# Forms programme

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## Purpose

Replace data sheets with custom MATLAB programme for Windows tablet running MATLAB. It might also work on an Apple tablet running MATLAB.

## Glossary

These are the terms I will use in this document:

*Set of forms*: A set of data sheets to be used for a particular purpose (e.g. “Caribbean sperm whale survey”)

*Form formats*: These define the data sheets that the programme uses

*Data sheet*: Type of data to be entered (e.g. “Environment”}

*Entry form*: Window on computer screen where data are entered

*Entry*: A particular piece of data to be entered on an entry form (e.g. “Wind speed”)

*Mode*:Whether on programme start up, you use the same forms as in the previous use of the programme (**continuing mode**) or enter new forms (**start-up mode**)

## Usage

In MATLAB:

Select path with dataseaov.m and any saved files.

Type either:

*>> dataseaov[return]*

This goes to **continuing mode**, unless you have not run the programme previously in which case it goes to **start-up mode**

Or:

*>> dataseaov(1)[return]*

This always goes to **start-up mode**

## Enter form formats (only in **start-up mode**)

You are first asked to identify the Excel file with the form formats (see Appendix for how this Excel file should be set up). You identify this file, press ‘Open’, and then you are asked for the ‘Title of set of forms’. You type in any title, e.g. ‘*Caribbean survey data sheets*’, and press ‘OK’.

## Previous data (only in **continuing mode**)

You are first asked whether you want to add to, and possibly edit, any previously stored data.

If ‘Add to previous data’, new data are added to previously stored data (as .mat file; the most recently saved one is used if there are several, see Data storage).

If ‘Start new files’, the input data are stored separately, the old data are not removed.

In **continuing mode** you use the set of forms as in previous use of programme. You also by default use previous alarm settings, although these can be changed (see Set alarm).

## Main screen

The data sheets are listed at the top, click on each to open an entry form for that data sheet.

Enter or edit the data.

You can put in ‘-‘ for missing data.

For some entries there are exclusive choices (round radio buttons). i.e. only one option, and exactly one option, can be chosen (e.g. “Port” or “Starboard”).

For some entries there are non-exclusive choices (square check boxes). i.e. you can click one, none, or several of the options. Clicking none can indicate “Don’t know”.

There are also list boxes. Click on the option you want, or click on “Other (enter)” to put in something else.

For some entries there are small pushbuttons, with, say, ‘Fl’ on them. Push to add (in this case at 16:22:31) F22:31 to the text box beside, so you can save times of fluke-ups, etc.

For the ‘F’ code, a window opens up where you can add additional data (e.g. fluke-up headings, which camera, …). Press ‘DONE’ when finished.

To cancel an entry form, press ‘CANCEL’ at the bottom right of the entry form.

When done, press ‘DONE’ at the bottom left of the entry form.

The data are then checked. Problems that need fixing are highlighted (e.g. entries too large or small) in red. Fix them and try ‘DONE’ again. For some data sheets you are asked to enter the end time (this can be edited).

You can have several entry forms open at the same time, but only for some types of data.

There may be counts in some entries which get incremented each time that data sheet is opened or keep a running total of the previous entry (e.g. number of codas; see ‘Counts’ sheet).

## Checking and editing inputted data

In the top left corner of each data sheet button is an area that says ‘Data’. Click on this to see a tabular view of the data for that data sheet type, including data from previous sessions if you used the ‘Add to previous data’ option at the beginning. You can edit the data, add or delete rows, etc.

## Data storage

The data are saved each time you press ‘Done’ on a data sheet entry form, or ‘Save changes?’ in the table mode. They are saved as MATLAB data (.mat) and Excel (.xlsx) files with names: formdatYYMMDDHHmm.mat and formdatYYMMDDHHmm.xlsx (YY is year; MM month; DD day; HH hour; mm the minute), where the date and time are for when the programme was started. Only the .mat file is entered at the next use of the program if you choose ‘Add to previous data’, so changes to the Excel sheet that you make in Excel are not propagated into the program.

## Date/time

The date and time (computer’s date and time) are given at the bottom right of the Main screen.

## Set alarm

At the bottom centre of the Main screen, you can set an alarm:

How often it goes off (in minutes, starting on the hour)

The frequency (pitch) of the alarm in Hz

The loudness (this is overridden by the volume settings on the computer’s audio system)

The duration in seconds

Turn the alarm off by setting loudness to zero.

## End

At the bottom left of the Main screen, you can end the programme, although you must exit from all entry forms first.

## Appendix

The formats of the data sheets shown by the programmes is set from an Excel file read in at **start-up mode**, and defines a particular set of forms. This file consists of the following compulsory worksheets, the ‘Forms’ sheet, the Sheets for each form, and the ‘Counts’ sheet.

### ‘Forms’ sheet

The worksheet entitled “Forms” has 4 columns headed:

*dst numsheet presheet empk*

*dst*: the names of the data sheets. These can be any names you like (no special characters).

*numsheet*: number of entry forms of that data sheet allowed to be open any time. e.g. ‘1’ means only one data sheet of that form can be open.

*presheet*: the code number of any other form that must be open before a data sheet of this form can be open. So, in the example below, ‘Encounter’ (form 4) must be opened before a sheet of ‘Cluster composition’ can be opened. ‘0’ implies no restrictions of this kind.

*empk*: which entry on the data sheet is initially highlighted (cursor) for filling in. ‘0’ implies no highlighted entry.

#### Example:

|  |  |  |  |
| --- | --- | --- | --- |
| dst | numsheet | presheet | empk |
| Cluster composition | 5 | 4 | 6 |
| Environment | 1 | 0 | 3 |
| Other cetaceans | 3 | 0 | 3 |
| Encounter | 1 | 0 | 0 |
| Listening | 1 | 0 | 2 |

So, in this example, up to five Cluster composition entry forms can be open, an Encounter form must be opened before any Cluster composition forms are opened, and the emphasis (cursor) is on the sixth entry (see below).

### Sheets for each form

There must be one worksheet for each form in the Excel file with the data sheet title the same as in the dst column of the ‘Forms’ datasheet (so sheets entitled ‘Cluster composition’, ‘Environment’, ‘Other cetaceans’, ‘Encounter’ and ‘Listening’ in the above example).

Each of these worksheets has 4 columns headed:

*elemk typdat varn pdat*

Each subsequent row is an entry for that data sheet, and they are displayed on the Excel worksheet in row order.

*elemk*: the names of the entries

*typdat*: the type of data of the entry (integer)

*1* numeric: data with acceptable max and min and optional default value

*2* numeric: larger than previous entry (also max and min and possibly default)

*3* radiobutton: one choice among several

*4* checkbox: choose as many as you wish, or none

*5* listbox: choose from list or ‘other’

*6* string: enter text

*7* string, pushbutton: one or more pushbuttons add time stamps and potentially other data to the string which can be edited

*8* time added manually when data sheet closed

*9* time added automatically when data sheet closed

*varn*: short name for entry used in table

*pdat*: initial values of entry. Depends on type of data (see codes under typdat)

1/2 either two numbers separated by a space (‘min max’) or three vales separated by spaces (‘min max default’)

3/4 names of different options on separate lines (see example below)

5 names of different options on different lines. ‘Other (enter)’ allows user to enter something else.

6 default text. Blank has no default; \*\*datest gives data and time; \*\*\*XXX gives count number (see ‘Counts’ sheet below)

7 short (<3 characters) names of pushbutton options on separate lines. If starts with ‘F’, then new flukeheading screen opens up.

8/9 no value needed

#### Example

|  |  |  |  |
| --- | --- | --- | --- |
| elemk | typdat | varn | pdat |
| Cluster number | 1 | Cl | \*\*\*cln |
| First seen | 6 | Date/time began | \*\*datest |
| Last seen | 8 | Date/time ended |  |
| Behaviour | 4 | Behaviour state | For Res Soc |
| Males | 1 | Ma | 0 20 0 |
| Adults | 1 | Ad | 0 100 1 |
| Calves | 1 | Ca | 0 20 0 |
| Suckling | 4 | Suckling | Left Right Switch |
| End type (+ Comments) | 4 | End type | Fl SD Spl Mer Left Unk |
| Other boats? | 6 | Other boats? |  |
| Aerial behaviour | 7 | Aerial | Br L |
| Flukes | 7 | Flukes | Fl |
| Comments | 6 | Comments (End Type) |  |

#### ‘Counts’ sheet

The worksheet entitled “Counts” has 6 columns headed:

*Code Restart RezeroStart IncrementStart DecrementCancel AddpreviousDone*

Each row indicates a count maintained by the programme, and the columns indicate how the count is changed:

*Code*: Code for this count. Starts ‘\*\*\*’. See example below

*Restart=1*: Zeros at programme turn on. ‘0’ no zero at turn on.

*RezeroStart=n*: Zeros when this form (indicated by index number *n*) starts. ‘0’ no zeros at form starts.

*IncrementStart=n*: Increments by one when this form (indicated by index number *n*) starts. ‘0’ no increments at form starts.

*DecrementCancel=n*: Decrements by one when this form (indicated by index number *n*) cancels. ‘0’ no decrements at form cancels.

#### AddpreviousDone=n: Increments by previous entry when this form (indicated by index number n) done (i.e. running total). ‘0’ no running totals.

#### Example

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Code | Restart | RezeroStart | IncrementStart | DecrementCancel | AddpreviousDone |
| \*\*\*enn | 1 | 0 | 4 | 4 | 0 |
| \*\*\*cln | 1 | 4 | 1 | 1 | 0 |
| \*\*\*totc | 1 | 4 | 0 | 0 | 5 |