

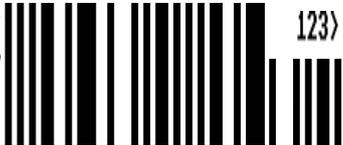
FROBNICATE

Wandering lost & confused amongst the ruins of a post-RISCOS apocalypse



- **Sorting methods.**
- **ACORN IN THE FUTURE?**

Hessing Spinach Christmas 1998 Issue 18 £0
1237



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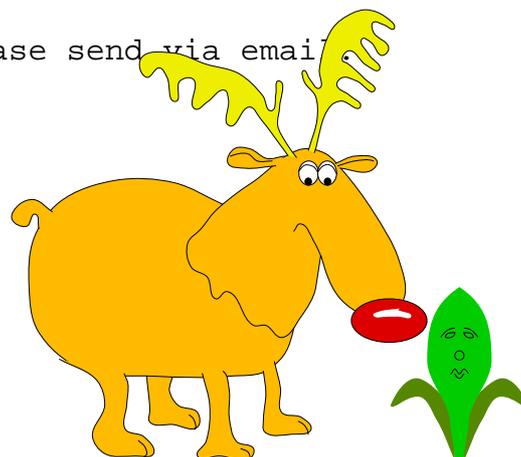
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Editor's Page

I doubt I need to outline the chaos and confusion that has occurred because of the death of Phoebe, and the death of Acorn World 98 (a move which I'm sure has pissed off many many dealers who would have been relying on *the big one*).

However, upon reflection I am thinking this might be something the Acorn scene has been needing for quite a while.

I'll explain:

Firstly, Acorn has always been made by Acorn. And everybody knows that Acorn are good at making efficient processors and have a powerful OS to add to it. However what Acorn are not good at is marketing. Everybody (including my mother) has heard of the Sinclair Spectrum – one of Clive Sinclair's creations. Many people, unfortunately, believe that "Acorn" refers to an old thing with black and red keys. Even Apple tried to get away with blatantly advertising that they were the first to bring RISC to the desktop (several years after RiscOS was released). If Acorn machines are made on a licence, that would give the job of advertising to other companies who are maybe a little better at it. It'll be hard going though. Watch television for a few evenings. You will notice the Pentium adverts, and Tiny Computers saying they use Pentium. The masses don't really know what a Pentium does, and the adverts don't help, they are just led to believe that if you want your computer to sing and dance and access the Internet – you *need* Pentium.

Secondly, the software scene is in a bit of a mess. Nothing much is happening. Perhaps this is the fault of the success of some packages – I'm still using the older "Ovation". But I can see several places for improvement. Such as a kick-ass database, or better development tools.

So it comes down to this. We have to investigate what is happening with RiscOS. Is anybody planning to produce the RiscPC II? Will RiscOS and Acorn technology be licensed? There are many rumours (like Dave Walker having won the lottery and planning to buy out Acorn!) but little solid evidence is visible...yet...

As soon as anything vaguely concrete appears – give your *total* support. Even if you are not in a position to buy a new machine; you might be able to write software for it, or just help spread the word. With recession finally biting into the big high-street names, it would be commercial suicide to take on something which won't pay off. Give them reasons for keeping RiscOS and ARM technology alive.

Acorn themselves can play a part. They should release source codes. Maybe they'd be a bit cagey about releasing the latest versions of this OS (hell, they still haven't released the BBC MOS); but they should at least release RiscOS 2 on the clan site. There are many issues that need to be tackled.

For example, I like !Paint. But some things bug me. When deleting rows or columns, a drag from the left or bottom works, but a drag from the top or right always misses the outer row/column. Or the fact that everything relies upon menus. Why not have ^T toggle the tools open and closed, and ^P show and hide the palette? How about supporting anti-aliased text?

I'm sure you have a list of things that could be done to your favourite part of RiscOS. I'm also sure that if Acorn are not interested in trivial things like that, there are people *out there* who are. Together we can make RiscOS kick ass again.

So don't despair too much. It is, after all, the Christmas season. The time for drinking too much wine and telling your fantasies to the wrong people. Let me know what you think. And if you agree, tell people! Maybe, just maybe, it'll have some effect.

frobnicate@heyrick.co.uk

Digiwidget

As you can see, I've had a bit of a make-over. This is to commemorate my new job. Poor Chantal was horrified when I announced leaving my nice £56K jobs bashing things up, to go into teaching which is earning me a £k figure that I won't even disclose.

You see, I always figured on teaching. I'm nice to kids so how bad can it be?

Well, it isn't good. There are barely enough textbooks to go around. One boy has a pathological problem which causes him to lose his pen every ten minutes (and they never turn up again – that's the weird part). Should I mention staying up until two in the morning marking papers?

Still, I'm not going to complain too much. It was fun breaking the Army's toys and being paid for it but it wasn't what I would call a fulfilling career. Imparting knowledge and helping to set people on the right path for their lives is more pleasant. And that feeling you get when "the penny drops" and a child understands is... there just aren't words sufficient to describe it.

I have three teaching jobs, or rather, my job is split into three parts. I act as a temporary for the lower juniors when a teacher is sick or otherwise away. It is easy enough reading stories and commenting on the appalling state of mathematics. But generally those children are in the "hey, so this is school? what can I do to annoy dad?" stage.

Next comes the upper juniors. Quite a respectable bunch if you ask me. I teach them a subject called "computer science" which is basically the same thing as the old "Information Technology". I'm sure they just reprinted a load of old I.T. textbooks with new covers on.

Finally, the most interesting lot. The seniors. For



them I teach computing science again, but it wanders into deeper territories. Some of the boys are too shy to look at me. Some of them look at me a little too much. Yet others are the geeky type who would rather see a computer with it's lid off than me with my clothes off. But it is all okay, just as long as I try not to pay attention to Jessica who stares at me for the entire lesson and submits homework with little red hearts around the borders. Cute in a rather sick kind of way.

After a long day teaching, I stagger into my favourite café laden with papers. Chantal makes me a nice hot chocolate with cream and sits down to look over the homework. I don't know if she understands much of it, but she likes giving grades on how well the papers have been presented. Chantal is back to calling herself Chantal, after trying the name of just about every actress around. Or maybe she didn't like it when I started calling her "Miss Depardieu"?

Well, so much has happened in the last year that it is hard to fit it all into one page. I would like to include some holiday photos from the Summer, when Chantal took me over to France to see her country and her parents, but there is no room!

France itself is... it is similar to some parts of Wales. Some hills, some fields, a few cows and not much in between except the odd stone-built farmhouse. It is very peaceful.

I had an okay time in France. I suspect I would have enjoyed it more had I spoken the language. Maybe next year?

Anyway. That it it from me for now. Whether you're Christian or Wiccan or Jewish or whatever, whatever your holiday is – I hope it is a merry one.

Dictionary of Computing – C

CAB

A hidden op-code in any good processor. It stands for Crash And Burn, and it should be invoked the moment your user admits s/he can't find the key disc that s/he never had to start with...

Calculator

The original hand-held computer is much under-rated. Sure, you can't run Windows95 on it... But Casio were smart enough to figure that you really wouldn't want to.

Cast

An icky C concept that allows you to force a particular variable type to being something else. For example:

```
int value;
value = (double)get_big_value();
```

CD-ROM

An easy and cheap storage mechanism designed so that MicroSoft™ can save millions on media costs. One CD-ROM is vastly cheaper and quicker than 100 floppies.

CDFS

Acorn's attempt at a filing system for CD-ROMs. Would be pretty cool if it wasn't for the little *bugettes* (like file typing not working correctly). Use *!CDFix* today!

Chase, Angela

An exceptional (fictional) girl in an exceptional television programme. If you have never seen *My So-called Life*, make sure you watch it next time it is on.

Co-Processor

If you *must* have Intel Inside™, then at least make sure it gets to do the boring menial crap while your (Strong)ARM does the fun stuff. Let it know who is boss. NEVER let it know that in some computers, there are *only* Intel processors and that they have *total* control of that machine...

Code

Pseudo-readable goobledeegook written by programmers (coders) that act as instructions telling the computer what to do. A real boon for control freaks as you only have to punch the information into it once, and it will faithfully do what you've asked (even if that was a recursive loop).

Coder

The poor sod that devises and types in computer programs.
See also "Geek".

Code Monkey

The poor sod that types in computer programs to somebody else's specification. Often, such specifications are written by *PHB's* that don't have a clue...

Comms

The slang name for knowing how to wield your modem at unsuspecting AOLers.

Compact, Master

The Acorn Master 128 as a three-box unit. Interestingly enough, the processor and logic was in the keyboard. The big box (not the monitor, the other one) was only there for the floppy disc and the power supply.

Computer

Dah! You *really* expect a definition of this?

Coming next time – part... oh... uh...
...the one that comes after C!

A matter of sorts

by Jon Ripley

Sorting forms an important aspect of data handling. There are many different ways of sorting, some being faster and more effective than others.

In this article I shall describe four different sorting methods; the *Bubble sort*, *Insertion sort*, *Shell sort* and the *Quick sort* and I shall give the algorithms and a BASIC PROCedure for each of them.

Variables used:

`N()` - is the name of the array to be sorted.

`start%` - is the first item in the list to be sorted.

`finish%` - is the last item in the list to be sorted.

You can change start and finish and only sort part of any array, just make sure that start is less than finish. Normally you sort the entire array.

As they stand, the routines sort numeric arrays but you can use any type of array. For example it could be `N$()`, `N%()` or even `pop_stars$()`. You'll need to replace every occurrence of `N()` with your own array but it's easy and simple to do.

The Bubble Sort

Go through the the array examining pairs of elements. If a pair is in the wrong order then they are swapped. This is repeated until the array is examined with no elements being swapped.

```
sort(start,finish)
1 repeat
2   set finished to true
3   loop for current = start to finish-1
4     if N(current) > N(current+1)
5       then
6         swap N(current) with N(current+1)
7         set finished to false
8       endif
9   end for loop
10 until finished
```

Translated into BASIC this becomes:

```
DEF PROCsort(start%,finish%)
  LOCAL finished%,current%
  REPEAT
    finished%=TRUE
    FOR current%=start% TO finished%
      IF N(current)>N(current+1) THEN
        SWAP N(current%),N(current%+1)
        finished%=FALSE
      ENDIF
    NEXT
  UNTIL finished%
ENDPROC
```

The Shell Sort

The Bubble sort is slow because the elements only move one place at a time. The Shell sort tries to overcome this by moving the elements further.

In practice the initial value of `d` should be set to the highest power of 2 below `n/2`. (Where `n` is the number of elements.)

```

sort(start,finish)
1 d = finish - start + 1 (number of elements)
2 repeat
3   d = d div 2
4   loop for current = start to finish-d
5     if N(current) < N(current+d)
6       then
7         swap N(current) with N(current+1)
8       endif
9   end for loop
10 until d=1
    
```

Translated into BASIC this becomes:

```

DEF PROCsort(start%,finish%)
  LOCAL d%,current%
  d%=finish%-start%+1
  REPEAT
    d%=d% DIV 2
    FOR current%=start% TO finish%-d%
      IF N(current%)<N(current%+d%) THEN SW
AP N(current%),N(current%+d%)
    NEXT
  UNTIL d%=1
ENDPROC
    
```

(the "IF N(current%)" part is one complete line)

The Insertion Sort

For each element in the unsorted part of the array. Search through the list and find the position of the highest element and swap it with the element at the top of the array. The top element is now in the correct position and thus forms part of the sorted list.

```

sort(start,finish)
1 loop for current = start to finish-1
2   set highest to current
3   loop for i = current+1 to finish
4     if N(i) > N(highest)
5       then
6         set highest to i
7       endif
8   end for loop
9   swap N(current) with N(highest)
10 end for loop
    
```

Translated into BASIC this becomes:

```

DEF PROCsort(start%,finish%)
  LOCAL current%,highest%,i%
  FOR current%=start% to finish%-1
    highest%=current%
    FOR i%=current%+1 TO finish%
      IF N(i%)>N(highest%) THEN highest%=i%
    NEXT
    SWAP N(current%),N(highest%)
  NEXT
ENDPROC
    
```

The Quick Sort

Select the first element in the array and partition the list so that the items less than the first come after it and items greater than the first come after it. he first item is now in the correct position, the two lists are then sorted.

```

sort(start,finish)
1 if start < finish
2 then
3   partition the list forming a pivot at i
4   sort(start,i-1)
5   sort(i+1,finish)
6 endif
    
```

The process of partitioning the list are quite complex and are expanded in the next algorithm.

```

sort(start,finish)
1 if start < finish
2 then
3   set i to start
4   set j to finish
5   set jstep to -1
6   set condition to true
7   repeat
8     if condition = (N(i) < N(j))
9     then
10      swap n(i) with n(j)
11      swap i with j
12      set jstep to -jstep
13      set condition to not condition
14    endif
    
```

```

15     set j to j + jstep
16     until i = j
17     sort(start,i-1)
18     sort(i+1,finish)
19 endif
    
```

Translated to BASIC this becomes:

```

DEF PROCsort(start%,finish%)
  IF start%<finish% THEN
    PROCpartition(start%,finish%)
    PROCsort(start%,i%-1)
    PROCsort(i%+1,finish%)
  ENDIF
ENDPROC

DEF PROCpartition(i%,j%)
  LOCAL jstep%,condition%
  jstep%=-1
  condition%=TRUE
  REPEAT
    IF condition%=(N(i%)<N(j%)) THEN
      SWAP N(i%),N(j%)
      SWAP i%,j%
      jstep%=-jstep%
      condition%=NOT condition%
    ENDIF
    j%=j%+jstep%
  UNTIL i%=j%
ENDPROC
    
```

Overview

For the bubble and the shell sort the more ordered the array is the less time that is taken to complete the sort. So for a list of 1000 items where 10 are out of place then the sort would be completed in a relatively short time, however if all or a majority of the items in the list were in the incorrect place then it would take a long time to sort the array.

The shell sort is faster than the bubble sort and like the bubble sort, the larger (or more disordered) the array becomes the slower the sort is.

For the quick sort and the insertion sort however, the time taken to sort the array remains the same

irrespective of how ordered (or disordered) the array is.

With a small number of items the insertion sort is slower than the bubble and shell sorts. However, as the list becomes longer the time taken by the insertion sort becomes less than that taken by the shell and bubble sort.

For medium sized arrays (or smaller arrays that you expect to be very disordered) the insertion sort is generally a good choice.

The quick sort, is overall the slowest sorting method for small/medium arrays, but for larger arrays it is definitely the fastest. Another bonus is that as the size of the array increases the time taken to perform the sort increases slowly as opposed to the other methods described here where the time taken increases dramatically as the array size increases. Large arrays can be sorted very quickly with the quick sort..

When deciding which method to use generally...

Small number of items -
Shell / Bubble

Small to Medium number of items -
Insertion

Large number of items -
Quick

Another method which is used for very large arrays is to first use the quick sort until the partitions are about 50-100 items in size and then use the insertion sort to finish. I shall leave you to write the routine, everything you need to do it is here.

Please feel free to contact me regarding this article.

by Jon Ripley (jonripley@arcade.demon.co.uk)

Announcing:



NEWS RELEASE

=====

If you are a resident of Lincolnshire or surrounding areas, and have an interest in the Acorn Risc OS computers, then the new Lincs Acorn User Group should be worth investigating.

LincsAUG has only just been formed by a group of enthusiastic users who can legitimately claim they are not all geeks or anoraks! Members range in age from 9 to 69 and whilst most are using Risc PC machines, others still cherish their BBC models.

LAUG aims to provide a forum for home, education and business users, and with links being forged to the Association of Acorn User Groups, the opportunity to obtain discounts from various suppliers is anticipated in the near future. It is intended both to assist members with practical problems and to hopefully cut through the mass of misinformation that circulates and keep in touch with new developments.

Founding members include Peter Neal who in addition to being a full time student finds time to write programs for Risc OS, and Dave Dunn, a parent governor who spends time at primary school helping children get to grips with computers, and uses his own machines for DTP, Photo manipulation, multimedia, etc.

Participation from members will ultimately determine the growth and activities of the group, and constructive input from interested parties will be welcomed.

Initial contacts can be made with:

Peter Neal pneal@argonet.co.uk

or

Dave Dunn dedunn@argonet.co.uk Tel: 01775 750535

Ovation Pro

The Ovation Pro demo takes quite a while to load, and eats a large chunk of memory (about 1600K just to sit on the iconbar doing nothing!). However when you start fiddling with it, you can *feel* the power available. The text in the screenshot is just *rotated*...



The demonstration version is restricted in that it cannot save documents. But great news - I tried printing to ArcFax and it looks okay. No "Demonstration" written across the page. The demo will also accept files from the older Ovations.

The full pack comprises:

- 300-page user guide
- Step-by-step tutorial
- Reference card
- Bubble Help utility
- Desktop Thesaurus
- 50 outline fonts
- Sample selection of Clipart

For further information, and to *download the demonstration version* (archive), simply visit:

<http://www.netlink.co.uk/users/beebug/software/ovpro/index.html>

What's wrong?

Ya too chicken to advertise in Frobnicate?

Come on, get over it!

Simply email frobnicate@heyrick.co.uk

www.heyrick.co.uk

To the right is the HeyRick! home page (with the middle part removed to save space).

HeyRick!
<http://www.heyrick.co.uk/>

BudgieSoft
 Commercial and free software for the Acorn RiscOS platform.
 (click here for BudgieMgr support)

Froblicate
 The Acorn-oriented magazine with an anarchic outlook.

Site info
 Site information.

Hissing Spinach
 Publishing - using Ovation, MS-WORD, HTML... You name it.

This site is designed to look best with tables and HTML 3.2 facilities, in a resolution 800 x 600 or better with image downloading enabled. Fallback is provided.
 The counter says: **00002469**, our audience says **PAAT C...**

Copyright © 1998 Richard Murray

The site is approximately 6Mb in size, with just under 2Mb of software/data available to download. The site itself is more organised than in the past. This article will tell you what you can find at HeyRick!.

/binaries/

You are best using the links from other parts of the site, but you can access here directly if you wish.

/budgiesoft/

This takes you to the area dealing with programming, both free applications and commercial applications.

/budgiesoft/betatest/

Password protected directory, only available to beta testers.

/budgiesoft/budgiemgr/

Support and information for BudgieSoft's "BudgieMgr" product (Econet management software). Also includes on-line upgrades in a password protected area.

/budgiesoft/videolist/

Support and information for BudgieSoft's "VideoList" product (video cassette management). Also shall include upgrades and support software.

/econet/

Index will take you to many (48) pages of information on all things Econet. Has been recently reorganised and updated.

/froblicate/

No need to discuss this. You've probably been here to download this issue of Froblicate (unless you downloaded it from a BBS?).

/heyrick/

Ah-ha! This is something old, something new, something borrowed, something blue... (no, I'm not marrying my computer - I just didn't have anything wittier to say!).

/hissspin/

Adventures in publishing. From a small letter to a custom brochure. From printing on your colour inkjet to sending to R.C.S. for proper printing, it is all possible. HTML coding (web design) also available. Don't be fooled because it is called "Hissing Spinach"...

/info/

Probably the least visited part of my site. Probably because it contains the least useful information...

/linden/

Mom's area. She'll update it before the next century. Promise!

/ricksworld/

A weird ride around Rick's World. Forget *Virgin!* balloons and step into a magic satellite dish and read movie information, marvel at my bizarre thoughts and lap up the obligatory Angela Chase piccies!

Where ever you go, HAVE FUN!

Froblicate Awards

And so to this; the eight hundredth annual Academy awards ceremony. Tipped to receive multiple Oscars™ is *Leonardo Decapitated* in "**Titanic 2 - the resinking**".

<scratch>

Okay, what I meant to say was: Welcome to the 1998/1999 Froblicate Awards. This is where YOU (the people, the readers) can show your appreciation for good services and good products? In the past, it was just *expected* that Ovation Pro would win time and again. But will R-Comp's latest games offering beat the God of Coding, Mr. Pilling? Only YOU can decide. Unlike normal awards (normal? this *is* Froblicate!), you can also cast your vote for the worst most God awful product or service you've had the displeasure to see.

All I ask is that your impressions go back no further than Summer 1997, so let's leave Andrew L. in the past, okay guys?

New to this Award is a 1 to 10 rating for certain key members of Acorn or the Acorn scene. Obviously 1 means "wish they'd die, like, now" and 10 means "I would even worship your every bodily function". Given the recent things that have happened at Acorn, this could be... telling... Also new to this award are some questions on what you have and what you use. It is known that many Acorn enthusiasts are moving to some version of Unix, but which?

Please email your completed questionnaires to : froblicate@heyrick.co.uk

Time duration : Summer 1997 to Winter 1998/1999.

PART ONE : RATINGS

Give a rating from 1 (die scum!) to 10 (marry me!) for the following:

Acorn Computers (the company) :

Acorn Computers (the machine) :

Stan Boland :

Peter Bondar :

Dave Walker :

David Pilling :
The BOFH :
Bill Gates :
Hermann Hauser :
Jason Tribbeck :
R-Comp Interactive :
Argo Interactive :
Beebug :
Kerri Green :
Acorn User (magazine) :
Archive (magazine) :
Archimedes World (magazine) :
Risc User (magazine) :
Froblicate (and don't suck up):

Nominate a "Personality of the year" :
Why do you nominate this person? :

PART TWO : BEST AND WORST

COMMERCIAL SOFTWARE PRODUCTS (give versions if possible):

BEST :
Why? :

WORST :
Why? :

Good but overpriced :

PUBLIC DOMAIN / FREE / SHAREWARE (etc) SOFTWARE (vers. if poss.):

BEST :
Why? :

WORST :
Why? :

Good but overpriced :

HARDWARE (for Acorn machines):

BEST :
Why? :

WORST :
Why? :

Good but overpriced :

HARDWARE (for non-Acorn machines, if you have any):

BEST :
Why? :

WORST :
Why? :

Good but overpriced :

PEOPLE AND COMPANIES:

BEST :
Why? :

WORST :
Why? :

Biggest jerk(s) ever:

PART FOUR : POPULAR SOFTWARE

Put an 'X' in the boxes you agree with

	Own	Use	Love	Hate	Only use 'cos I'm paid to
Ovation	<input type="checkbox"/>				
Ovation Pro	<input type="checkbox"/>				
Impression2/Junior	<input type="checkbox"/>				
Imp. Style/Pub.	<input type="checkbox"/>				
MS WORD 6	<input type="checkbox"/>				
MS WORD 7	<input type="checkbox"/>				
WORD 8 (Office97)	<input type="checkbox"/>				
AMIPRO	<input type="checkbox"/>				
WORDPERFECT 5.x	<input type="checkbox"/>				
WRDPRFCT 6 or newer	<input type="checkbox"/>				

PART FIVE : INTERNET

Put an 'X' in the relevant boxes:

- I have my own ISP account, with :
- I use a college/uni/work ISP account
- I most often connect using my Acorn
- I most often connect using a PC running Windows
- I must often connect using a PC running some version of Unix

Your WWW browser is (tick whichever are necessary):

- ArcWeb
- Fresco (not the Argonet version)
- Fresco (the Argonet version)

- Fresco (with JavaScript)
- Browse
- Webster (the free one)
- Webster XL (the commercial one)
- MSIE, version :
- Netscape, version :
- Other:

PART SIX : DEMOGRAPHICS

There is NO requirement to fill in all or any of this section, but it would be greatly appreciated. This information will be used to create a demographical overview of Frobnicate's target audience. It will NOT be passed to any third party or sold to any mailing lists. The information will be held in a computerised database (written by myself!) to track changes between this and the end-of-1999 survey planned for, you guessed it, December 1999.

As Frobnicate is a hobby and is written for recreational purposes, it is exempt from the Data Protection Act (exemption 1 in section 6.A.2 of the DPA Guidelines November 1994 on p90).

You can, at any time, request a copy of the information held on you. Email frobnicate@heyrick.co.uk for further information. Hardcopies are available but will incur a small charge, again, email for information.

Your name :

Your age :

Your gender :

Your STD code :

Remember, you do not have to answer the next three questions unless you want to. Please delete all those that do not apply...

Are you... : Single / Attached / Married / Widowed / Other

Do you... : Live at home / Living in digs / Own house (mortgaged) /
Own house (outright) / Renting a place

Average income: £ / year

Mark which Acorn machines you own:

- 8-bit (BBC micro / Master)
- FileStore
- Archimedes, pre-RiscPC in a three-part box (A3xx - A5000)
- Archimedes, pre-RiscPC all-in-one (A3000, A30x0, A4000, A4)
- RiscPC
- Acorn Unix machine (R140 etc), running RISCiX
- Acorn Unix machine, running RiscOS

And which non-Acorn machines you own (Pentiums include compatibles):

- Classic 8-bit (Speccy, Dragon etc)
- Pre-80486 PC (!)
- 80486 PC
- Slow Pentium PC (less than 100MHz original speed)
- Fast Pentium PC (over 100MHz original speed)
- Pentium MMX PC (200 - 300MHz)
- Pentium MMX PC (300++ MHz)
- Apple Mac (old type)
- Apple - PowerPC
- DEC Alpha machine
- CRAY hypercube supercomputer (some day this will get ticked!)
- Other :

Select which hardware your main Acorn has:

- Don't have an Acorn (aaaargh!)
- ARM2 or ARM250

- ARM3
- ARM6 or 7
- SA110
- Hardware FP
- Harddiscs, how many :
- IDE podule, manufacturer and # of drives :
- SCSI podule, manufacturer and # of drives :
- Econet
- Ethernet
- Video digitiser
- RiscTV or similar
- Fast serial card, # of ports :
- I/O card, Acorn type
- Serious I/O card, such as made by Intelligent Interfaces
- Co-processor, 6502
- Co-processor, 80386
- Co-processor, 80486
- Co-processor, 80586 or Pentium class
- Modem, speed :
- ISDN

Your comments...

Your comments are valued. Whether they are on this questionnaire or whether you wish to expand one of your answers, Frobnicate appreciates attention to detail!

MERRY CHRISTMAS



FROM FROBNICATE

Here's to 1999...

...will all those sci-fi predictions
come true in 12 months? :-)