

1. Send multiple files faster by compressing them

If you're sending multiple files – for example, several files related to a single project – you can reduce their combined size by using a compression utility. Compressing your files dramatically reduce the time needed to send files online, and compressed files don't take up as much space in your (or the recipient's) email inbox. Winzip is one of the most common compression tools.



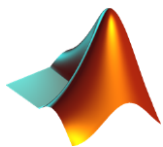
2. Increase browsing speed by turning off graphics in Windows Internet Explorer

Graphics are important to web pages, but they also take time to download if you're online. You can turn them off to speed your internet browsing.

3. Send email using contact Groups (Distribution Lists)
4. Reduce email size with simple email signatures
5. Work offline using cached exchange mode in outlook
6. Browse offline by saving web pages on your computer
7. Open webpages faster by increasing you cache



UDAY LAL SHAW
ECE 3RD YEAR



PLAY WITH MATLAB

Matlab is a very important tool for all engineers. But do you know that you can literally play with MATLAB. It allows you to perform functions that you may have never known about. Let us have a look:

y=wavrecord(N,F_s)

Lets you record sounds through the input audio device of your PC.

Here N samples of a signal (audio) are sampled at F_s Hz

The default values of N and F_s are 8000 and 11025 respectively.

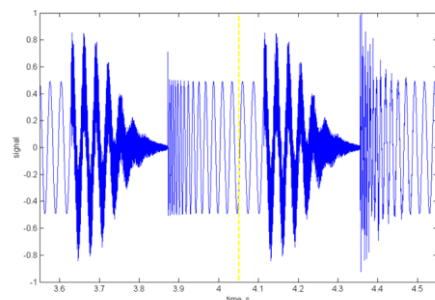
When you press enter after typing this command, the status of MATLAB remains busy as long as the wavrecord command runs. Speak into your microphone during this period to record the sound.

One more way of using this command is as follows:

Example:

```
Fs = 11025;
y = wavrecord(5*Fs, Fs, 'int16');
wavplay(y, Fs);
```

The above example Record and play back 5 seconds of 16-bit audio sampled at 11.025 kHz.



wavwrite (y, Fs, Nbits, 'drive:\filename.wav')

Writes the data stored in y to a file named filename.wav on the disc. Fs is the frequency (default is 11025 Hz) and Nbits is the number of bits in each sample (8,16,24,32).

z=wavread ('drive:\filename.wav')

This command reads the saved sound under the name filename.wav from the path specified in drive.

wavplay (z,Fs)

Lets the users to play the recorded sound saved in the vector z;

Example:

The following code will record sound for 10 seconds and write the information in y to d drive under the filename x.wav. It will then play the sound in matlab.

```
Fs=11025;
Y=wavrecord(10*Fs,Fs,'int16');
Wavwrite(y,Fs,16,'d:\x.wav');
z=wavread('d:\x.wav');
wavplay(z,Fs);
```



It would be an interesting thing to listen to t d file
would have to be reversed. To reverse the sound file, Let us look at the following piece of code:

```
r=z(end:-1:1);
wavplay(r,Fs);
```

Tip: Read out from a to z and then from 1 to 20. Perform the above operation. What do you hear?? It seems that you're speaking some sort of an alien language!!! Hilarious.

There are some default sounds in Matlab 7. One of which is given below:

To listen to a small piece of music:

```
load handel;
sound(y,Fs);
```

it plays a part of Handel's Hallelujah chorus. Enjoy!

Hope you enjoyed getting to know these secrets. Keep trying different things in Matlab and you'll discover a treasure.

DEBOPAM GHOSH
ECE 3RD YEAR



EXPLORE GOOGLE

How do you easily find information about anything (or anyone)? You “google” it (or them) using Google’s Web search. For many (if not most) people, the Google Web search engine is the information gateway to the Web (and the world).

You probably know that it’s easy to enter almost any words or names in the Google Web search engine and get useful search results back. But you may not know that you can also enter many specialized numbers into Google’s



Web search box — such as shipment tracking numbers, product codes, and more — and get useful results. This article is all about some of the specialized information you can request from Google, how to use Google shortcuts to get information about stocks and travel, and how to use Google’s wonderful “secret” calculator.

Google is the world’s biggest one-stop shopping mall for finding information on the Web. Most likely, you already know about — and have used — Google’s Web search functions. But you may not know about some of the other “shops” that are part of the Google Web information mall. In this article, I list many of the hidden parts of Google — including Google Answers, Google Directory, Google News, and Google Scholar.

Searching using Google’s rules



Even with simple Google keyword searches, there are some basic rules Google follows that you need to know about to get more out of your searches:

- ✓ Google searches for all words (well, most words — see the next bullet) in a simple query.
Example: *midwest blizzard* yields different results than *moscow blizzard*.
- ✓ Google ignores many common words — such as *and*, *for*, and *the* — also called *stop words*, and most punctuation.
Example: A search for *to be or not to be* does not provide meaningful results (such as a link to Hamlet’s famous soliloquy) because *to*, *be*, and *or* are all stop words. In effect, this search is the same as searching for the word *not*.
- ✓ Google finds results anywhere in a document, not just in its text (for example, within the HTML title of a page).
Example: Search for *organic farm* and Sun Organic Farm appears near the top of the search results list because of its Web address (www.sunorganic.com) and title, Sun Organic Farm.
- ✓ Google cares about word order: The first word is the most important in a search, and so on, reading left to right.
Example: Just switch the word order to *farm organic* and it’s a whole new search.
- ✓ Google returns pages ordered by *PageRank*, a measure that Google use to gauge a page’s popularity.
Example: Search for *music* and you won’t be surprised to find MTV near the top of the result set, but you will be surprised if your garage band’s Web page is. You’re not famous . . . yet.
- ✓ Proximity matters: If the words in your search are close together in a result, that result will be returned before results where they are not close together.
Example: The search *moscow birthday* leads to different results than *birthday moscow* (the results of the first search are centered around the city of Moscow and happen to have birthday in them, while the results of the second search are pages about birthdays — such as Michelangelo’s — that for one reason or another happen to also include a reference to Moscow).



- ✓ Google is case-insensitive: Google does not care about capitalization.
Example: *moscow* and *Moscow* are the same thing (er, place) to Google.
- ✓ Simple Google searches are limited to ten keywords.

Google finds its results depending on words that occur in Web pages (and that match your search words), not by analysing your search phrase for its meaning. See the section, “Searching for words, not meaning,” for more information.



Effectively searching

Your simple Google searches can be highly effective, but they will probably work better if you follow these suggestions:

- ✓ **Be specific:** Targeted keywords work better than more general keywords (so the more you learn about a topic, the more likely you are to create successively more effective searches). For example, if you are looking for information about environmental impact statements in Alameda County, California, a search for *environmental impact alameda country* gives you much better information than a search for *environment northern*.
- ✓ **Use both singular and plural forms of words:** To Google, singular and plural forms of words are different words. You may need to try both singular and plural forms in successive searches. For example, if you are interested in monks and medieval music, a search for *monk polyphony* yields different results than a search for *monks polyphony* (so you should run both searches for the most useful results). You can run both searches together by combining the single and plural forms, for example, *monk monks polyphony*.
- ✓ **Use distinctive and important keywords:** If you can think of an unusual word that will most likely appear on most pages with information you are interested in, then you are most of the way to an effective, but simple, Google search. For example, if you are looking for material with information about building software that customizes Google, the search term *Google apis web service* probably works well — better than *program Google*.



The Google calculator

The Google calculator does arithmetic for you, and also performs more complex calculations. You just have to use the syntax specified by Google — see www.google.com/help/calculator.html for complete information about using the calculator — and enter your expression for calculation.

For example, enter $42*12$ in the Google box and click the Search button. The answer (504) appears on the results page, along with a link so that you can learn more about the calculator. Another link appears to search for the query $42 * 12$, just in case you really meant to search rather than to calculate.



Enter the expression $2*\pi*26$ into the Google search box and click the Search button. This expression evaluates to 163.362818 (which is the circumference of a circle with a radius of 26).



Mining Google for Information











Google has a lot more going on than meets the eye. The simple, elegant exterior of the Google search form is the visible tip of a vast submerged iceberg.

You can get beneath the Google surface with relative ease. For example, to open the Google Advanced Search, simply click the Advanced Search link on the Google home page, or open the URL www.google.com/advanced_search in your browser.

In addition to the Google Advanced Search window, here are some other hidden parts of Google that provide valuable information and/or tools for researchers:



- ✓ **Google Answers:** Google Answers is a service that allows users to name their own price to get research questions answered. Browsing questions and answers is free — and very informative — but you need a Google account to post a question. You can open Google Answers at www.answers.google.com. 
- ✓ **Google Directory:** Google Directory uses the categorization scheme and sites selected by the Open Directory Project to find information that has been vetted by experts. The URL for Google Directory is <http://directory.google.com>; 
- ✓ **Google Groups:** Google Groups lets you search through millions of bulletin board posts made on every conceivable subject (Google Groups are the very same Usenet Groups that predate the Web, only with a new name). In its most recent version, Google has extended Google Groups, adding tools and group list management features that go beyond anything available through the old Usenet. You can find Google Groups at <http://groups.google.com>. 
- ✓ **Google Images:** Google Images lets you search for pictures on the Web. This service has some surprising uses for researchers. You can open the Google Image Search at www.google.com/imghp?hl=en. 
- ✓ **Google Language Tools:** Google Language Tools lets you choose a geographic area to search, translate text, and translate Web pages by providing a URL. You can also choose another language for the Google interface (such as the Search button) if English isn't your native language or if you just want to read everything in, say, Portuguese. You can open Google Language Tools at www.google.com/language_tools?hl=en. 
- ✓ **Google News:** Google News Search provides links to recent news items. If you have a Google account, you can set up automated search results on a topic and have the results e-mailed to you. You can open Google News at <http://news.google.com>. 
- ✓ **Google Scholar:** Google Scholar lets you search for academic, peer reviewed articles and citations. You can open Google Scholar at <http://scholar.google.com>. Google Scholar is currently in beta. I've included information about it here because scholarly materials are potentially extremely important to some kinds of research. 
- ✓ **Google Video:** A pilot program that lets you search the transcripts of selected television shows displays the transcripts and still photographs. See <http://video.google.com> for more information. In addition, Google has recently announced the digitization of major portions of research libraries including Harvard, the University of Michigan, Oxford, Stanford, and the New York Public Library. As this progresses, resources from the libraries will be available through Google. 

Introducing Simple Operators

Operators are used in conjunction with Google search terms and have a special meaning to Google. They are not included in the subject of a search, but rather change how Google works when it performs a search. Thus, the operator AND signifies that two words should be searched for together. The operator OR looks for one term or another to show up in the search results.

I talk about AND, OR, +, and – operators in this section.

Although words entered as Google search terms are not case sensitive, Google operators are. You must type **AND** or **OR**. You cannot enter them as **and** or **or**. (Alternatively, you can use the pipe operator, |, as the OR operator.)

Understanding Google operator options

Google uses a rather simplistic set of query operators that do not correspond completely to standard Boolean or SQL systems. (For more information about Boolean operators and Boolean logic, try searching for those terms on Google. SQL, or Structured Query Language, is used for interacting with databases.)



Understanding the AND operator

The AND search operator is the explicit conjunction operator that tells Google that the terms on either side of the AND operator should be included in search results. By default, even if you don't use an operator, Google provides search results for multiple keywords as if you'd used the AND operator (this fact explains why AND isn't used too often). However, using AND instead of the implicit conjunction makes it clear what is going on and makes it easier to transfer your results to a search engine (or database) that does require the explicit use of an AND operator (such as an SQL-driven database).

The OR operator

When you use the OR operator, you tell Google, "Match *any* of the terms connected by the OR operator" (as oppose to AND, which requires *all* the terms to appear in search results).

One of the best uses of the OR operator is when you're not quite sure of the spelling of a term (looking for *autochthonous?*), or when the term has several variations (*email OR e-mail*). Or perhaps you want to include both singular and plural forms of a word (*ant OR ants*).

Sometimes OR works if an item is known by more than one term. For example, the search

`wireless device OR computer OR network`

returns pages that contain the words *wireless* and *device* or *wireless* and *computer* or *wireless* and *network* wireless and any two or three of the other terms. In any event, the word *wireless* appears in the results.

The inclusion operator

The *inclusion operator*, signified by a plus sign (+), forces Google to include the indicated word on each page that is returned as a result. The inclusion operator, +, must come immediately before the term to be included, without any spaces.

The inclusion operator is most useful for reinserting the *stop words* that Google leaves out by default. Sometimes you really need to include stop words to get the best results. Never fear; the + is here. For example, if you search for

`Star Wars I`

the results omit *I* from the search results. (In fact, Google even displays a message to let you know that *I* is a very common word and was therefore omitted from the search.) If you're really looking for results related to the first episode of the *Star Wars* space opera, it's handy-dandy to be able to enter

`Star Wars +I`

and get search results related to *Episode I: The Phantom Menace*.

The exclusion operator

The exclusion operator requires Google to return results that do not include a specified term. This operator is represented by a minus sign (-) before the term to be excluded (no spaces are allowed between the operator and the excluded term).

Exclusion is one of the most useful operators a researcher can use because it allows you to clarify the context of terms. Many words are used across a number of fields. For example, a virus can infect a computer or a person. A search for

`virus -computer`

should, in theory, show only biological viruses. If you try this search, you'll see that in fact it includes biologic viruses, philosophic pseudo-religious viruses, and more, as well as some computer virus links. In contrast, a search just for *virus* returns primarily links about computer viruses. So the exclusion operator doesn't always work perfectly, but it does improve results.





Refining searches with inclusion and exclusion

Of course, you can combine multiple terms along with exclusion operators. This technique is likely to give you better results than just using exclusion operators (the inclusion operator is implied when you add any new term to your query).

For example, if you want to find biological but not computer viruses, using a search term that includes *virus* and *biological* and excludes *computer*, like this:

`virus biological -computer`

is a good idea. If you are looking for the fly genome, you'll get pretty good results if you include both *fly* and *genome* in your search. (There's really not much point in excluding *guy*, *airplane*, *airline*, and *fishing* as I do in the previous section because these terms don't come up in search results when you add the term *genome* to the mix.) But you might want to search for fly genomes that belong to flies other than the fruit fly. If so, you could include *genome* and exclude *fruit*, with excellent results:

`fly genome -fruit`



Working with Occurrences Operators

Unless you specify otherwise, Google matches your search terms to keywords located anywhere in the text of a Web page — and in a lot of other places, too, including the HTML elements used to create the page. This means that you sometimes don't get the most precise results when you use the default tools. For example, if you search for *best programming practices*, you may end up with a page that lists results of all three words in different locations, one in the header, one in a link, and another in the name of the page. In lower-ranked results, you may end up with pages that contain only two of the words, not located together. As I note in Chapter 4, you can put the search term in quotation marks ("*best programming practices*") to ensure that resulting pages contain the terms together, which improves your results considerably. However, with the *occurrences operators*, you can get even more specific with your directives to Google. For example a search for:

`allintitle: best programming practices`

returns results with all three words in the HTML title of a page, an even more pinpointed result than quoting the terms (because the fact that the words are in the title means that the Webmaster who created the page feels that they best describe the page).

The occurrences operators are used to pinpoint the occurrence of search terms in specific elements of Web pages and Web links. For example, you use one of the four occurrences operators beginning with *allin:* when you want *all the terms* in a search to be in a page or link element (such as the title of the page). You use one of the occurrences operators beginning with *in:* to make sure that *a single search term* is found in the specified page or link element. Operators that apply to a single term, like *intitle:*, must immediately precede the term without any spaces. On the other hand, some operators (for example, the *allin:* operators and *define:*) refer to all the terms in a search. These operators must go at the beginning of a search, can't be combined with other search operators, and they're usually (but don't have to be) followed by a space before the search terms they apply to.

You can specifically target four possible page and link elements with either the *allin:* or the *in:* operator. These groupings are shown in Table 5-1.

Table 5-1 Grouping the Occurrences Operators Where to Text of Links Text of a Title of a URL of a Look for to Page Web Page Web Page Web Page Terms:

Where to look for terms:	Text of links to page	Text of a webpage	Title of a webpage	URL of a webpage
<code>allin:(all search terms)</code>	<code>allinanchor:</code>	<code>allintext:</code>	<code>allintitle:</code>	<code>allinurl:</code>
<code>in:(single search terms)</code>	<code>inanchor:</code>	<code>intext:</code>	<code>intitle:</code>	<code>inurl:</code>



Here's a quick rundown of what these four terms mean:

- ✓ **anchor:** An anchor is the text that accompanies or makes up a description of a link. This is sometimes also called *link text*. The Web page that is opened when a user clicks the link is called the link's *target*.
From an HTML perspective, an anchor (or link text) is everything between `<a>` and `` tags.
- ✓ **text:** The stuff written in the actual HTML document that is in the body of a page and not part of an HTML tag itself.
- ✓ **title:** The name the Webmaster has given the HTML file, found in the `<head>` section of an HTML page between the `<title>` and `</title>` tags.
- ✓ **URL:** The *Uniform Resource Locator*, or address in human-readable form on the Web, of a Web page.

If you think about it, you only really need the `in:` operators: an `allin:` search of all terms within a specific element could be constructed using the AND operator with each search term. But having the `allin:` operator sure makes life easier for researchers! For example, the search `allintitle: Harold davis` is exactly the same as the search `intitle:harold intitle:davis`.

Table 5-2 shows all eight of the occurrences operators, what they mean, and an example of how each is used.

To get a better feeling for the examples in Table 5-2, you can use Google to search with them and take a look at the results.

Table 5-2 Using the Occurrences Operators

Occurrences Operator	What It Does	Example Query
allinanchor:	The pages returned are linked to by pages with all search terms in anchor text.	<code>allinanchor: best research tools</code>
allintext:	All search terms must appear in the text of the page.	<code>allintext: HTML tag</code>
allintitle:	All search terms must appear in the title of the page.	<code>allintitle: Form 1120</code>
allinurl:	All search terms must appear in the URL of the page	<code>allinurl:easter island statues</code>
inanchor:	Term (<i>deciduous</i>) must appear in the anchor text of links to the page.	<code>inanchor:deciduous trees</code>
intext:	Term must appear in the text of the page.	<code>intext:HTML</code>
intitle:	Term must appear in the title of a page	<code>intitle:10-k</code>
inurl:	Term (<i>CIA</i>) must appear in the URL (Web address)of a page.	<code>inurl:CIA</code>

How you can best use the occurrences operators (and the examples shown in Table 5-2) may take a bit of getting used to.



ARE YOU A GADGET FREAK: DISCOVER i-WORLD

The names 'Apple Inc.' and Steve Jobs have become almost inseparable from the lives of thousands of gadget freaks all around the globe. It has revolutionized the way people think about music, applications and even computers. And all that with just one alphabet-'i'. Presented below are some masterpieces of Apple Inc. which has taken the world by storm.

iCloud:



One of apple's newest technologies in the market is iCloud. It allows users to store their data online on remote servers from which data can be downloaded to any iDevice' or any PC with a Mac OS. And to top it all, these downloads can be done without even switching on the computer. This technology known as 'cloud technology' can thus provide a backup of all user data. It is even provided with the feature that it can track the location of any device like iPod Touch, iPhone, iPad or Mac. iCloud can be accessed by making a specific update of iTunes, another popular software under the Apple banner.

iPod:



Apple improved the already existent Mp3 player by introducing the iPod which immediately topped the sales charts worldwide. It is a portable device to carry all our favourite songs wherever we go. Thousands of songs, videos can be stored in an iPod and it even provides the option to buy songs from Apple's very own store, the 'iTunes' store. iPod comes in five models – Classic, Mini, Nano, Shuffle, and Touch. Classic and Touch models provide the users the luxury to watch films and other videos and even enjoy a few games. To sum it up, iPod provides a complete multimedia experience. Apple's main rival regarding Mp3 players, Creative Technologies once filed a lawsuit claiming that apple had violated one of its patents by introducing it in its iPod. Later Apple had to enter into an mutual agreement with Creative Technologies by paying a whopping US\$100 million. As per this agreement Apple bought Creative Technologies' license to use its patents in Apple's products and Creative Technologies agreed to license the patent.

iPhone 4S:



Apple's version of a smart phone which has become an instant hit as soon as it was launched, partly because it was the last Apple product that Steve Jobs could unveil personally. It works as a conventional mobile phone along with features of a personal computer. The most striking feature about the iPhone 4S is a voice recognition and talking assistant called 'Siri'. It allows the users to select any function through voice. This feature comes in particularly handy while driving or when both hands are full. It has a built in gyroscope which stabilizes the 8.2 MP camera while recording videos.



iWork:

iWork is Apple's equivalent of Microsoft Office. The features provided are almost the same except for the names. It was mainly developed for iOS and Mac OS. A service known as iWork.com allows users to share iWork documents online and receive feedbacks from other users world wide. The various applications of iWork package are Pages (word document), Numbers (spread sheet), and Keynote (presentation).



iTunes:

iTunes is the interactive software for transferring our favourite songs to iPods. It enables the users to watch 'Podcasts' – videos that are released specially for iPods. It also doubles up as an audio player and provides users the opportunity to make custom play lists comprising of songs that they love to hear the most.



iLife:

iLife is Apple's photo, movie, and music editing, organizing and publishing software application. It has the features of Photoshop, Microsoft movie maker etc combined into this unique package. It includes iMovie, the video editing and creation application allowing the users to make and edit their own videos. iPhoto provides similar functions to iPhoto but has the additional feature to print photos in a whole lot of ways. The music creation and editing software is known as 'GarageBand'. 'iWeb' application provides a unique opportunity to the users to create their own websites without any prior knowledge of HTML.



iPad:

Apples very own tablet computer was named iPad. It has a touch screen interface and it accesses the net through Wi-Fi network. The ambient light sensors are provided to adjust the screen brightness and its built in accelerometer senses the orientation of the iPad so as to switch between portrait and landscape. Although the various features have ensured that the iPad packs a punch, but with its 32 or 64 gb storage, it is mostly restricted for use in business purposes.



iOS:

iOS was the operating system introduced by Apple for mobiles, mainly iPhone. It is programmed in C, C++ and now it is used to operate iPod Touch, iPad also. Gesture like swipe, tap, pinch and reverse pinch are included as part of the interaction between the OS and the user. Google Maps, YouTube streamer are provided in this OS



DEBOPAM GHOSH
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PROTECT YOUR SMARTPHONES FROM VIRUSES



Today's smartphones are really pocket-size computers, capable of browsing the Web, sending messages, making online purchases, managing bank accounts, taking photos and much more. But while most people use security software on their computers to keep sensitive information safe, very few have security software installed on their smartphones. In fact, one recent report says only 4 percent of smartphones and tablets are protected against viruses, device theft and data loss. And if criminals and mischief-makers don't attack your cellphone, it could still be at risk. According to a poll by Norton Security publisher Symantec, 34 percent of Americans report losing a phone, putting passwords and personal information at risk. It's time to fight back.

A Growing Threat



While there are potential security problems on any portable device, most recent attacks have targeted phones running the Android operating system. Android-based smartphones are outselling Apple, BlackBerry and Windows 7 models, which makes them a tempting target. And the system for distributing phone apps for Android is particularly vulnerable to abuse.

Apple maintains strict control over what's offered in the iTunes App Store — Google doesn't supervise the Android Market. As malware researcher Tim Armstrong of Kaspersky Labs explains, "From Google's point of view, there is no app review whatsoever — they don't scan apps, they don't vet at all. Basically I could write a malicious app this afternoon, set up an account for about \$25 on the Android Market and be selling it within minutes."

What are the bad guys trying to achieve? The biggest money-making scam is making your phone sign up for an expensive subscription SMS text messaging service without your knowledge. You'll never know what happened until your next bill arrives with whopping extra charges tacked on. There are other exploits as well. A hacker could install an unseen program that sends him a copy of all your input, including passwords and other personal information, or send a message to everyone on your contact list, or view your personal photos or track your location.

While this kind of attack has been possible for years, it's only now becoming widespread. According to a report from security software firm Lookout, Android users were two and a half times more likely to encounter malware in June than they were in January, and the problem continues to increase.



8 steps to protect your smartphone:

1. Avoid Jailbreaking or otherwise “rooting” your phone, says Tim Armstrong, virus analyst at Kaspersky Labs. Your smartphone becomes a bigger target for malicious agents when you “jail break” or hack into your phone so that you can download apps from other operating systems or switch mobile carriers.

2. Avoid opening email attachments on your phone. As with desktop malware, mobile attachments can contain malicious programs.



3. Avoid clicking on links in text messages. Text message spam can contain links to malicious websites.

4. When downloading applications be wary of the system resources that the application needs permission to access on your phone. If you are not familiar with the app *don't* download it.

5. “Be extra careful of possible **phishing** sites while using your mobile browser,” says Armstrong. While browsing the internet, apply all of the same precautions to your phone as you would your desktop. When possible, enter the site address directly in the browser. If you click a link to a new page check the URL to make sure you weren't redirected to an unknown site.

6. Turn your Bluetooth device off when you are not using it. Anyone with a Bluetooth-enabled phone can easily **spy on your phone** activity, from calls you make to the text messages you send. Also, do not accept Bluetooth messages from strange phone numbers.

7. Lock your phone, and enable remote wipe. “The most common problem affecting mobile users is the physical loss of their phone...from leaving it in the back of a cab to having it stolen,” says Armstrong. Wiping it will keep thieves from accessing any personal information on the phone. Also, make sure you back up the data on your phone.

8. Upload antivirus software. Many smartphones come with some form of antivirus protection, but it doesn't hurt to get more. Companies like Kaspersky Labs, McAfee, and Lookout Mobile Security will provide you with extra protection along with other critical services.



BLUETOOTH REMOTE CONTROL.. FROM YOUR MOBILE PHONE

Flick through any electronics magazine – professional or hobbyist – and you will see a wide range of single board computers and microcontroller boards. For many applications, they make product development so much simpler than it used to be. Attach a few auxiliary components and a control panel, write the computer program, and you're finished

What makes the process easier is that the computer board is programmable, so one off-the-shelf component can be applied to many tasks. Could this concept be taken even further? A few auxiliary components will always be needed in any product, but what about the control panel? Couldn't an off-the-shelf programmable component be made to replace custom control panels on electronic devices?

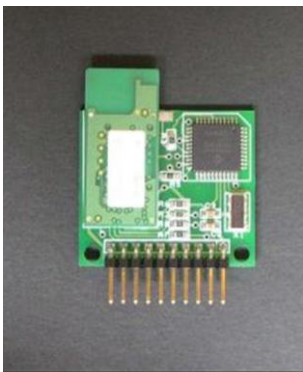


Figure 1 – The FlexiPanel module.

FlexiPanel's remote user interface module (Figure 1) does just this. Using Bluetooth radio, it asks a remote device – a mobile phone or handheld computer, perhaps – to create the required control panel on its behalf (Figure 2). The module has a Class 1 radio, so the remote device can be up to 100m away. The module operates at TTL levels, and a standalone RS232 device (Figure 3) will soon also be in production.

A user may connect to the appliance at any time using any suitable device. The device will display the required control panel, but its appearance may vary according to the remote device used. For example, compare the same user interface on a mobile phone (Figure 17, Figure 19) and a handheld computer (Figure 18, Figure 20). On the handheld's touch sensitive screen, large buttons are used. The phone, on the other hand, assigns "hot keys" to controls on the user interface display.

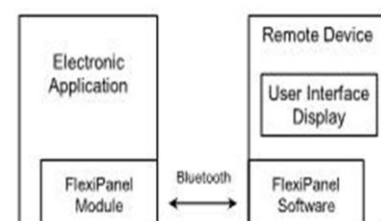


Figure 2 – A FlexiPanel in operation. The electronic application asks the remote device to display a user interface for it.

The software on the remote devices is the same for each application and does not require customization or re-installation. It is freely downloadable from www.FlexiPanel.com. At the time of writing, Pocket PCs, Windows PCs, and Smartphones (e.g. SPV E200 from Orange) software are supported. Software for Palm Operating System and Java phones supporting the JABWT standard (e.g. Nokia 6600 and Sony Ericsson P900) is due for release in June 2004.

A Bluetooth Protocol

Bluetooth is a 2.4GHz digital radio communication protocol developed and licensed by Ericsson. Serving the “personal area network”, Bluetooth devices can come and go *ad hoc*. In contrast, the WiFi protocol, operating at the same frequency, is more suited to longer-term wireless infrastructure, with each individual node needing to be assigned a fixed IP (internet protocol) address.

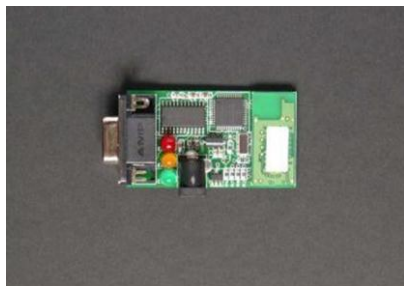


Figure 3 – Prototype RS232 version of the FlexiPanel Bluetooth module.

Thanks to Bluetooth headsets, Bluetooth is now solidly entrenched in the mobile phone market. Intel intends to incorporate Bluetooth into its Centrino 2 chipset, to be launched in Autumn 2004. Not only will this allow PCs to connect wirelessly to printers, etc, but it will boost the growth of VoIP (voice over internet protocol), *i.e.* phone calls over the internet.

The Bluetooth standard provides interfaces for a wide range of communications protocols, from a simple serial port to audio. Like many higher-level protocols such as OBEX file exchange, FlexiPanel sits on top of the serial port emulation layer of the Bluetooth protocol stack (Figure 4). It is not part of the “official” Bluetooth standard. However, the standard is relatively open in that anyone is free to create software for remote devices, and product-side components such as the FlexiPanel module are manufactured under license, just like any Bluetooth radio module. The first FlexiPanel products were software libraries to provide remote control for Windows applications and high-end embedded systems.

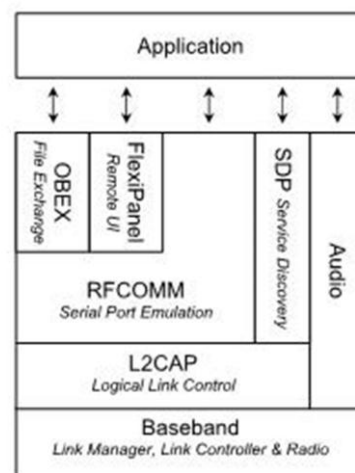


Figure 4 – FlexiPanel in the Bluetooth Protocol Stack

From the electronic product’s perspective, the FlexiPanel module is a peripheral providing graphical user interface services. It maintains a list of the controls required by the product, and the current state of the controls. (The ten types of control available are shown in Table 1.) The product can update a control at any time. If a user modifies a control, the product is notified. The pin functions of the FlexiPanel module are detailed in Table 2.

The Project

Developing applications of the FlexiPanel module is simple enough that this mini-project can be detailed within this article. This use a BASIC Stamp BS2p and the Board of Education development board featured in *Elektor* in September 1999. Parallax Inc, who supply the Basic Stamp, also distribute the FlexiPanel module.

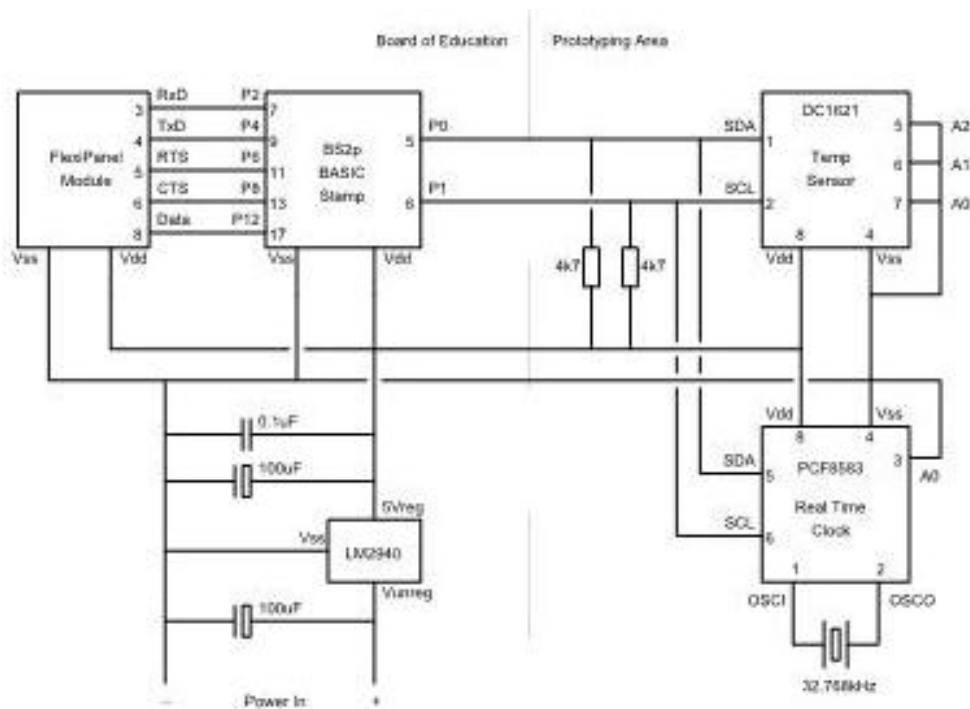


Figure 5 – Schematic diagram of the temperature data logger.

The BASIC Stamp can be programmed using the BASIC programming language from any PC computer using a serial cable. The same link is used to program the control panel into the FlexiPanel module for each of the three mini-projects. The project is a temperature logger.

The BASIC programs and FlexiPanel designer data files used in these projects are available from *Elektor Readers' Services* as free software downloads.

Temperature Logger

Measuring environmental variables such as temperature is vital for quality control in the food, chemicals and drugs industries. In this project, the FlexiPanel module logs the output of a temperature sensor. It is a simple project but sufficient to illustrate the four steps in the design process: - Designing the electronic circuit:

- ✓ Design of the user interface
- ✓ Programming the user interface into the FlexiPanel module
- ✓ Writing the BASIC program to interface between the circuit and the FlexiPanel module.

First, the circuit is designed. In addition to the BASIC Stamp and the FlexiPanel module, a real time clock (a Philips PC8583 and 32768Hz crystal) and a digital temperature sensor (a Dallas DC1921) are connected over an I2C bus. The circuit is shown as a schematic diagram in Figure 5 and on the prototyping area of the Board of Education in Figure 6.

Next, the user interface is designed using the PC-based FlexiPanel Designer software freely available from www.FlexiPanel.com. Four controls are required:

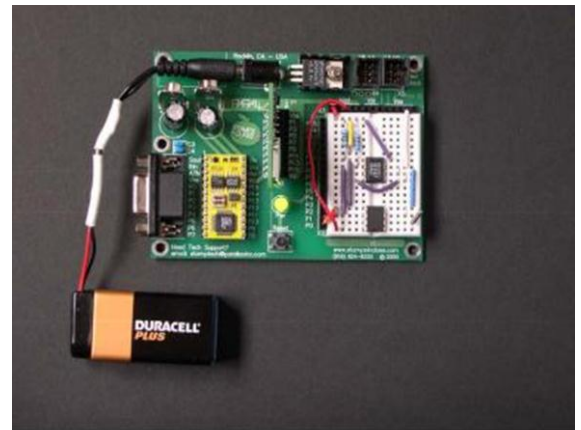


Figure 6 – Prototyped circuit for the Temperature Logger.

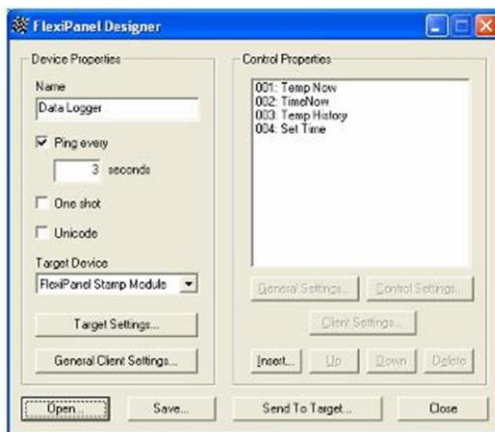


Figure 7 – Screenshot of FlexiPanel Designer for the Data Logger project.

- ✓ a readout of the current temperature
- ✓ a readout of the current time
- ✓ a table of historical temperatures
- ✓ a control to set the time

Once controls are created using FlexiPanel Designer (Figure 7), their appearance may be simulated and tested on remote devices, provided the PC is Bluetooth enabled.

When the user interface design is complete, it is programmed into the FlexiPanel module. Pressing the *Send To Target* button in *FlexiPanel Designer* creates a BASIC program. When this is run in the BASIC Stamp editor (supplied with the BASIC Stamp), the Stamp programs the user interface into the FlexiPanel module's memory. The FlexiPanel module acknowledges successful programming with an "Acknowledge: ROM" message (Figure 8) and remote devices may connect to view the user interface.

The final step is to write a runtime program for the BASIC Stamp to interface between the electronics and the FlexiPanel module. To make this step easy, the BASIC program created by FlexiPanel Designer contains commented-out example code showing exactly how to read and write control values.

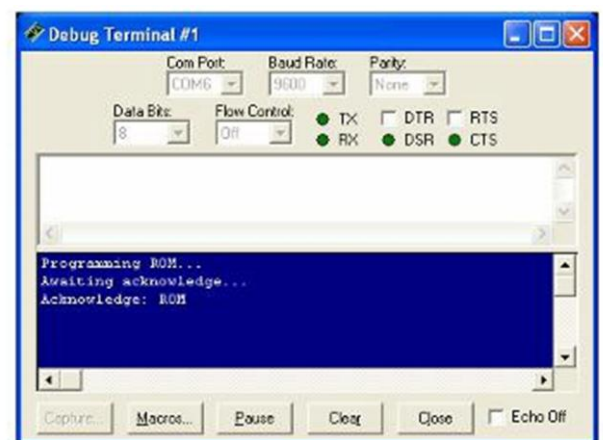


Figure 8 – The BASIC Stamp editor programming the FlexiPanel module.



Figure 9 – The Temperature Logger user interface on a Smartphone.

The runtime BASIC program for the Temperature Logger is shown in Listing 1. After initialization, the program reads the temperature and the time each second. These values are written to the temperature, time and temperature history controls. Then, the program checks to see whether the user has set the clock time. If so, the new time is read and programmed into the real time clock.

In operation, the controls appear on a Smartphone as shown in Figure 9. The controls update once every five seconds. Figure 10 shows a temperature history full-screen view after a brief tour in the refrigerator. To the author's surprise, the project maintained radio contact throughout, despite being confined by the steel case of the refrigerator.



Figure 10 – The Temperature Logger temperature history.

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