

PUBLIC HOLIDAYS

Calendar programs were one of the staples on which many of us cut our programming teeth. The first book on programming I bought had a calendar program that just fitted into the 1Kb of a ZX81.

The downloads page of the Just Words! website contains an unusual calendar program, because it displays public holidays for each year. Why don't other calendar programs do this? The clue is to be seen in the program description. It only displays English public holidays. And I stress English, because it does not show Scottish or Northern Ireland public holidays.

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It is easy to write a universal calendar program, but it is impossible to write a universal public holiday program. Each land has its own public holidays and even within a land there can be regional differences.

In this situation QL-ers have an advantage over users of some other computer systems. The ease of programming in SuperBasic means that it is possible to write a tailor made calendar program. You could even amend someone else's program to include your country's public holidays. Nor do you need just to stick to public holidays. If you are Muslim, Jewish or other religion you may be able to program in your holy and feast days. You could even tailor your program to show family birthdays and anniversaries

Public holidays come in three types:

- 1: Fixed days
- 2: Occasionally variable days
- 3: Totally variable days

FIXED DAY PUBLIC HOLIDAYS are the easiest to program. We all know that Christmas Day is on 25th December and New Years Day on 1st January.

In your print routine you will have commands like PAPER 7 : INK 0. A simple line of basic reverses these:

```
IF month = 12 AND day = 25 : PAPER 0 : INK 7
```

(Do not forget to reset to PAPER 7: INK 0!)

OCCASIONALLY VARIABLE PUBLIC HOLIDAYS can come in various sorts, some of which are easier to program than others.

In the Netherlands the monarch's birthday is an important public holiday. If a monarch dies or abdicates you would have to reprogram your basic.

Many decades ago the UK elected a Labour government after many years of Conservative rule. They rewarded us by an extra public holiday and what better day than 1st May-the day of the worker

This was simple to program:

```
IF month = 5 AND day = 1 : PAPER 0 : INK 7
```

However the Labour government was short-lived and when the Conservatives came back in power the idea of a public holiday to celebrate the day of the worker was abhorrent. However no politician would dare take a holiday away, and so they cunningly changed the holiday from 1st May to the first Monday in May and in so doing gave everyone a long weekend

The programming had become a little more difficult:

```
IF (month = 5 AND day < 8) AND cd/7 = INT(cd/7) : PAPER 0: INK 7
```

(In my program $cd/7 = INT(cd/7)$ identifies the day of the week as a Monday)

Some years later the government replaced the totally variable Whitsun holiday by an occasionally variable one of the last Monday of May. Then the code becomes:

```
IF (month = 5 AND day > 24) AND cd/7 = INT(cd/7) : PAPER 0 : INK 7
```

The British have another unusual public holiday rule. If Christmas Day, Boxing Day (the day after Christmas) or New Years Day fall on either a Saturday or Sunday then an extra public holiday is awarded. Thus in 2010 Christmas Day was a Saturday and Boxing Day a Sunday so 27th and 28th December become public holidays. Similarly if New Years Day falls on a weekend the 3rd January becomes a public holiday.

A programming rule to cover these possibilities is a little complicated. I did it by use of a "holiday flag". For example, if Christmas Day falls on a weekday the value of the flag is

0; on a Saturday 2; and on a Sunday 1.

PUBLIC HOLIDAYS 2010	
New Years Day:	1st January
Good Friday:	2nd April
Easter Sunday:	4th April
Easter Monday:	5th April
May Day Holiday:	3rd May
Spring Bank Holiday:	31st May
Summer Bank Holiday:	30th August
Christmas Day:	25th December
Boxing Day:	26th December
Bank Holiday:	27th December
Bank Holiday:	28th December

TOTALLY VARIABLE PUBLIC HOLIDAYS are the biggest headache and they are very common in lands where the public holidays are still largely church based. The most obvious is Easter which occurs on a different day each year

The rule is in fact very simple, Easter Sunday is the first Sunday after the first full moon on or after the Spring Equinox To simplify matters the church cheated by defining the Spring Equinox as 21st March although it is in practice variable

The big challenge is how to turn this into a computer code. It requires both astronomical and programming skills.

Fortunately others have done the work for us. In the Quanta library there are two programs for calculating Easter. They can be found in the folder "ONEFILEPROGS" on disk UG02. The first program Easter-bas is by Darren Jones and the second program Easter2-bas by John Tanner.

If you are not a member of Quanta then you will also find an Easter algorithm in a QL Today article written by David Denham (Vol, 7 issue 1 page 45).

Finally the website:

www.h2g2.com/approved_entry/A653267

gives the algorithm in a suitable form for use in a basic program.

Once you have worked out a date for Easter the other holy days are easy to calculate. Ascension day is the Thursday after the 5th Sunday (i.e. 39 days) after Easter and Whit Sunday is 7 weeks or 49 days after Easter