

# Developers' Newsletter No: 25

February 1992

## General News

### • 1992

We wish you all an active and prosperous year.

### • Changes at Acorn

Acorn goes into 1992 with a clear sense of purpose. We intend to maintain and extend our share of the Education market, to develop the inroads we have made into Consumer, International and Special Needs markets and to focus more clearly our activities in the Professional market place. Stretching across all these markets are events, exhibitions and PR, not forgetting the overall management of Acorn's full product range.

In order to achieve the objectives outlined above, a few changes have been made within the marketing organisation. If you are not sure whom you should contact about a sales and marketing issue, do please ask Developer Support and we will endeavour to put you in touch with the appropriate department.

### • Contacting Developer Support

Please help us to help you by using the Developers' Direct Line when telephoning.

The number is: 0223 215474

If you call on Acorn's main number and ask for 'technical support' you are likely to be put through to the Customer Services Information line who are not in a position to support Developers.

Don't forget that, if you have access to the uucp network, you can email us using:

ISVQuery@acom.co.uk

Please feel free to follow up with a reminder if you haven't received an answer within a reasonable time - although we hope this won't be necessary!

### • Subscriptions for 1992

If it has not already arrived, you should soon be receiving an invoice for your 1992 subscription. Please send your

remittance (making it payable to Acorn Computers Ltd) to Developer Support so that we can acknowledge the receipt of your cheque. Thank you to those Developers who have already sent their subscription. You also will receive acknowledgement.

### • TCP/IP Programmer's Guide

The TCP/IP Programmer's Guide (AES33) is now available. The Developer Discount Price is £30 (RRP £50). This Guide should be ordered in the normal way. See the Developers' Discount Price List, November 1991 for details of how to place an order.

### • Technical Publications Style Guide

The Technical Publications Style Guide was available, as expected, in December and copies have been sent to all those of you who ordered it. Developers who have purchased copies have reported that they have found the Guide useful. If you would like one, please send your order, accompanied by a cheque for £9.50 per copy, to Developer Support.

### • November 1991 Developers' Discount Price List

Please note the following amendment and update your copy accordingly:

Ethernet card (AKA25) has been replaced by Ethernet II card (AEH50). The price is unaltered.

A minor error was made on one of the prices in the November 1991 Developers' Discount Price List. The price for the A5000 Learning Curve is stated to be £1194.22 exc VAT (£1403.21 inc VAT) whereas it should have been £1194.23 exc VAT (£1403.23 inc VAT). Apparently, our accounting software doesn't cope with small discrepancies such as this. As a result, you may get an account statement with just twopence outstanding. We do try to filter them out but we don't claim to be perfect!

If you do receive such a statement, please accept our

apologies and send it back next time you write. Please don't take the trouble to send it on its own.

- **Discount prices for Overseas Developers**

To date, we have not been able to offer discounted equipment to our overseas Registered Developers. We are pleased to say that we have now made arrangements to extend the Developer Discounts to those of you who are not in the UK. Please contact us for details.

- **Archimedes 400/1 Series**

The demand for the 400/1 series has declined because the successfully-launched A5000 offers greater overall customer benefits at a comparable price. This was predicted by Acorn and it has been decided not to build further products in the A400/1 range.

Spares and support will, of course, continue to be available for these products from normal service and support providers.

- **Response to technical queries**

There have been a number of occasions recently where queries have been received with insufficient background information to allow a response to be researched. On such occasions we contact the Developer in question by fax, letter, telephone or email requesting that further detail be supplied. Should that further information not be forthcoming within two weeks, we consider the query closed.

Please respond as soon as you can to our requests for detail so that we can provide you with the service you need.

If you have a problem relating to a program you are developing, it often helps (and saves typing time) if you can provide an example on disc.

Some queries we receive cannot be resolved by a quick 'off-the-cuff' answer; they need further investigation. In such cases, we refer the query via our technical back-up team to various experts within Acorn. This can take some time which we realise can be frustrating for you.

We intend, therefore, to acknowledge queries on receipt and to provide you with a query number to quote if you wish to enquire about progress. It is hoped that the new system, which should be in place by Easter, will help to improve our service to you.

- **Delivery of A5000 systems**

We are aware that there has been some delay in the delivery of A5000 systems ordered. This was largely due to demand being much higher than anticipated given the

current economic climate. Please be assured that Developers are given some priority in the queue. We hope that the supply situation will shortly improve.

- **Education Directory - Issue 3**

This directory was published in time for the BETT show and includes any additions and amendments provided to us by the mid-November deadline. You will notice, if you have one, that the Directory is considerably bigger than Issue 2. We thank all of you whose efforts made the larger directory possible.

If you do not have a copy of the Directory (we know that many of you obtained one at BETT), but would like one, please complete the enclosed form and we will send you a copy.

We need to keep the database up-to-date all the time. Please read your entry carefully and send us clearly marked-up, photocopied pages if corrections or changes are required.

Please let us know if you no longer supply any of the products listed under your name.

Please complete a form (obtainable from Developer Support if you don't have one) for any new products to be added.

If you wish your products to be listed as 'Available now', please ensure that you send to Developer Support a copy of the full release pack for the library (in the case of software) or details of two reference sites where the product is installed (in the case of hardware). Neither site should be Acorn. We would be grateful also to have, for the library for reference, a copy of any manual supplied with your hardware.

- **Adding drives to A5000**

Floppy drives: The only supported upgrade is the use of the Acorn spare for the existing drive as a second drive. Generally this will be a Citizen unit, but could be from any supplier meeting the Acorn part number spec. Installation should be quite clear to a dealer when carried out in conjunction with the A5000 Technical Reference Manual. There is no support from Acorn for the use of other drives.

Customers should order the spare from their dealer, who will quote for the job. There is no fixed price.

Hard discs: There is currently NO Acorn supported IDE upgrade route. Although the industry IDE interface will support two drives, there is no specific area within the A5000 case for a second 3.5" drive, and the IDE bus does not support cables outside the case; hence there is no IDE upgrade route for a second drive.

There are currently NO Acorn approved larger capacity 3.5" drives that could replace the existing 40 MB unit. It

is possible that, during the next few months, a larger drive may be approved for upgrade purposes.

Any customer wishing to increase the capacity of his A5000 hard disc system is advised to fit a SCSI card together with the appropriate choice of external SCSI hard disc. This will also provide the correct interface for a CD-ROM drive to be added when needed.

## Marketing News

### • Dealer discs

It is planned to provide dealers, on a regular basis, with demonstration discs for showing off applications to potential customers.

From time-to-time Acorn will generate demo software for the use of dealers and others. If you have a new product that is available and that you would like to be considered for future dealer demos, please send details, in electronic form, and screen shots to Developer Support. Receipt implies no commitment to use the information supplied but will ensure that it is considered.

### • Education O

#### November Roadshow

What a success! The November Software Roadshow was the biggest yet. The long haul through England and Wales proved a huge success. During the five days, over 850 customers came through the show. The vast majority of these were looking to purchase software. As usual, we had invited key decision makers from across the UK, flying people in from Northern Ireland and Scotland. Some of these were committed Mac users who went away well-impressed with the range, power and sheer genius of the software available for the RISC OS machines. Kevin Roddis sends his thanks to all of you who helped to make the event such a success. (Mike O'Riordan lost his name badge on the last night. Could anyone who found it please return it!) At the moment Kevin is planning this year's roadshows and conferences and will be in touch shortly. Make sure you keep May 10 to 15 clear.

#### O BETT 1992

Kevin Roddis, Acorn's National Account Manager for Schools, has asked me to pass on his view of the show. He says,

"I do not know how to view BETT. To me as an Acorn employee, it was a resounding success although, personally, it was exhausting. I have never been busier than I was this year. Gone are the 10 or 12 a day who confront nose-to-nose then demand "Come on then, tell me why I should buy your proprietary rubbish instead of one of those powerful industry standard machines". In

fact, I only had one during the whole show. What I did get though, was a number of complaints that Acorn seemed to have taken the show over - in BOTH halls!!! A special thanks to all of you who had people pointed in your direction to be shown your software. I had 7 enquiries, during the show, from individuals or small independent schools who felt they had to get into IT and were at a loss as to which machine they should buy. I showed all of them a number of software houses they should visit - not always the same ones - and suggested they decided for themselves whether Acorn or MS DOS was the way to go and when they had made that decision to find me again and I would give them all the information they required. WELL DONE all of you. All seven returned, convinced that Acorn was the only machine worth purchasing, though somewhat confused as to where to start with deciding which software to buy since there was so much of it. The platform base is now well-established and I know that, together, we can reach the parts of educational IT others cannot reach."

#### O Acorn in Tertiary Education

Do you have users in tertiary education? Are you developing new products that will appeal to staff or students in Further and Higher Education? If so, please have a look at the copy of Higher Education News enclosed.

This newsletter publicises some of Acorn's activity and successes in this diverse marketplace.

H.E. News is currently mailed three times a year to a database of some 3000 users, decision makers and influencers, as well as being distributed at Roadshows, Conferences etc.

If you would like to feature new products of interest to this market, either in the Newsletter or by inserting a flyer in the mailing, please contact Frank Burdett, Tertiary Market Manager, at Acorn, Fulbourn Road.

#### O CHEST Software Directory

The CHEST Software Directory is published once a year, by the Combined Higher Education Software Team, as a source of reference on over 800 commercial software products available at educational prices.

For a free listing of your software in both a hard copy Directory (sent out to 10,000 Heads of Department etc.) and an entry in an on-line Bulletin Board...

...please complete the enclosed copy of the CHEST Software Directory Entry Form and post to Trevor Janes, CHEST Suppliers' Administrator, CHEST Centre, Computing Services, University of Bath, Claverton Down, BATH, BA2 7AY (phone 0225 826282, fax 0225 826176).

The only condition for entry is that you must offer an educational discount.

- **Consumer 0**

Games writers

A Games Writers' Application Note is in preparation. Please let us know if you would like a copy.

In an attempt to bring some order to the proliferation of joystick interfaces, we have discussed the standardisation of the joystick interface with several companies. Please see the Technical Information section of this newsletter for details.

- **International 0**

### **Germany**

Considerable *press activity* and exposure (an average of 3 German reviews/month) during 1991 culminated, in December, with a very successful press event in which ARM Ltd also participated.

Diary date:

CeBIT '92 takes place from 11 to 18 March.

#### **Seminar for Developers based in Germany**

GMA, Acorn's distributor in Hamburg, is hoping to hold a Seminar for Developers based in Germany in the next few months. Jona Gebauer tells me that they would like to invite a few UK Developers to attend. If you think you might be interested, please fax Jona on 010 49 40 2502660. No dates are fixed as yet but it will be after CeBIT. This event is only in the planning stages.

### 0 Canada

Please note that the contact details for Canada are as follows:

**Acorn Computers Canada Inc.**  
2851 John Street  
Suite 200  
Markham  
Ontario  
L3R 5R7

Telephone: 010 1 416 946 9461, Fax: 010 1 416 946 9462.

Contact people are Olaf Trunzer and Dorothy Netherwood.

Diary date:

ECCO (the Canadian equivalent of BETI) takes place in May.

### 0 Scandinavia

The area of special needs is a very important and continually growing market in Scandinavian countries. In Sweden, for instance, there is, organised by ITS, a two-day programme about special needs beginning on 20 February.

### 0 **Australia** and New Zealand

#### **Site Licences in Australia and New Zealand**

You may not be aware that site licensing in Australia and New Zealand requires a different approach from that in the UK. Typically, for instance, schools in New Zealand are small but networked. Pricing of licences needs to be flexible to allow for the purchase of a licence for just two or three machines rather than the 10 to 30 which is more usual in UK schools. Additionally, we must emphasise that Acorn does not dominate the education market in Australia and New Zealand as we do in the UK and pricing needs to reflect the fact that we are an aggressive entrant rather than an installed market leader.

#### 0 **Demo software**

If you have demonstration software which can be provided to Acorn for distribution overseas, please let us know. With the distances involved in countries such as Australia and New Zealand, it is not always practical for the customer to visit the dealer for a demonstration of your products, yet the dealer needs something more illustrative and convincing than mere words to convert interest into a sale.

Please, wherever possible, produce demos alongside the main product. These are valuable in all markets, not only overseas.

## **Technical Information**

- **CD-ROM and networking**

When designing or writing CD-ROM applications, please remember that it is possible to access these applications via a Level 4 Fileserver. Thus, it is important to ensure that the following points are checked and adhered to before mastering the CD-ROM application as it can be very expensive to correct once the disc has been "mastered".

1) All filenames and directories need 'Public Read' access. When a file or directory is created under ADFS or SCSIFS it is given 'Owner Read\Write' access only. This should be changed to include the 'Public Read' access as well.

NB: An application for formatting a heirarchy of files to create an ISO 9660 image will soon be available from Acorn. Please write to Developer Support for details. This application checks that the above constraints are met and, if requested, will make sure that all files and directories are included in the image with "Public Read Access" set.

2) All CD-ROM discs should be given a disc name. This should be no longer than 16 characters, which will ensure that current versions of the Level 4 Fileserver will be able to export the CD correctly.

3) It is possible to create a CD with as many files in a directory as you wish. Under CDFS these are all accessible. Only the first 77 files, however, can be used with current

versions of the Level 4 Fileserver.

4) No special requirement for filenames is needed. It is worthwhile, however, limiting the length of filenames to no more than 10 characters, as this will ensure compatibility with ADFS.

(NB. The above are additional constraints to the ISO9660 specification to allow the Level 4 Fileserver to cope with CD-ROM applications on Archimedes platforms.)

• Scrap files

0 About ScrapFiles

Due to the requirements of single floppy and network users with regard to temporary file storage, it was important that a definite move was made in the area of scrap file storage. Originally, scrap files were stored inside the !System application but the scrap file part has been removed and placed inside its own application, !Scrap.

0 The history

With older applications the system variable <Wimp\$Scrap> was used to ensure that scrap files were placed inside the !System directory. Applications which use this variable will function correctly when !Scrap is used, as !Scrap simply redirects the file from !System to itself. Files generated in this manner invariably use the name Scrapfile.

Some developers allowed an application to create multiple scrap files. Others were worried that another application may overwrite the newly created scrap file with other data. This led to the situation where applications explicitly directed scrap files into the !System directory, via the use of <System\$Path>, and created unique names, based on the application name, for scrap files.

This method is, of course, fine until the application is placed on a network. There may then be a number of users sharing the same !System. The situation previously described reappears.

0 About !Scrap

!Scrap gives the computer somewhere to store temporary files. Applications often use temporary files during copying or saving; these files are, however, always deleted when they are no longer needed.

Hard disc users should always store !Scrap in the root directory of their hard disc. This is so that !Scrap is always seen when the root directory is catalogued.

Floppy disc users should keep a copy of !Scrap on every floppy that contains an application. This may seem wasteful of disc space, but Scrap only takes up minimal space when not in use. Also keeping !Scrap on every 'work' disc will eliminate the need for constant disc swapping, as long as you are using the !Scrap on the

current floppy disc. This can be achieved by double clicking on the new !Scrap each time a new disc is placed in the drive.

On a network, a copy of !Scrap should be placed in each user's root directory. Do not worry about multiple users using the same user's root (e.g. 5 different stations logged on as user 'Geography') as !Scrap is intelligent enough to create scrap directories for each logged-on user.

With current copies of !Scrap the directory Scrapfile is used, unless the pathname indicates that it is stored on a network, in which case the network and station number are used to generate a unique directory name. The name is displayed thus:

Stn000!000

Where Stn is used to ensure that all the directories appear at the same point in the directory catalogue.

**000 contains the network number. 1 is used as a separator. 000 is the station number.**

So a directory entitled Stn002! 140 would indicate that this is the scrap file area for station 140 on network 2.

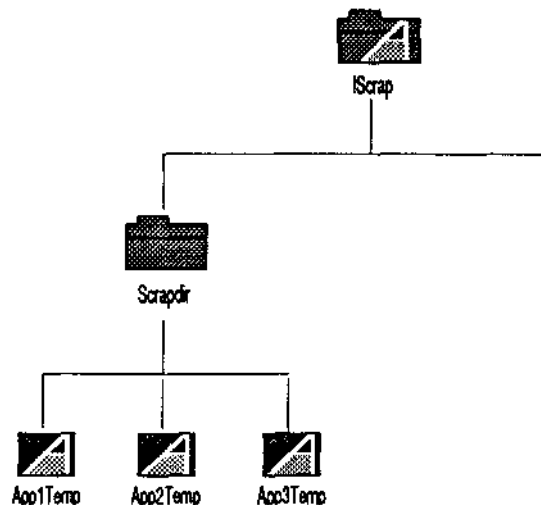
0 Writing applications which use !Scrap.

When writing an application which needs to generate scrap files there are a number of basic rules which should be obeyed. These are:

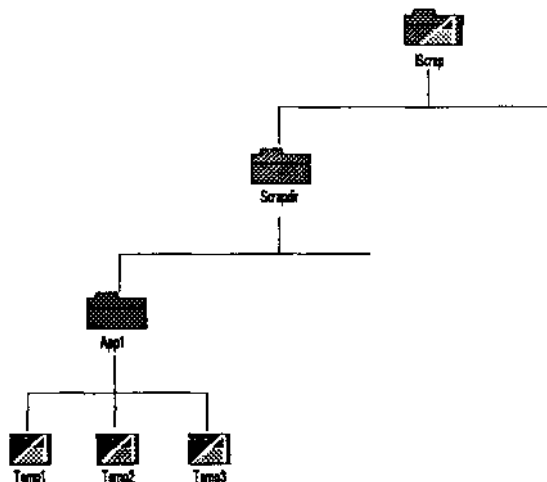
If there will only ever be a single scrap file created by the application then use a name which is unique.

If there are likely to be multiple scrap files generated by the application, then create a directory inside the scrap area into which the application can place its scrap files. If you do need to create such a directory then you should register the name of the directory with Developer Support.

The following draw files illustrate these two examples and show the commands which need to be in the !Run file of the application.



```
IF "<Wimp$ScrapDir>" = "" THEN Error 0 !Scrap has
not been run. Please locate !Scrap. ELSE Set Appl$Scrap
<Wimp$scrapDir>
```



```
IF "<Wimp$ScrapDir>" = "" THEN Error 0 !Scrap has
not been run. Please locate !Scrap. ELSE Set Appl$Scrap
<Wimp$scrapDir>.App1
```

```
If "<Wimp$ScrapDir>" > "" then Cdir
<Wimp$scrapDir>.App1
```

## 0 Possible errors

Applications that transfer files via scrap files will generate errors if !Scrap has not been seen. The possible errors are as follows :-

**"Can't transfer file" - This means that !Scrap has not been seen by the filer.** Showing the filer !Scrap, or double clicking on it will solve this.

**"Protected disc" -** This means that the current 'scrap' disc has been write protected and the scrap file cannot be written. This can be solved by un-protecting the disc, or using !Scrap from another, unprotected disc.

**"Please insert <disc>" -** to prompt the user to insert the appropriate disc if the one with Scrap on it is not now in the drive.

## 0 Supplying !Scrap with third party products

If your application uses Scrap files, be it for temporary or longer term storage, then you will need to supply !Scrap with your application. The latest version of !Scrap should be distributed with a copy of !Merge (an application merging tool) so the user can update/install accordingly.

Although Scrap and Merge are Acorn's copyright, they may be distributed without a licence, provided that the copyright is acknowledged.

The current version of !Scrap is v0.56 (2-Aug-1991). Both Scrap and Merge are supplied on the disc accompanying this newsletter.

If you have any questions about scrap files that are not covered by the above, then please contact Developer Support. If you are unsure about the way you have implemented your scrap files (especially when dealing with longer term scrap storage) it is better to be safe and contact Developer Support to check that you are doing things correctly.

## • Filetypes

When considering the file format and filetype for a program, always ask yourself whether it is really necessary to create yet another diverse data format, which only your program can understand. The multitasking desktop environment is all about successful interaction between various programs. Should you lock users into your own unique format, thus preventing them from taking files generated in your application into other applications of their choice and vice versa?

Filetypes are a limited resource and one factor which often strongly influences our decision about a filetype request is whether an existing filetype already exists which should be capable of holding that sort of data.

Always try to support generic types wherever possible. Support CSV and TSV file export/import where appropriate.

Allow time for filetype allocations. Requests are typically considered fortnightly, and it is rare for an immediate decision to emerge.

While we try to assess urgent applications upon merit, we have little sympathy for last-minute applications where the program is already written and it's too late to incorporate changes to the file format. Try to request filetypes early in the planning stage of a product.

Future requests for filetypes should be submitted on disc. A copy of !Request is on the enclosed disc. Please remember to complete all sections and to include your file format and sprites. For instructions for use, *please* refer to !Help within the application.

It is intended that applications for other allocations will also be made in electronic form in the future. We will keep you informed.

## • SWI Interface for Joystick Devices

A joystick module is being developed to provide a SWI interface for reading the state of a joystick. The intention is for games houses to have a common SWI interface they can use. Third parties producing joystick hardware can replace this module to provide support for their specific hardware. It is recommended that any such modules have version numbers greater than 2.00 so that Acorn can upgrade its own module without preventing its replacement.

## 0Joystick\_Read (SWI &43f40)

Returns the state of a joystick.

On entry:	R0 = joystick number
On exit:	R0 = joystick state
Interrupts:	Interrupt status is not altered
Processor mode:	Processor is in SVC mode
Re-entrancy:	Not defined

0 Use:

This SWI is used to obtain the state of the requested joystick. The state is returned in the following format:

Byte 0:

signed Y value (range -127 to 127) -64,  
0 or 64 for single switch joystick (corresponds to Down, Rest, Up).

Byte 1:

signed X value (range -127 to 127) -64,  
0 or 64 for single switch joystick (corresponds to Left, Rest, Right).

Byte 2:

Switches (e.g. fire buttons) starting in bit 0,  
unimplemented switches return 0. Byte  
3: Reserved.

Note that this format allows both digital and analogue devices to be supported. Applications which are only interested in state (up, down, left, right) should not simply test the bytes for positive, negative or zero. It is recommended that the at-rest state should span a middle range, say from -32 to 32 since analogue joysticks cannot be relied upon to produce 0 when at rest.

**Related SWIs: None**

**Related vectors:None**

### • Recommended Guidelines for floppy disc based software protection

**The following information was provided in Newsletter No: 19, August 1990:**

"Protection

There have been several enquiries about software protection recently. Acorn does not protect its own software. Users need to be able to use hard discs and/or the network, so protection is inappropriate.

You should be aware also, that there are now bit-copiers available on the market which render software protection useless.

For future compatibility, you need to restrict the use of ADFS\_Op to disk operations that industry standard floppy disk controller chips, other than the 1772, can handle. The 765 chip is one such device that may be used in the future. Although support for the ADFS\_Op call itself is planned to continue, the access it gives to the underlying hardware may inevitably change.

Acorn will continue to consider the possibility of including serial numbers in the hardware or firmware but, currently, this option does not exist for developers. In the meantime, we are working on schemes to ensure that end-user purchasers of Acorn equipment are at least aware of the legal position."

**A reminder about hardware addressing was included in Newsletter No: 21, March 1991:**

"Hardware addressing

Here follows a repeat of the "Acorn Health Warning" - apologies to those of you who always take note:

Please remember that Acorn reserves the right to change components as necessary. Third party applications should not, therefore, address the hardware directly.

Technology, as you are undoubtedly aware, changes apace. Chip manufacturers change their specifications (correcting bugs, implementing speed improvements etc.). Other opportunities sometimes occur in the lifetime of a computer product. Acorn will take advantage of such advances.

Devices such as key discs, dongles and other hardware-specific protection mechanisms could fall foul of such changes."

... **and** now ...

It has come to our attention that some software developers are using special disc formats (typically as part of their software protection system) that compromise the reliability or speed of data recovery.

Unfortunately, it is not sufficient to say "our scheme uses legal operating system calls so everything should work". This is because (for example) some ADFS\_DiscOp calls can be structured to be hardware specific. Although support for the ADFS\_DiscOp call itself is planned to continue, the access it gives to the underlying hardware may inevitably change.

0 Guidelines

The following recommendations are intended to prevent software being produced which is either not readable, not reliably readable or slow to load on future Acorn systems.

Disc formats should conform to the Sector format, header format and inter-sector gap and track arrangement defined in the RISC OS 3 Programmer's Reference Manual (Pages 3-189 to 3-207 and 3-253 to 3-259, for those of you who have purchased the draft), with the following allowable exceptions:

Any software protection may involve:

- Different size sectors within any one track.
- Arbitrarily varied header field data bytes (except those excluded by the 1772 FDC hardware).

**It may not involve:**

- Direct hardware access.
- Varying the data rate or encoding method within a single track.

- c) Reliance on data outside a CRC'd sector of data to be correct, e.g. Reading a 1K sector with a 2K read command to recover inter-sector data.
- d) Accessing sectors specifying track number, head number or sector size other than that recorded in the sector header. If for example a recorded header was: Tk20, Hd 0, Sector 5, Sector size 1024 then trying to read it specifying Hd 1 would succeed with a 1772 but fail on the 82C710 used in the A5000. This particular example can cause some software to take much longer to load. If the sector was actually positioned on a different cylinder one could access it by changing the FDC cylinder register, but this result could not be relied upon for all hardware configurations.
- e) Using ADFS DiscOP 3 (Readtrack). This call is not supported on the A5000 & future machines.
- l) Using ADFS DiscOp 7 & 8 (Step in/out). These calls are not supported by the A5000 82C710 hardware.
- g) Reliance on system data areas (e.g. 0..&8000) or FIQ routine contents or operation.

## • Reported bugs and errors

### 01/0 Documentation

It has been brought to our attention by Chris Honey (Watford Electronics) that some of the documentation for the Acorn I/O podule is incorrect. The problem lies with the following OS\_Byte calls:

```
OS_Byte 188 Read ADC Channel
OS_Byte 189 Read maximum ADC channel number
OS_Byte 190 Read whether 12-bit or 8-bit conversion
```

The I/O Podule guide states that the OS\_Byte calls should be called as follows:

```
Entry : R0 contains number (ie: 188)
Exit : R1 contains result
```

This is in fact incorrect and page 45 of the RISC OS 2.00 Programmer's Reference Manual describes the correct action for these OS\_Byte calls (in fact OS\_Byte calls are in the range 166 to 255). The correct action is as follows:

```
new value = ( old value AND R2) FOR R1
```

and on return R2 holds the value of the status variable in the next memory location.

So, to read the conversion type without altering it, the call should be made as follows:

```
SYS"OS_Byte",190,0,255 TO ,type%
```

For more information read pages 45 and onwards in the RISC OS Programmer's Reference Manual.

### 0 Faults in fontselector

There are a few faults in the font selector code, as supplied with C Release 4. The faults are as follows, with their workarounds:

#### Templates

The font selector window does not have its auto-redraw bit set in its template. This causes the machine to appear to hang when the window is opened. (The Wimp is asking

you to re-draw the window and there is no code there to do it)

Workaround: when copying the font selector templates into your own template file, set the auto-redraw bit on the font selector templates.

#### Crash when leaving the font selector

If you return TRUE from the unknown icon handler or call fontselect\_closewindows(), the font selector will often crash due to a small fault in the library. What actually happens is that the fontselector does not remove its event handler before closing the window. This then causes a pointer leaving window event to be delivered by the Wimp, causing the font selector to die with a 'Fatal Error type=3'

Workaround: there are two workarounds for this problem.

1. mask out pointer leaving window events at the start of your application by issuing the following:

```
event_setmask(event_getmask() I wimp EMPTRLEAVE
J wimp EMPTRENTER);
```

2. remove the windows event handler before returning true from the unknown icon handler, by issuing the following :-

```
wm_unregister_event_handler(e->data.but.m.w,NULL,NULL);
return(TRUE);
```

We have an example application which shows how to drive the font selector, with these workarounds, in our code library. This is provided on the enclosed disc.

### 0 Faults in OS\_CallEvery

RISC OS provides a facility to set up ticker events to call a specified address at a certain time interval. There is a small fault in the call OS\_CallEvery, where the time specified in centiseconds in R0 will have the effect of having an extra centisecond added to it.

Hence, if you issue the following:

```
MOV R0,#5 ; 5 centisecond timer
ADR R1,MyRoutine ; address of routine to call
MOV R2,#0 ; no workspace
SWI XOS_CallEvery
```

Then instead of getting a 5 centisecond timer, you will get 6 centiseconds.

Taking the above into account, and subtracting 1 from your timer (e.g. use 4 for 5cs calls), provides a solution. A problem arises, however, when you need a single centisecond timer, because OS\_CallEvery will not except a value of 0. If you require a single second timer then you should claim the software vector, TickerV, which will call your routine every centisecond.

### 0 Size of podules/expansion cards

Please note that, in the early days, a few Acorn expansion cards were produced which did not allow the requisite



space between the backplate and expansion card PCB, i.e. they did not conform strictly to Eurocard specification. Archimedes 300 and 400 (non / 1) series machines were designed to suit this shorter expansion card length. Acorn's expansion card specification was changed to meet the correct Eurocard specification and Archimedes 400/1 series machines onwards are designed to accommodate the later expansion card design.

Cards should always be designed to meet the Eurocard specification and should normally be supplied with spacers to enable fitting to 300 and 400 (non / 1) machines. The Acorn Expansion Card Specification Issue 2 onwards includes details of the correct card dimensions and includes drawings of the appropriate spacers.

We still come across third party expansion cards that are being manufactured to the earlier, shorter, card design. These will not fit correctly into A400/1 and A5000 machines. Please ensure that you follow the guidelines in the Expansion Card specification. If you need a copy please ask Developer Support.

### • Writing to the CMOS RAM location

It appears that some programs write to the CMOS RAM checksum location. The OS\_Byte,162 SWI, however, does not recalculate the checksum if the location being written is the checksum location.

Software developers should be aware of the implications of writing to the CMOS RAM Checksum location. Do not write to this location.

### • Virus infection

There have been several instances of virus distribution in recent months. One appeared in a Developer's demonstration software and another on a distributed product disc.

Acorn is anxious, as we are sure you are too, to prevent the proliferation of virus infection in the RISC OS community. It behoves us all to take particular care in these matters. Indeed, we understand that, in certain circumstances, the distribution of viruses (i.e. the unauthorised modification of the contents of a computer, whether it be permanent or temporary) is a criminal offence under the Computer Misuse Act 1990.

Please find on the enclosed disc, a copy of Killer which will 'disinfect' your discs of any virus known to Acorn at the time of writing. Please use it on any master disc before it is sent for duplication. Killer cannot be expected to work on entirely new viruses or on new strains of old ones but its use, as a precaution, should help to reduce the spread of the known ones.

Killer has been developed within Acorn as a direct response to the growing problem with viruses. In recent months it has become apparent that the software is best

administered through a third party, in line with Acorn's stated objective of providing innovative personal computing products and services in partnership with third parties. Future releases of Killer (and VProtect - see below) will be sold by Pineapple Software.

Another program, called VProtect, is also included. This is a relocatable module which prevents known !Boot infectors from being loaded. It is also capable of preventing the Module virus (which attacks relocatable modules) from surviving in memory. VProtect is very small - under 4K in fact - and we suggest that it is kept loaded at all times, and is included in the boot sequence. It will automatically take part in a RISC OS 3 Desktop save to ensure that it is reloaded.

Please note that these programs are copyright. They are NOT in the Public Domain and should not be distributed further. This will allow a good degree of version control.

Should you discover a virus which is not known to these programs please contact Acorn or Pineapple Software. The Computer Crimes Unit at New Scotland Yard should also be informed.

We would ask you all to assist in responding in a professional manner to the irresponsible element in the community.

So far the ten families of virus examined at Acorn can be categorised into these two groups.

#### !Boot infectors

These modify (or sometimes create) a !Boot file to load a program when the filer first examines an application directory. There is almost always an additional file added to the application directory containing the program code. One variant on this theme has the whole code in the !Boot file, which is then loaded into OS workspace and executed there. It is important to remember that !Boot infectors can become active as soon as a filer window is displayed for an infected application.

#### File infectors

These append code to files of a particular type (Absolutes and Modules are targets for known viruses in this category), and modify the entry point(s) of the code to pass through the viral code before passing back to the original code. These spread more slowly, since they rely upon an infected program being loaded, which can then infect other programs subsequently.

So far, the chances of data loss are quite low since most viruses appear to have been written for gratification rather than destructive potential. In many cases, however, the coding is of a poor standard and can cause the machine to crash. It is quite common, for example, for RMKilling a viral module to leave a vector claimed to the space at which the module was loaded. The next RMTidy will almost certainly cause the machine to crash when the claimed vector is called.

There are further details of the actual virus families we have encountered in the Release note file on the disc accompanying this edition of the newsletter.

It is not, generally speaking, a good idea to attempt to build self-checking into programs. Firstly, it introduces an unnecessary degree of paranoia and extra effort for programmers (and makes the software build process more complex), and secondly, one of the most used PD virus killers (!Willer) attempts to inoculate !Boot and Absolute files by appending bytes used as infection markers by particular viruses. This is known to cause problems to programs written in C which use overlays, and will cause false triggering by any integrity checking routines.

We do not recommend attempting to emulate these inoculation methods in your own products. Firstly, it implies that you need a new version every time a new method of attack is discovered, and secondly it is NOT possible simultaneously to inoculate against all known viruses.

There are, however, some simple measures which are of some benefit. Set the access rights to be read-only on all files which are not altered by the program - this can defeat some viruses and will result in an error occurring which can alert the user. Do not have a !Boot file unless you really need one - remember that in the absence of a !Boot file, the filer will cache your !Sprites file for you. Avoid making assumptions about/within your programs, e.g. "knowing" the size of a module.

#### • Additions to the Developer code library

We in Developer Support have been constructing a library of Source code to demonstrate how to do certain ~~tasks~~ or achieve certain effects under RISC OS in a variety of different programming languages. The items in the library usually consist of source code plus a working application or module.

Currently, the code library is not very large and we are hoping to expand it as the need arises. If you feel that there is something that is needed in the code library (i.e. you wish to achieve a certain effect and want some source to show you how to do it) or you have some source code or tools that you feel would be of benefit to other developers, then please forward your comments or source to James Bye at Acorn, Fulbourn Road.

The code library now consists of the following items:

#### **txtPATCH**

A patch for v3.1b of RISC\_OSLib to allow the inclusion of the txtedit functions from RISC\_OSLib. With the release of C Release 4 this is now really obsolete and will be removed from the library shortly. If you do require this patch then please ask for it as soon as possible.

#### **PrintSpr**

A small BASIC routine that demonstrates how to drive the RISC OS printer drivers. In this case we just print a specified sprite from a sprite file.

#### **Heap**

Routines to provide memory allocation/deallocation in BASIC.

#### **ChkFlopps**

A small C program that checks all ADFS drives for a specified disc. This code can be useful for checking if a specific disc is in a specific drive.

#### **ScrDumper**

A small C application that shows how screen dumping can be done via the RISC OS (2.00 or 3) printer drivers.

#### **PopUp**

A small C application that shows how to implement 'PopUp' style menus using RISC\_OSLib (a style used by some RISC OS 3 applications).

#### **TXTEdit**

A small C application, written using RISC\_OSLib, which shows how to implement a really simple txtEdit window.

#### **TXT**

A small C application that shows how to implement a very simple text window in C that can be used for reading files (i.e. a read-only text window).

#### **TXTPrint**

A small C application (very similar to TXT described above) which shows how to implement a read only text window in C with the ability to print out what you are reading (shows how to implement printing via the Printer Message protocol).

#### **FontSEg**

Shows how to implement the font selector window using RISC\_OSLib (as shown in the RISC OS Style Guide). There are currently a few faults in this section of RISC\_OSLib and this example code shows how to get around the majority of them. This item is included on the enclosed disc.

#### **SerialCIm**

A small module written in ARM Assembler, which shows how to claim device vectors. In this case we claim the Serial Device Vector.

#### **xsaveas**

An extension to 'saveas' from RISC\_OSLib which has an extra parameter. With this extended SaveAs you pass the name of a sprite (which must be in the Wimp sprite pool) which you wish to represent in the SaveAs window. This enables directories or applications to be represented.

## Ticker

A small module written in ARM Assembler, which shows how to implement ticker events under RISC OS, using OS\_CallEvery and OS\_RemoveTickerEvent.

## Ticker VMod

A small module written in ARM Assembler, which shows how to use Software Vectors under RISC OS, using OS\_Claim and OS\_Release. In this instance we sit on TickerV to provide a single centisecond interrupt.

## CTL

A RISC\_OSLib-style library written in C which provides a script language for building user interfaces for C applications (building and controlling menus, dialogue boxes etc.). This item comes with full source code and is also a good example of enumerating/decoding textual scripts.

## • The enclosed disc

The enclosed disc includes the following software:

Killer - virus killer v 1.26

Request - to be used when you apply for filetypes

System v 0.49

including the modules:

CLib v 3.75, Colours v 0.52, FPEmulator v 2.80, IRQUtils v 0.12,

Hourglass v 2.02, Sound2 v 1.13, WimpUtils v 0.04

Sysmerge v 1.02

Scrap v 0.56

Merge v 1.03

Networking modules

FontsEg - font selector code

Other items may be included at the last minute if there is space.

All the software on the disc is the copyright of Acorn.

You should not distribute Killer outside your own company. System, the system resource modules (CLib, Colour and FPEmulator) and Sysmerge may not be distributed without a licence from Acorn. Please write to Developer Support if you require a licence. You should not be shipping earlier or later versions of the licensable items. If you have a licence which restricts you to earlier versions, please return the existing licence to Developer Support asking us to issue a new one. You should always acknowledge Acorn's copyright to code distributed under licence.

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## Endosures

Request form for Education Directory Issue 3

Disc

Higher Education News 9

CHEST Software Directory Entry Form

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