Table interface documentation

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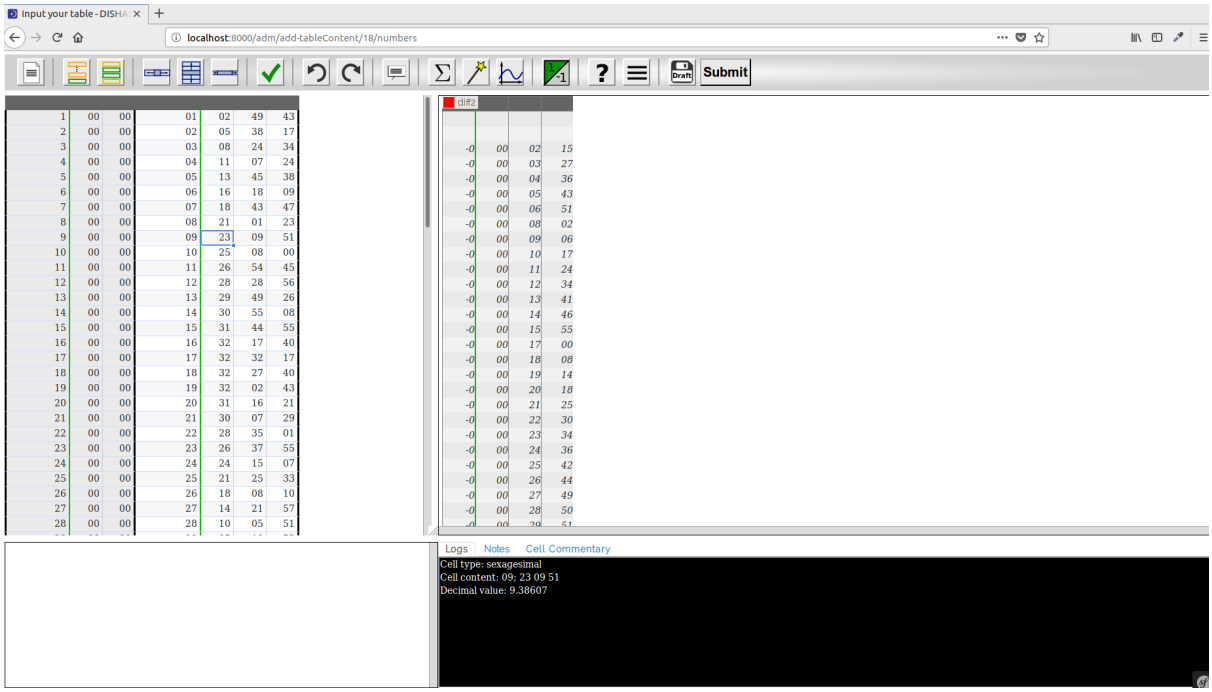


Introduction

This document explains how to properly use the input interface for tables in DISHAS. It is specificaly aimed at adminstrators who wish to add, edit, consult, export or remove tables in the database.

The input interface is subdivided into three zones :

- The actual table, with its values
- The information zone (1st differences, 2nd differences)
- The console, giving informations about the currently selected cell

I. Input template

I.1. Fixed properties

1	00	00	01	02	49	43
2	00	00	02	05	38	17
3	00	00	03	08	24	34
4	00	00	04	11	07	24
5	00	00	05	13	45	38
6	00	00	06	16	18	09
7	00	00	07	18	43	47

- The browner part (left) of the template contains the argument, the brighter part (right) contains the entry. They are separated by a bold black line.
- In this representation, the red square designates one **super-cell**.
- The green line (part of the template) delimitates the **integer** part (left) of the number and the **fractional** part (right).
- Each **place** is contained in a particular cell.
- The value is **completed** to the maximum number of digit admitted at this place in the base with a zero. Note that in this example, the argument are expressed in interger+sexagesimal; hence in this case, the integer part is not completed by zeros.

The objective of DISHAS is to generate a common way to edit numbers in table for interoperability purpose. Hence, some setting of the input interface are fixed for every generated template:

I.1.1. Super-cell

For a given quantity, its different places are divided into individual cells. A group of cell designating a quantity is called a **super-cell**. The template implement the concept of super-cell, so that the super-cell implements tools such as navigation, calculation, commentary, errors etc.

The super-cell is generally divided into two parts: the integer part of the number and the fractional part. Each of these part is divided in as many cell as places.

I.1.2. Cell auto-fill

For a given value in a cell, this value must be represented by the maximum amount of digit authorized by the type of number (the base) in order to avoid misinterpretation. The cell will be automatically filled if needed to comply with this rule.

E.g. in a sexagesimal quantity the value “7” will be auto-fill in its cell as “07”. Ex : 12;3,7

12	03	07

✔ Note that the fixed properties of the online template can be overwritten when determining the format in the export tool.

To represent a missing sign (e.g. difficulty of reading, gap…), it is recommended to use the wildcard “*”.

I.1.3. Cell style value

The interface does not allow any change in the styling of the cells. The coloration of the cell content is always linked to a specific tool of the application:

- Green content means that the value was suggested automatically.
- Red content means that the value contains a mistake (generally: mismatch between the number and the base).
- Yellow flag indicates a commentary.
- Black content means that the value was either manually inputted by the user of validated by him/her from a suggested value.

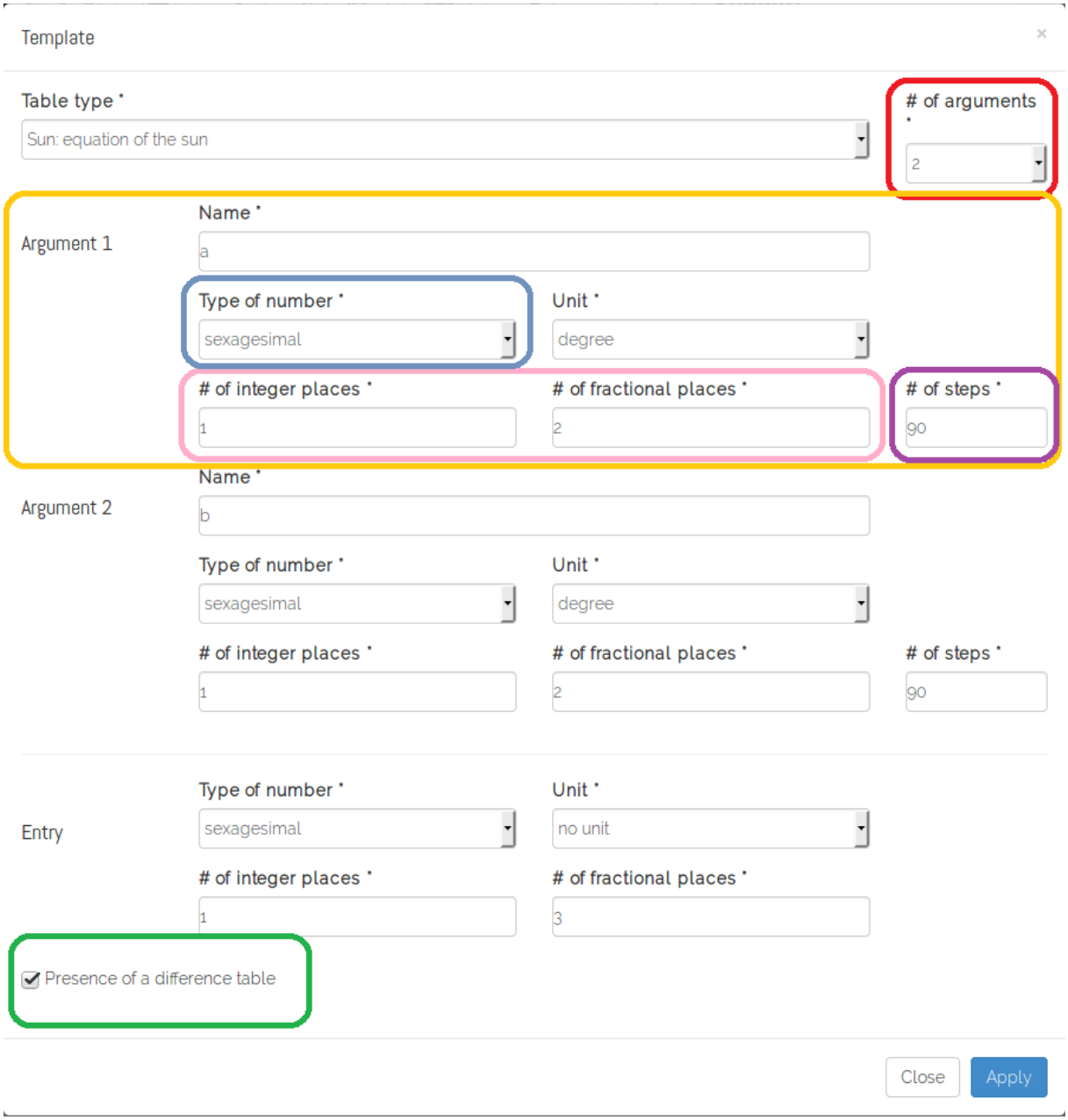
I.1.4. Orientation

DISHAS’ template has a portrait orientation. The first arguments go from top to bottom, and the second arguments from left to right.

I.1.5. Content

DISHAS’ template is designed to contain only contemporrean Arabic numbers. Each cell of the template must be filled by either a quantity or a specific mark. By default, any cell left blank will be filled with “00” (according to the base). As a numerical edition, it is recommended to fill the table cell according to the informed judgment of the user.

I.2. Settable template properties



Template modal window

I.2.1. Numbers of argument

The number of argument is set by the user (here in the red square). DISHAS input interface manages single and double-arguments table. The selection of the number of arguments is up to the user, although for some functions it might be a suggested value.

I.2.2. Template size

I.2.2.1. Size of the super-cell

The size of the super-cell of each argument and of the value is calculated adding the number of integer places and fractional places. These information are set in the “number of integer places” and “number of fractional places”, here in a pink square for the first argument.

✔ It is always possible to change the number of integer and fractional places while entering the data. Note that removing a fractionnal place will truncate the template.

I.2.2.2. Number of lines

The number of lines is set by the “number of step” of the first argument, here in a purple square.

I.2.2.3. Number of columns

The number of columns is a combination between the number of cells used to represent the first argument and the entry and the step of the second argument.

I.2.3. Type of number

The type of number determines the correct format of each cell composing a super-cell. Although it is possible to do so, it is not advised to change the type of number while entering a table in DISHAS’ interface for precision matters. The type of number must be selected in the “type of number” select, here for the first argument in a blue square.

I.2.4. Name and unit

Name and unit are strictly documentary metadata.

I.3. Auto-generated difference-table template

In the specific case the inputted table contains a difference table, a difference-table template is auto-generated. To generate a difference table, one must click on the button “Presence of a difference table”, here in a green square.

This difference table can be programmatically filled by the app-tool, or entered manually by the user. Note that the template of a difference table is fixed at the generation of the main table and cannot be modified by the user.

To access the difference-table interface, click the button  of the toolbar. Note that the coloration of the interface is slightly changed to remind the user that it is not the interface of the main table, which can be accessed back by clicking again on the same button.

II. General interface tools

II.1. Cell selection/navigation

The navigation in the template relies on the different zone-level determined in DISHAS: cells, super-cells, columns and line.

Note that by default, if an action involve a super-cell and the selection is on a single cell, the navigation to the parent super-cell is automatic.

II.1.1. Area and non-overlapping area selection

Note that a zone selection can always be done manually, by **extending a selection** by clicking and dragging the mouse to highlight the selection.

A zone can be selected by clicking on the first cell, then press the shift key and click on the last cell of the selection.

Dispersed area can be multi-selected by clicking on each zone or cell and holding the ctrl key.

The all table can be selected by clicking ctrl + A.

II.1.2. Cell and zone selection

Given the specificity of the template and usage of DISHAS interface, innovative selection tools can be used to select the super-cell, the column or the line from one position.

II.1.2.1. Cell to super-cell

A super-cell can be selected manually by extending a selection like any area.

From one cell, the selection can be extended to the super-cell by clicking on the button  . The same event can be triggered by the keyboard shortcut: ….

Repeating the action will bring the selection back to the previous selected cell.

Note: the list of equivalences will be given at the end of the document.

II.1.2.2. Cell to column

A column can be selected manually by extending a selection like any area.

From one cell or one super-cell, the selection can be extended to the column by clicking on the button  . The same event can be triggered by the keyboard shortcut: …

Repeating the action will bring the selection back to the previous selected cell or supercell.

II.1.2.3. Cell to line

A line can be selected manually by extending a selection like any area.

From one cell or one super-cell, the selection can be extended to the line by clicking on the button  . The same event can be triggered by the keyboard shortcut: …

Repeating the action will bring the selection back to the previous selected cell or supercell.

✔Cliking the escape key will always bring back the cursor to the main single cell, defined in bold blue line.

✔All selection method can be cumulative.

II.2. Quick value modification

While entering a value, especially if the input is assisted by a tool, a quick modification of the value (+/- 1) is accessible by the keyboard short cut: …

The value modification may affect either a specific cell or a super-cell. If a super-cell is selected, the incrementation will start by the smallest fractional part. In both cases, the value cycle from place to place.

E.g. in the case of a sexagesimal number :

12	03	59

+1

12	04	00

II.3. Validation

Values in cell have two statues in the interface: they are either suggested or validated by the user.

All value that was imputed or modified directly by the user is considered validated. Values that are generated by one of the input helper are suggested and need to be validated before being processed.

To validate one or multiple value, the area containing these values must be first selected, then the validation can be trigger by clicking on the button  or using the keyboard shortcut: ….

As long as a value is suggested, it keeps in memory from which tool or method it was generated. For instance, in case of a linear interpolation, the suggested value can display what are its parent selections: … (Graphical delimitation of the parent area), or simply by consulting the console.

Once a value is validated (either by clicking on the validation button, or by manually modifying it), it loses memory of its source of generation.

II.4. Comments

The adding of a comment can be triggered by clicking on the button  or by using the keyboard shortcut: …. The “comment” tab of the console is automatically accessed and highlighted in the interface. The comment must be inserted in the console text area; when over, the user need to click on anywhere else to escape the comment mode. The content of the console will be automatically saved.

To access and/or edit a comment, the commented super-cell or any of its child cell must be selected. By default, the console will automatically switch to the comment section, where the text can be consulted or edited.

! Comments can only be added at the level of the supercell. They may be included in the export of the table as footnotes (see export).

II.5. Errors

The error tool can be configured by the user according to various matters. The errors are generally evaluated at the level of a cell.

II.5.1. Off base numbers

The interface proposes an error tool that highlights values that are not coherent for the selected type of number (base). For instance, “72” will be highlighted in a strictly sexagesimal base. This error is always estimated at the level of the cell.

II.5.2. Inconsistent number

WIP: The interface proposes an error tool that can be configure by the user to alert on inconsistent number according to either a linear interpolation or a given model and parameters. The user needs to configure a limit after which the error tool will be triggered. This type of error is always estimated at the level of the super-cell.

III. Prediction tools

Many prediction tools have been specifically designed for the DISHAS interface. All of them implements the particular types of number used in the astronomical sources. The tools are based on contemporean calculation. For more documentation on the method used to compute in DISHAS, see the developer documentation.

01	00	00	00	00	00	00
02	00	00	01	10	15	00
03	00	00				
04	00	00				
05	00	00				

01	00	00	00	00	00	00
02	00	00	01	10	15	00
03	00	00	02	20	30	00
04	00	00				
05	00	00				

Prediction tools are composed of 2 parts: determining the source cells (in orange) and target cells (in green) of the operation, and then applying a mathematical function to input cells and fill the targets with the result.

✔ Prediction tools must explicitally be manually triggered before filling a part or the all table. Predicted values won't be validated until the user confirms it. They are clearly highlited in the interface until their validation and keep in memory their method of production.

III.1. Interpolation

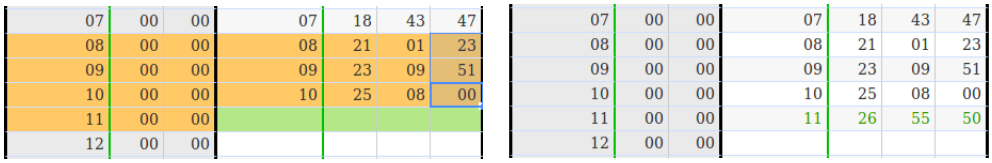
The interpolation can rely on several grounds

III.1.1. Polynomial forward interpolation.

- This interpolation will predict the next value (in the given direction, based on which shortcut is used) based on linear interpolation (or polynomial interpolation if more than 2 source cells are selected).

- Button for downward linear interpolation : 
  Shortcuts: : W = up, S = down, A = left, D = right

- Exemple of a parabolic downward interpolation :



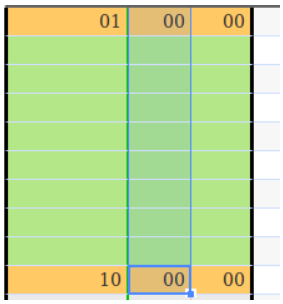
07	00	00	07	18	43	47
08	00	00	08	21	01	23
09	00	00	09	23	09	51
10	00	00	10	25	08	00
11	00	00				
12	00	00				

07	00	00	07	18	43	47
08	00	00	08	21	01	23
09	00	00	09	23	09	51
10	00	00	10	25	08	00
11	00	00	11	26	55	50
12	00	00				

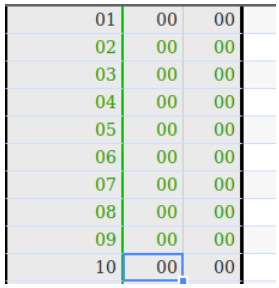
III.1.2. “In-between” interpolation

- This interpolation assumes a linear behaviour for the selected cells. It will fill the empty cells of the selection accordingly. In the case where the selection is arguments, it will assume a constant step.

- Button for “In-between” interpolation : 
  Shortcut: B
- Exemple of constant-step prediction for arguments:



01	00	00
10	00	00



01	00	00
02	00	00
03	00	00
04	00	00
05	00	00
06	00	00
07	00	00
08	00	00
09	00	00
10	00	00

III.2. Model based prediction

The model based prediction modal window can be accessed by clicking the button  .

III.2.1. Model selection

According to the type of table the user is filling, the corresponding model is automatically selected.

III.2.2. Parameter input/estimation

Once the model is selected, the interface displays the associated parameters.

In order to predict a table, the user can manually input the values in the parameter field.

Note that this tool can also be used to estimate the parameter value from already input entries with the least square method.

Once the value for the parameters is set, you can fill the remaining of the table with values predicted from the model.

IV. Historical tools

Based on the model, the interface gathers different tools that help connecting the inputted table with resources stored in DISHAS database.

IV.1. Historical parameter search

Based either on implicit parameter estimation or explicit parameter read-off the table, a query of matching historical parameter set can be managed in the interface, based on the value of one given parameter which is part of a parameter set.

The parameter can be searched by minimum and maximum value, or value and range.

The research of historical parameter is cross-base. This means that the result of the query is not necessary expressed in the same type of number. Note that the level of match precision at the level of historical parameter is up to the user. The historical parameter might for exemple have a different level of precision than the astronomical parameters estimated by

IV.2. Table search

WIP Based on the type of table and the quantity inputted, the user can query the database to find identical or close matches.

V. Visualization tool

V.1. Function information

V.1.1. First and second difference

The user can display first and second differences of the table calculated by the computer to help during the input of the table. **WIP** based on the local values of the first and second differences, a warning can appear when an outlier is detected.

In the case of a single-argument template, the first and second different are displayed in the right-zone of the window. In the case of a double-arguments template, the difference line by line are displayed in the right-zone of the window, the difference column by column are displayed in the bottom-zone of the window. The differences shown are linked to the selected cell of the template, and automatically scroll with the user selection.

V.1.2. Statistical information

WIP Some statistical informations about the table can be displayed.

V.2. Graphic visualization

A basic tool of visualization in accessible through the interface by clicking on the button 

In the case of a single-parameter template, the visualization tool will display a line graph with argument value in abscissa.

In the case of a double-arguments template a heat-map is displayed.

VI. Management tools

VI.1. Console

In case of registered event the console shows the information that can be displayed by clicking on the cell (?) :

- Float value of the quantity
- Error verbose

VI.2. Auto-save

The table content can be either a draft or a public document. A draft version can be listed in the interface but won't be accessible by anyone else than its owner (the creator of the document). As any other data of DISHAS, only the owner can edit a document.

In order to prevent data loss, the document is automatically uploaded to the database every minute.

Moreover, the autosave can be manually triggered by clicking on the button 

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The document won't be publically accessible until actually submitted by the user by clicking on the button 

.

Note: When a table content is being edited by its creator, the table is removed from public access until the changes are done. The user must click on the submit button to make it publicly accessible again.

VI.3. Documentation

Documentation can be accessed at multiple point of the interface.

VI.3.1. General interface documentation

General documentation on the interface can be accessed by clicking on the button 

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Name of the button and their function happens has pop-up while passing the mouse on it.

Documentation on specific tools can be access by hovering or clicking on the icone 

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VI.3.2. Table and model documentation

Each table type for which a model is implemented in DISHAS database is documented on the prediction modal windows accessed by the button  .

VII. Export

VII.1. Export format

In order to comply with a great number of different usage, the export is accessible on different formats: .csv (in this case: semi-column separated values), .ods (readable by LibreOffice, openOffice and excel), LaTeX code, JSON and PDF. Depending on the output format, many options are available.

VII.2. Export specification

Heads (Y/N): presence or not of the headings of the arguments.

Strictly double digit (Y/N): the export can either keep DISHAS behavior of auto-filling with zeros the quantity or not. In this case, all zeros located at the first left position of a cell will be erased in the export.

Errors (Y/N): for some export formats, it is possible to keep the graphical indication of a mistake in a cell.

Commentaries (Y/N): for some export formats, it is possible to keep the commentaries linked to the quantity. The commentary will be exported as a footnote.

(Block division (Y/N): for some export formats, it is possible to divide the template in different blocks in order to match an editorial template or the original template.)

3 possible (mutually exclusive) options for representing a value:

Multiple cell per quantity (Y/N): the export keep DISHAS behavior of super-cell,

As 1-cell floats (Y/N): the export compute the floating (decimal) value of the super-cell and put it in a single cell.

As formatted string: the export represent the value in 1 cell as a string (e.g. ”12 ; 33 , 10”),

	CSV	ODS	LATEX	JSON	PDF	HTML
HEADS (Y/N)	✔	✔	✔	✔	✔	✔
MULTIPLE CELL PER QUANTITY (Y/N)	✔	✔	✔	✘	✔	✘
STRICTLY DOUBLE DIGIT (Y/N)	✔	✔	✔	✘	✔	✘
ERRORS (Y/N)	✘	✔	✔	✔	✔	✔
COMMENTARIES (Y/N)	✘	✔	✔	✔	✔	✔
BLOCK DIVISION	✘	✘	✔	✘	✔	✔

Icone	Definition	Keyboard shortcut
	Document	
	Forward interpolation	W,A,S,D
	“In-between” interpolation	B
	Super-cell selection	Shift+Space
	Column selection	Shift+W or S
	Line selection	Shift+A or D
	Validation	Ctrl+Space
	Comment	C
	Function info	
	Statistical tools	
	Graph visualization	
	Difference table	Shift+Tab
	Documentation	
	Save draft	Ctrl+S
	Submit online version	
	+/-1 on a cell	Q or E