GGREC

THE OFFICIAL JOURNAL OF
THE GIPPSLAND GATE RADIO AND ELECTRONICS CLUB
AUGUST 1986

GIPPSLAND GATE RADIO AND ELECTRONICS CLUB

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Kerry VK3KFC (059 963580)

Magazine Editorial:
The entire Committee

Club meetings held at the 1st Oakwood Park scout hall in Heyington Crescent, Noble Park North. Meetings commence on the Third Friday of each month at 8:00 pm.

Club Station: VK3BJA Located at the scout hall.

Postal address: P.O.Box 98 Dandenong 3175

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ALL VISITORS WELCOME
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PRESIDENTS REPORT - AUGUST 86

Greetings readers, this month you will notice another version of Club logo on the front cover, conceived by Dave, VK3XMF and drawn by Andy VK3KCS on his computer. Last months design of an integrated circuit over a lightning bolt got the axe as it made CMOS users cringe. During this months meeting Andy will also be giving a talk on soldering techniques and equipment, an area where we all could do with some improvement.

Negotiations are taking place between the Club and a local electronics retailer for a possible radio/electronics demo for later in the year. If successful the demo will greatly help the Clubs publicity campaign.

The 1987 Australia day long weekend will see some of our members up at the town of Corowa N.S.W. for the annual celebrations and raft regatta. There will be a GGREC entry into that competition so start putting your rotten eggs aside now! accommodation in the town for this weekend is scarce, so MAKE YOUR RESERVATIONS ASAP.

Finally, the committee is always looking for magazine articles and suggestions for activities on meeting nights, so dont keep them to yourself.

Ian Talbot VK3BVF

World in a muddle over laws on software piracy

AN INTERNATIONAL meeting of lawyers broke up this week, unable to decide how to protect computer programs from piracy. The problem is whether copyright law, which protects the written word, will prevent the illegal copying and use of valuable programs, from video games to expert systems. The meeting, held in Geneva, was called by UNESCO and the World Intellectual Property Organisation, the UN's patent office.

In the few countries where disputes over computer programs have come to court, copyright law has proved hard to uphold. Australia passed a law in 1984 protecting programs by copyright. This followed a court wrangle in 1983, when Apple Computers claimed that an Australian company Wombat had stolen the operating system used in its chips, thus infringing copyright.

A lower court dismissed Apple's case, on the grounds that the programs were not intended to provide "literary enjoyment". But an upper court reversed the ruling, saying copyright did not depend on "literary merit, taste, judgement or ingenuity". It had only to convey meaning, and be created with some mental effort, for copyright to apply.

Several delegations in Geneva argued that copyright law should not be applicable to computer software. Greece pointed out that an author does not have to register a work for copyright to apply. Hence, there is no way of knowing whether, in programming an idea for which few alternatives are available, a programmer has infringed a copyright. On the other hand, an official register might give away secrets about valuable programs.

Copyright law protects a work from being tampered with or adapted, even when rights to its use have been bought. But, in translating a program from one computer's operating system to another, where does translation stop, and adaptation begin? "You can't simply ignore the technical aspect in information technology, which copyright does," said one Greek delegate.

Similar conflicts have emerged elsewhere. In France and Italy, the right of an author to prevent any alteration of a work is enshrined in law. In France, this has created legal confusion as civil courts have upheld copyright for programs, while criminal courts have held against it.

West Germany is introducing laws to copyright computer programs. But the programs must be "personal intellectual creations", more than a simple algorithm, expressable in different ways, and they must exhibit "qualities of selection and arrangement". The potential legal confusion implicit in such a definition could be a boon for the German legal profession.

Amendments to copyright legislation to encompass the special features of computer programs are enacted or in progress in Denmark, Finland, Hungary, India, Norway, Spain, Sweden, Japan, the Philippines and Britain. But, say copyright's opponents, the complications are so great that countries might as well have set up special legislation to protect programs alone.

Brazil led the call among developing countries in Geneva against the unquestioning acceptance of program copyright. One concern is that, under copyright law, an author reserves the right not to publish a certain program in a particular country. Countries worried about gaining access to the technology of the developed nations want compulsory licensing of programs to prevent this.

The Brazilians say that copyright law does not protect a user's rights. If a show flops, the producer cannot sue the playwright. But if a computer program does not do what it says it will do, a user should be able to sue the program's owner.

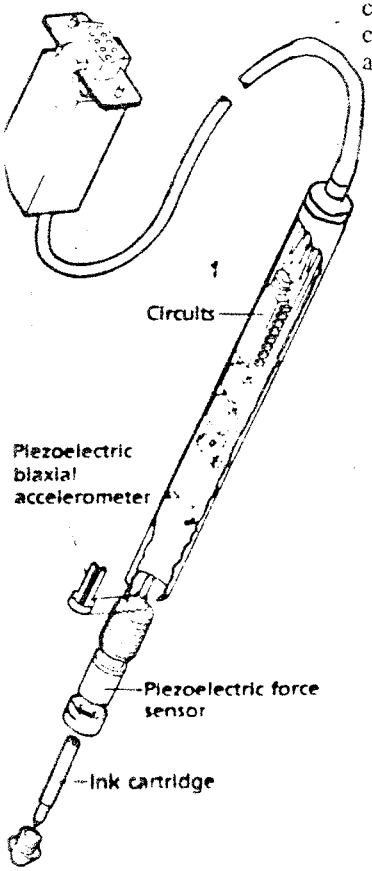
But the real concern of some developing countries revolves around protection of their own fledgling computer industries. Brazil bans foreign companies from selling microcomputers if a similar machine is already produced by a Brazilian company. International copyright law would not permit any such protection for software produced in Brazil. □

Sign in . . . check out

Two innovations have been developed recently to aid in the detection of fraud. One, IBM's signature-verification pen, serves as an access control to prevent break-ins into a bank's computer by spotting forgeries. Through transducers similar to those in some phonograph cartridges, the pen measures pressure applied along its axis as well as transverse acceleration along two axes. The pen's hardware is sophisticated enough to collect data at 1000 points in 12.5 seconds. An algorithm stored in a computer compares the pattern of a person's script against a file of legitimate signatures. In tests, only four of 1000 forgery attempts were missed.

F/22 Press of Leonia, New Jersey, has designed a program called Clearing-house to pinpoint a fraudulent cheque. Loaded into a computer at the retail outlet, it asks a series of questions relating to the cheque; answers are evaluated against a data base of the 20 commonest factors that accompany a phony cheque. Erroneous data are immediately detected. Through a subtle beep, a change of screen border colour or the word *Warning*, a clerk is informed of the attempt at fraud

This IBM pen has hardware that can measure the pressure and acceleration of a person's signature and compare it with a computerised reference file.



Speedy colour laser printer

■ An economical, high-speed colour laser printer developed by Colorocs Corporation of Norcross, Georgia, USA, can print up to 14 pages of final colour graphics per minute. Using sensors and microprocessors, the computer-driven system seems to have overcome the problems other colour printers have in precisely aligning overlays of the colours magenta, cyan and yellow. It is expected to be available next year.

■ The University of California's School of Optometry in Berkeley has set up the first eye clinic to cope with health problems associated with video display terminals, such as eyestrain, double vision, headache and fatigue

Hi-Tech Comfort

The mission of the Kanazawa Institute of Technology is to produce science specialists and computer-literate engineers and architects for Japan's industry, education and research. The Institute's modern library features the country's first "cardless" information system with IBM computers controlling the library's operation.

Attached to this library is an audio visual centre. This facility, built by Sony, is the first of its kind in the world. It retrieves tapes and cassettes automatically from storage and relays the material to students working in the library's audio visual cubicles or audio equipped armchairs. A long row of such armchairs, equipped with keyboards and earphones, stretches the length of a serene atrium at the centre of the library building — no doubt to assist concentration.

US plans four university centres for supercomputers

THE US government is to spend $200 million over the next five years on supercomputers for universities.

The National Advanced Scientific Computing Centres will be the Reagan administration's latest tactic in the race with Japan and Europe to build and use the next generation of large computers. Each centre will draw scientists to share time on some of the world's largest and fastest machines, according to the National Science Foundation (NSF), which will run the programme.

Besides providing more scientists with maximum computer power for basic research, the NSF hopes that the centres will produce better computers as well.

The four centres will be at the University of California at San Diego, the University of Illinois at Urbana-Champagne, Cornell University in Ithaca, and the John Von Neumann Center, near Princeton University in New Jersey.

Computer manufacturers, the host universities and state governments will share the cost with the NSF. The country's leading manufacturer of supercomputers, Cray, will provide an XMP computer for San Diego that will be connected, via a high-speed network, to 18 universities around the country. A Cray machine will also be the centrepiece at the University of Illinois, whose own supercomputing faculty is now engaged in designing hardware and software for supercomputers.

IBM and Floating Point Systems, of Oregon, will supply the centre at Cornell, which will be under the direction of the Nobel laureate Dr Kenneth Wilson. Control Data Corporation and ETA Systems are providing the machine at Princeton, which will cater for a consortium of 12 universities.

Only a handful of supercomputers, which cost upwards of $10 million each, are sold each year. Most are used by the Pentagon and its weapons laboratories, by intelligence-gathering agencies, and the few universities that can afford one.

IBM is new to the supercomputer market, and its link with Cornell is bound to change the business. Cornell's Wilson says that one of his goals is to develop a new generation of parallel-processing computers. These can outstrip today's best machines by abandoning serial, or step-by-step computing, for arrays of processors that divide and perform large tasks simultaneously. IBM is investing $30 million in the centre. Meanwhile, the Exxon Corporation, American Telephone and Telegraph and Lockheed Corporation will participate in the centre at Princeton.

Marriages between industry and universities are not new to engineering departments. But the allure of academia to industry has heightened as biotechnology and computing have become big business. The Reagan administration has encouraged the romance, although some critics have warned that joint endeavours will divert research from the basic to commercial products. Spokesmen for some of the universities insist that the centres, built in part at taxpayers' expense, will not put profits before knowledge.

Nonetheless, many of the projects now planned cannot help but benefit the companies involved. At the University of Illinois, studies already planned include the redesign of chemical processing plants, faster semiconductors, and, possibly, new designs for aircraft and automobiles. Also on the agenda, however, are models for predicting contamination of groundwater, simulating the global atmosphere and the dynamics of the movement of sea ice. □

Duplicating Essential Data

When the cat chews your data disks or the kids play frisbee with your floppies, there is little to do but sit down and cry. That is, unless you have duplicates of your program and data disks safely stored in a bank, or some other child-proof place.

For Apple II users help is at hand in the form of the Essential Data Duplicator (EDD) from Utilico Software (02) 30 2105. This very effective software duplicator of "copy-protected" programs comes complete with a list of parameters for backing-up many well-known programs.

Of course, to use copy programs for anything other than back-up copies of software programs is piracy or "softlifting". Even for educators — who it is rumoured are among the country's most practised pirates — next to the students, that is

Still video systems (SVSs) could replace carousel slide projectors. Kodak is putting the finishing touches on its SVS, with which undeveloped 35mm colour film images can be transferred onto magnetic disks for convenient storage and TV-screen viewing. With a colour printer, snapshots or any image from videotape, TV or computer-monitor screen, laser-disk player or video camera can be instantly reproduced.

Kodak's SVS has five components: a film-to-disk transfer station at Kodak processing laboratories, which converts the images from 35mm colour negative film onto video floppy disks; the disks themselves; a still video player with which users can show prints on their TV; a player-recorder, for both showing images and recording them onto disks from a variety of video sources; and a colour video imager for making instant prints. The imager is available now, and some laboratories are already equipped with film-to-disk transfer stations. Within a few years there should be stations in Australia.

The major breakthrough in Kodak's SVS development, according to Chuck Rimmeli, an electrical engineer at Kodak, is the magnetic recording system that enables analogue video signals (a type of continuous-wave video signal) to be recorded onto a small floppy disk. A video camera built into the transfer station converts 35mm film into the analogue signal. Each 5cm-by-5cm-inch disk can store up to 50 images — much more information than can be handled by the conventional floppy disks used for personal computers. Standards for the disk, set by the Electronic Still Camera Standardisation Committee, assure compatibility with 30 different manufacturers' products that are expected to become available over the next few years. Polaroid, for example, is developing a video imager that bears the working name Pomegranate. Meanwhile, in Japan, Fuji Photo Film has launched Fujix TV-Photo System.

To show photos on your TV screen with Kodak's SVS, you simply slide the disk into the player or player-recorder, both of which can be plugged into TVs with built-in video-output jacks or to most VCRs and some colour computer monitors. Image display is controlled from a panel installed on the face of the player that has options showing selected images out of sequence. The panel can be removed from the player and used as a wireless remote-control device.

To make prints, you insert the floppy disk into the player or player-recorder and select an image on the screen by pushing a freeze-frame button. Before printing, you can adjust the colour saturation, hue, brightness and contrast. Then you press the print button on the video imager, at which point a microchip in the imager takes over, converting the video signals from the images into light, which can then be captured on instant colour film. In less than two minutes, you have a print that, according to Kodak, is equal in quality to a print from a Kodak instant camera and superior to one produced by other still video systems.

Initially, the colour video imager is expected to be used chiefly by people who are involved in medical imaging, computer graphics, security and surveillance, professional video, advertising, real estate and law enforcement. "We will test the colour video imager in some households, but at this point we believe the main market is going to be professional applications, primarily for documentation and record-keeping purposes, and also for the sharing of information," says Richard Lorbach, general manager of marketing and vice-president of the Kodak Consumer Electronics Division.

● Once people get used to viewing colour prints on TV, they'll want to have filmless cameras that take pictures directly on magnetic disks. The barriers have been image quality and price, but Kodak, Sony and Canon are now perfecting filmless cameras whose photographs rival 35mm prints for clarity and whose disks cost almost as little as a roll of 35mm film.

Sony's Mavica, a professional filmless camera that takes black-and-white photographs with resolution acceptable for newspaper reproduction, should be available soon, according to spokesman Fred Wahlstrom. "We're still working on a consumer colour version," he says, "and we expect to introduce it in the next year or two." Unlike cameras that use either colour or black-and-white film, filmless ones capture colour or black-and-white images with different built-in microchips.

Learn Your Q Signals

By N6DQC Noel Novinson
from Santa Barbara ARC KEYKLIX

The following is a list of little used Q-Signals and abbreviations. Their meanings often need to be expressed with brevity and clearness in our amateur radio work, so learning and using them should be an important order of business for us all.

QCK — Don't bother trying to listen on the other sideband; I am a duck.

Q[illegible] — Please stop transmitting at this [illegible]e, you're boring.

QOL — Your signal is so strong it just blew out my front end and I'll be seeing you in court.

QFF — Please send louder; there's a French-fried potato in my ear.

QOD — Sorry about my sloppy sending, but I'm high on drugs at this time.

QHT — Please stand by, as my antenna has just fallen into my bathtub.

QME — Sorry about taking so long to come back but I had to go out and milk the elk.

QDR — I have traffic I need relayed to Stonebridge. Do you speak Druid?

QHI — Please tell funnier stories at this time.

QHH — Please increase your power and/or talk louder as it is hard to hear you over the tinkling ice cubes and ripping clothes.

QBL — Sorry, I can't QSL, but I'm not legally licensed.

QHHHHHH — I think my keyer's stuck.

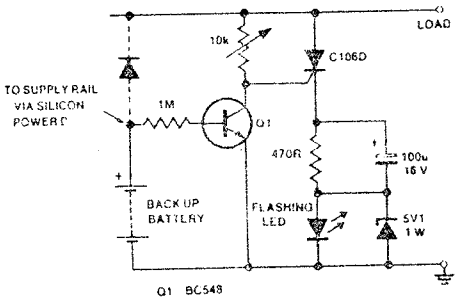
QDT — I notice you are experiencing difficulty tuning up; please consider an easier task like watching television or counting your toes.

QCT — Your RST may not be much, but you're coming in fine on Channel 2.

from "ARNS Bulletin", Sept. '81

Battery watchdog

In most equipment where there is a battery back-up, there is no indication of the condition of the battery.



The battery may lie around forgotten until it is eventually required, but then you find that it is no longer serviceable and may even have leaked corrosive acid damaging components and the pc board.

C.W. Catherwood of Lismore NSW has designed a simple circuit which indicates a dying battery in a battery back up system. It only uses a few components and the small pc board can be easily incorporated into most equipment.

Q1 and the 10k preset potentiometer form an adjustable voltage divider. It is controlled by the base current of Q1 via the 1M resistor and the value set on the 10k potentiometer.

The voltage on the divider feeds the gate of the SCR, switching it on. The SCR then conducts through the flashing LED, indicating an unserviceable battery.

The zener diode maintains the five volts required by the flashing LED. The electrolytic capacitor across the series dropping resistor forms an RC network which determines the flashrate.

The voltage of the battery which is to be tested can be determined by adjusting the 10k potentiometer. This could be done by using an adjustable power supply in place of the battery.

ELECTRONIC LOGIC PRINCIPLES - PART 1

By Ian Jackson VK3BUF

Introduction:

Whether you are an amateur radio operator, computer enthusiast or experimenter in electronics, you will at some stage be confronted by equipment that uses electronic logic circuits as part of its operation. It is a field that differs greatly from electronics of the past where most equipment used analog devices such as transformers and amplifiers to perform a task. Dur the past few decades there have been very few tools and appliances that has escaped the transition to digital technology.

This series of articles will demonstrate the basic concepts of digital electronics, describe the components used and show how each part can join together to perform practical tasks "in the real world".

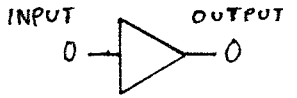
Two-state logic:

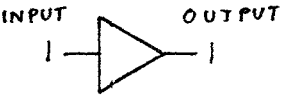
Digital electronics uses two levels to define the condit of a circuit, these levels have many names but they all mean the same thing.

```
1.................0
ON................OFF
HIGH.............LOW
POSITIVE....NEGATIVE
OPERATED....RELEASED
VOLTS.......NO VOLTS
```

Logic Gates:

The building block of any logic system is the logic gate, while logic gates may be constructed from transistors or FET's their actual working is immaterial. What is important is the input and output conditions of each gate. Here is the symbol and "Truth table" of the most simple of logic gates, the Buffer.

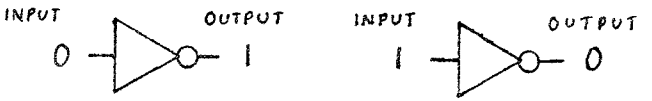




Input	Output
0	0
1	1

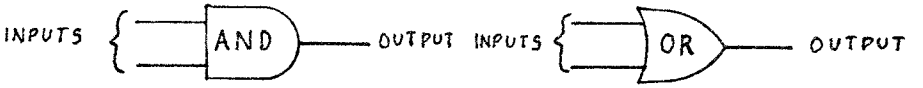
This seemingly pointless device can be used to boost faint or distorted logic levels.

The next logic gate is called the "Inverter", it is similar to a buffer except the output is always the opposite of the input.

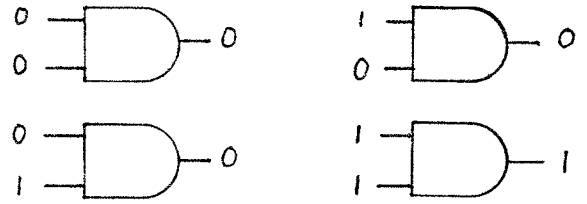


Input	Output
0	1
1	0

Now we get to some interesting logic gates, the AND and OR gate.

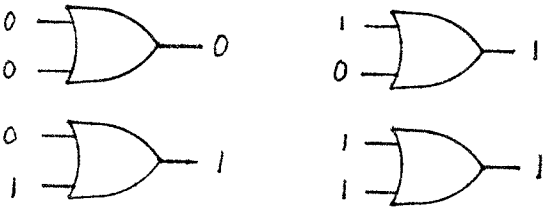


The AND gate will give a logic 1 output only when BOTH inputs are logic 1, here are all the possibilities:



Inputs	Output
0 0	0
0 1	0
1 0	0
1 1	1

The OR gate wil produce a logic 1 output when EITHER input is in a logic 1 state.



Inputs	Output
0 0	0
0 1	1
1 0	1
1 1	1

At this stage the reader is probably wondering what possible value these AND and OR gate symbols could be; the simple circuit below shows a coin box on a photocopier that requires exactly 30 cents before it works. The indicator lights show the current status of the coin boxes.