



The problem of sequential numbering

This is a particular problem for electronic forms that needs careful analysis. With paper forms, the matter is straightforward. Simply preprinting a unique number for each form or form set is usually sufficient. In some cases, you may choose to preprint a check digit (modulus) number to ensure that later transcription is free of errors. The problem with electronic forms is that they don't usually come with preprinted or pre-assigned numbers. Depending on the software you are using, it may be possible to distribute sets of electronic forms with pre-assigned numbers, but this will generally be a time-consuming task for the person distributing the forms.

As with most forms issues—electronic or paper—it pays to get back to basics. In this case, consider the following questions:

- Why do you need a serial number for the form?
- What purpose will it serve?
- Is it ONLY for unique identification?
- Is it to prevent fraud?
- Is it for ease of reference? For example, paper forms are often stored in numeric sequence.
- Who will be referring to the number and for what purpose?
- Will the number tell you who issued the form?

This is best explained by looking at three typical examples.

Example 1 — You want to issue an accountable document such as a cheque.

In this case EVERY document must be accounted for to ensure that none have been fraudulently used. Each preprinted paper cheque has a preprinted serial number and the auditors will want to locate every document.

In electronic format, this is not so easy to achieve. Much depends on how the software allows numbers to be allocated. If the number can only be allocated at the time when the data file is created, usually by taking a number from a remote server or external database, then what happens if that data file is discarded before being saved. If the person subsequently deletes the document, or decides not to use it for the time being, the organisation will be left with an a number that cannot be accounted for unless special precautions are taken. Software such as FormFlow makes provision for the number to be allocated at the time when the document is saved. However, as explained in the FormFlow Reference manual, *"you can only display the number by moving back to the record after using the Add Record command"*. Although this is potentially annoying for form fillers, it may be a satisfactory compromise and it certainly solves the problem of allocated unused numbers. Of course, this doesn't necessarily achieve the desired audit requirement. The record may be saved and still never be sent anywhere.

If the audit requirement is to LOCATE THE ORIGIN of each numbered form, then this could be achieved by storing the user's name and date in the database that issues the serial number at the time of issue. If this happened, it wouldn't matter when the number was issued, the main point being to know WHO it was issued to. How you do this depends on the capabilities of your software and whether you can SEND data to the serial number database as well as receive data from it.

If your electronic forms system cannot handle the problem, then you will most likely have to institute manual control procedures, just as you do with paper forms.

Example 2 — You want to issue a document that is used by one person only.

In this case your primary task will most likely be to ensure that there is no duplication.

Most software has the facility to allocate a serial number from within the data file. Usually this is done by allocating a start number and an increment number. For example, if a form was set to start at 500 and increment by 1, as the person issues forms they would be numbered 500, 501, 502, 503, etc.

But this only makes the number unique for that user.

Example 3 — You want to issue a document such as a purchase requisition.

In this case you may not want to account for every document, but may want to ensure that there is no duplication. Having issued numbers that have been discarded may no longer be an issue. It has been my experience over some 30 years of forms management that the vast majority of serial numbered forms fall into this category. So it doesn't matter how and when the number is allocated as long as it is unique and it doesn't even matter if a number is allocated and never used since such occurrences will be rare.

You could use the method discussed in example 2 to issue each user with their own start number. The problem with this arrangement is that each user's file has to be set individually and even this doesn't ensure uniqueness unless the number is tied directly to a user ID such as name.

A safer way is to allocate a number from a server as previously discussed. An interesting example from the world of paper forms occurred some years ago with one of our State Police Departments. We were developing forms for firearms control and licensing. To overcome a particular procedural problem we suggested that the Licence numbers be preprinted on the application form. The obvious response was: "*You can't do that! It would open the system up to fraud.*" We pointed out that the number by itself was meaningless. The law stated that the person had to have their licence in their possession if using a firearm. Just quoting a number was no defence. Although the number on the application became the Licence number at a later stage, it was JUST a number and meant nothing till the Licence was actually approved and issued.

So this takes us back to the important question about what PURPOSE the number serves. If it is just for unique identification, then allocating from a server, even when the data file is initially opened, will do the job. Some programs (e.g. JetForm and Informed) have the facility to do this automatically.

An alternative is to allocate the number from within the data file itself but to use a formula that makes it unique. One of the simplest ways is to combine the user's ID and the TIME (including seconds) that the document is created. In many cases you will only need the time. There is a limited risk, but the chance that two people will create forms at EXACTLY the same time (to the nearest second) is so remote that it will most likely be inconsequential. You could use features such as Informed's "RANDOM" function which generates a random number, or even include such a random number with the time.

In conclusion

You will need to decide first of all WHY you need a serial number, then WHO will use it and finally, what METHOD will best achieve your needs. The latter will depend on the software you are using and its capabilities. And a word of warning--don't just look at your software's default functions. Good electronic forms software has powerful calculation and/or macro features that can often be used to achieve sophisticated functionality that isn't always obvious at first glance.

To sum up, the most common methods of allocating the next number are:

- from within the form data file itself using a built-in auto-incrementing feature
- from within the form data file using a formula
- from an external file/database/server as soon as the new data file is opened
- from an external file/database/server as soon as the new data file is saved

Further information

For further information on electronic forms see our paper: *Electronic Forms: traps for novices*.

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