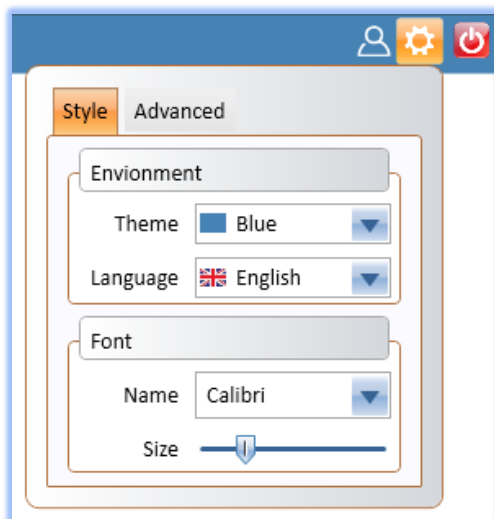


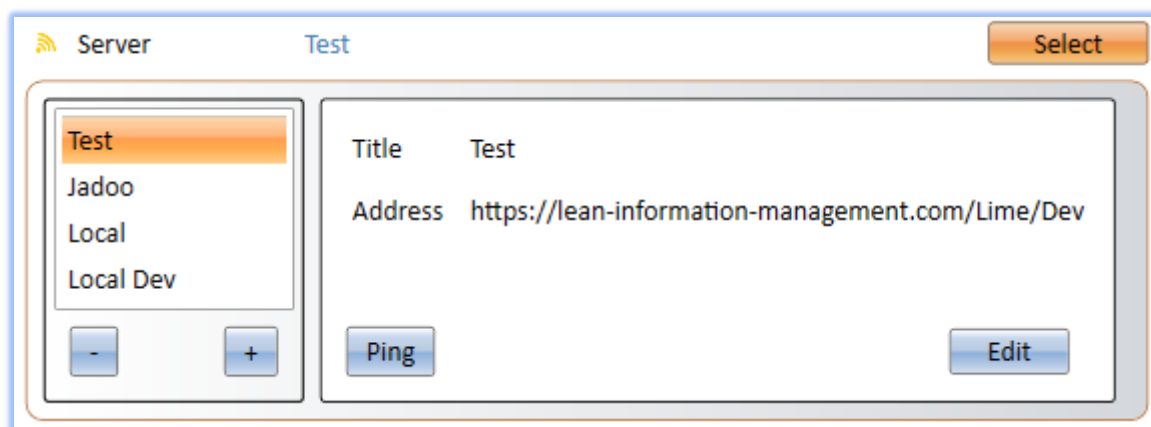
Getting Started with LIME*

001) Download the [Lime Client](#) (ignoring the Microsoft warnings) and run it.

002) Personalise the client opening “Settings” at the top-right:

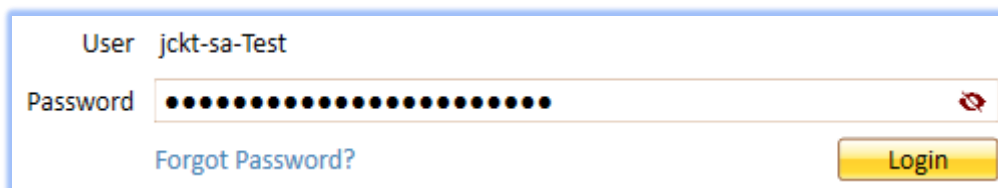


003) Select your Server on the Login-Screen:



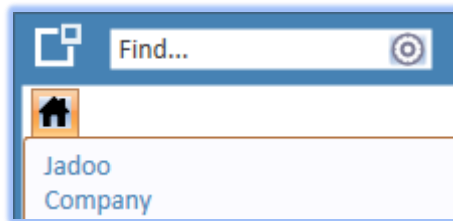
The Wi-Fi symbol next to “Server” should turn amber to indicate that the server is available. If it stays red, try to connect to our Test Server (<https://lean-information-management.com/Lime/Dev>).

004) Login using the credentials given to you:

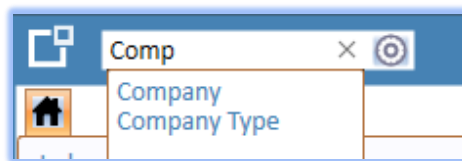


* Lean-Information-Management-Engine

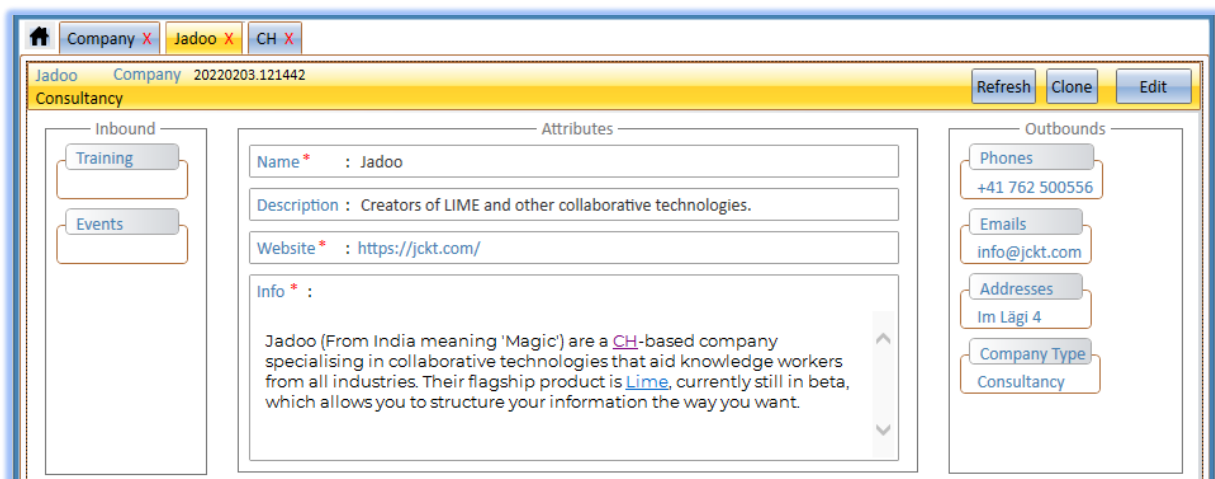
005) On successful login, the Wi-Fi symbol next to “Server” turns green and the login-screen is replaced by the Home Screen:



006) You can now select items from your recent items' list or type into the search box at the top-left and selecting them from the results pane:

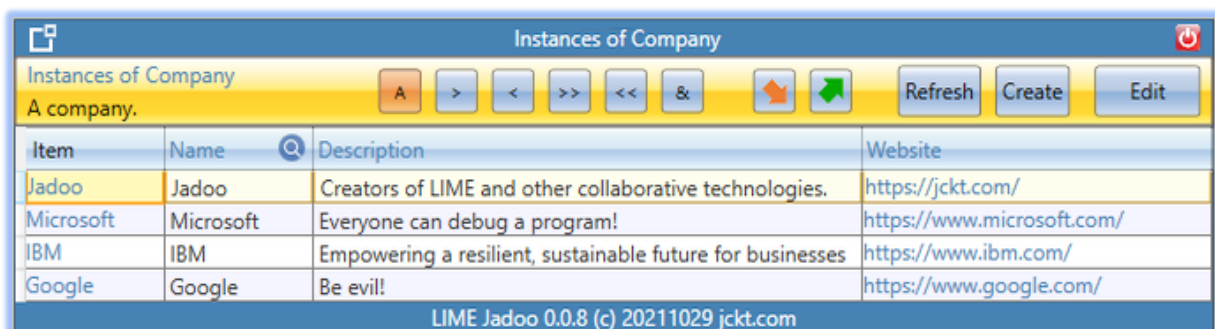


007) Items are typically* displayed using a generic form. There are two forms, one for single items (top) and one for collections of items (bottom):



The screenshot shows a detailed form for a single item named 'Jadoo Company'. The form is divided into several sections: 'Inbound' with links to 'Training' and 'Events'; 'Attributes' with fields for 'Name' (Jadoo), 'Description' (Creators of LIME and other collaborative technologies), 'Website' (https://jckt.com/), and 'Info' (a paragraph about Jadoo); and 'Outbounds' with links to 'Phones' (+41 762 500556), 'Emails' (info@jckt.com), 'Addresses' (Im Lägi 4), and 'Company Type' (Consultancy). The form also includes 'Refresh', 'Clone', and 'Edit' buttons.

Generic Form to display a single Item



The screenshot shows a table titled 'Instances of Company' with columns for 'Item', 'Name', 'Description', and 'Website'. The table lists four items: Jadoo, Microsoft, IBM, and Google. The footer of the table indicates 'LIME Jadoo 0.0.8 (c) 20211029 jckt.com'.

Item	Name	Description	Website
Jadoo	Jadoo	Creators of LIME and other collaborative technologies.	https://jckt.com/
Microsoft	Microsoft	Everyone can debug a program!	https://www.microsoft.com/
IBM	IBM	Empowering a resilient, sustainable future for businesses	https://www.ibm.com/
Google	Google	Be evil!	https://www.google.com/

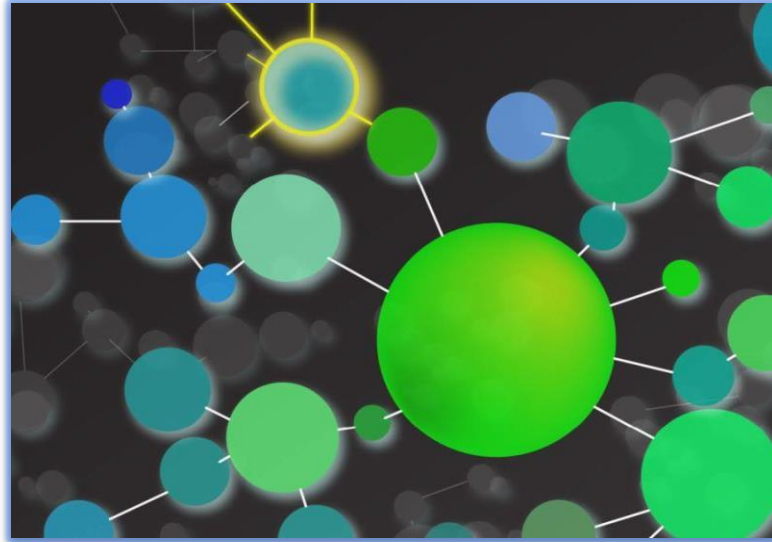
Generic Form to display a collection of Items

Most of the information available on a form are references to other items from your information model (shown as [links](#) that you open by left-clicking; right-clicking opens the item in an extra window).

* You can define custom forms for each type of item.

Information Model Logic

Lime employs a fractal Information Model meaning that there is no implicit structure and that all information consists of other information items, including those to govern item features and behaviour. It is thus a graph whose nodes and edges represent Items with Attributes and their Relationships, respectively.



LIME Information Model

Item Information

The information that is available for an Item consists of Item-specific information, i.e. data that only exists because their owning Items exist, and the information contained in the Item's relationship, i.e. data that exists irrespective of an item. The former are called 'Attributes', the latter are 1st and 2nd-level 'Relationships'.

Attributes

Attributes are the smallest information unit in the model and contain a single value of a particular Data Type (text, number, date, file name, true/false, etc.). There are two types of Attribute-Types: 'Attribute Types' and 'Quantifiable Attribute Types'.

Attribute Types

Defining an Attribute Type

Both define a Title and a Description. You can also define whether it is i) mandatory information for an Item, so that it must contain a value; ii) the value will be passed on when this item is cloned; and iii) if newly created Items will already have a default value set.

You must also define the Data Type and there is an option to add a validation object, e.g. to limit the allowed dates for the reign of a Soviet leader to a range between 1922 and 1991, the time when the Soviet Union actually existed.

Quantifiable Type

For Attributes that would typically be specified using a unit, like 'meter' or 'second', you can define a 'Quantifiable Type', which is an 'Attribute Type' featuring a unit. All units must be based on an SI-Unit for Calculations:

The screenshot shows the configuration window for a 'Height' Quantifiable Type. The window has a title bar with 'Height', 'Quantifiable Type', and a unique ID '20220203.163408'. Below the title bar are buttons for 'Delete', 'Create', 'Cancel', and 'Save'. The main content area is divided into three panels: 'Inbound', 'Attributes', and 'Outbounds'. The 'Inbound' panel shows 'Features On' with 'Person' selected. The 'Attributes' panel contains fields for 'Title *' (Height), 'Description' (The height of a person in centimetres.), 'Is Mandatory' (unchecked), 'Is Cloned *' (checked), and 'Default' (185). The 'Outbounds' panel shows 'Validations' (Number Range), 'Data Type' (Integer), and 'Unit' (cm).

Relationships

In LIME, all relationships are bi-directional and carry different semantics depending on which way you are looking at them. For example, a person can be the parent of another person. The relationship representing this would be called "Children", looking from the parent, and "Parents" looking back from the child. The former is defined as an "Outbound" and the latter as an "Inbound" relationship, though both are in fact the same relationship:

The screenshot shows the configuration window for a 'Children' Outbound Type. The window has a title bar with 'Children', 'Outbound Type', and a unique ID '20200321.2155'. Below the title bar are buttons for 'Refresh', 'Create', 'Clone', and 'Edit'. The main content area is divided into three panels: 'Inbound', 'Attributes', and 'Outbounds'. The 'Inbound' panel shows 'Origin Types' with 'Person' selected. The 'Attributes' panel contains fields for 'Title *' (Children), 'Description' (The children of this person.), 'Cardinality *' (-1), 'Reverse Title *' (Parents), 'Reverse Description' (The parents of this person.), 'Reverse Cardinality *' (-1), 'Is Mandatory' (unchecked), and 'Is Cloned *' (unchecked). The 'Outbounds' panel shows 'Default Value' and 'Outbound Target' (Person).

Defining a Relationship

Defining a Relationship

Relationships are defined by their Type, on which you can specify all the relevant properties:

- The "Origin Type" for which this relationship has been defined (here: 'Person', shown on the top-left)
- The "Target Type" of the items that you can select for this relationship (here: also 'Person', shown on the top-right).
- Its Title and Description, and Reverse-Title and Reverse-Description.
- The respective Cardinalities, specifying how many items can be related on either side of this relationship. Here, both being '-1' means that a Person can have any number of children and a child can have any number of parents.

You also have the option to specify whether or not i) the Relationship is a mandatory part of an Item, so that at least one target item must be selected; ii) the selected item(s) will be passed on when this item is cloned; and iii) if newly created Items will already have a default relationship item selected.

The following Table is an illustration of 'Parent-Child' relationships. The highlighted Elizabeth I famously had no Children. Her Parents were Henry VIII and Anne Boleyn.

Instances of Person A real person.					
Item	Name	DoB	Photo	Children	Parents
Henry VIII	Henry VIII	28/06/1491		Elizabeth I	Henry VII
Elizabeth I	Elizabeth I	07/09/1533			Anne Boleyn Henry VIII
Anne Boleyn	Anne Boleyn	01/07/1501		Elizabeth I	
Henry VII	Henry VII	28/01/1457		Henry VIII	

Item Collection Form of 'People'

Defining 2nd-Level Relationships

The table also shows indirect relationships that are derived from the defined 'Parent-Child' type, namely 'Grandchildren' and 'Grandparents'. They are the result from defining a computed value called a 'Look-Up', which is also bi-directional with its reverse values shown as 'Rear-Views'.

The 'Grandchildren' Look-Up Type is defined in a similar way to a Relationship, also featuring 'Title', 'Description', 'Reverse Title', and 'Reverse Description' as well as the Target Type (called 'Look-up' Target). However, the actual definition of such a 2nd-Level relationship happens in the Attribute 'Lookup Formula', which allows to select the target relationship path (here: 'Children > Children', meaning that the target is found by finding all the children of a person and then all their children, thus yielding all grandchildren).

Grandchildren Lookup Type 20220124.174315

The Grandchildren of this person.

Inbound

Origin Type
Person

Attributes

Title * : Grandchildren

Description : The Grandchildren of this person.

Reverse Title * : Grandparents

Reverse Description : The grandparents of this person.

LookUp Formula * : Children > Children

Outbounds

Lookup Target
Person

Edit

Delete Create Cancel Save

Definition of a 'Look-Up' Type

Select the target of the path.

- ☐ Citizenships
- ☒ Children
 - ☐ Citizenships
 - ☒ Children
 - ☐ Phones
 - ☐ Emails
 - ☐ Addresses
 - ☐ Accounts
 - ☐ Parents
 - ☐ Events
- ☐ Phones
- ☐ Emails
- ☐ Addresses
- ☐ Accounts
- ☐ Parents
- ☐ Events

Cancel Ok

LIME Jadoo 0.0.8 (c) 20211029 jckt.com

Selecting the target is done by creating or editing the formula. You can select as many Out- and Inbound relations as you like, with no limit on their order or the resulting path length.

For example, selecting 'Children > Parents' as a 2nd-level Relationship would select all 'Partners', i.e. all 'People with whom this Person has one or many children' (see Figure below)

Select the target of the path.

- ☐ Citizenships
- ☒ Children
 - ☐ Citizenships
 - ☐ Children
 - ☐ Phones
 - ☐ Emails
 - ☐ Addresses
 - ☐ Accounts
 - ☒ Parents
 - ☐ Events
- ☐ Phones
- ☐ Emails
- ☐ Addresses
- ☐ Accounts
- ☐ Parents
- ☐ Events

Cancel Ok

LIME Jadoo 0.0.8 (c) 20211029 jckt.com

Instances of Person

A real person.

A > < >> << & Refresh Create Edit

Item	Name	DoB	Photo	Children	Grandchildren	Parents	Grandparents	Partners
Henry VIII	Henry VIII	28/06/1491		Elizabeth I		Henry VII		Anne Boleyn
Elizabeth I	Elizabeth I	07/09/1533				Anne Boleyn Henry VIII	Henry VII	
Anne Boleyn	Anne Boleyn	01/07/1501		Elizabeth I				Henry VIII
Henry VII	Henry VII	28/01/1457		Henry VIII	Elizabeth I			

Item Collection showing 'Look-Ups' and 'Rear-Views'

Calculated Values

LIME allows you to add simple calculations to your Item information. In the example below, we calculate the number of Grandchildren for each Person.

The screenshot shows the LIME interface for a 'Person' item, Henry VII, with ID 20220203.152817. The interface is divided into several sections:

- Inbound:** Contains a 'Parents' button.
- Attributes:** Contains fields for 'Name *' (Henry VII), 'DoB' (28/01/1457), 'Photo' (a portrait of Henry VII), and 'Height' (157).
- Outbounds:** Contains a 'Children' button (showing Henry VIII) and a 'Lookup' section with 'Grandchildren' (showing Elizabeth I) and 'Partners' buttons.
- Rearviews:** Contains 'Grandparents' and 'Partners' buttons.
- Calculated:** Contains a field for '#Grandchildren' with the value 1.

Defining the Calculation Formula is similar to defining a Lookup. It starts with a Keyword (SUM, AVG, MAX, MIN, and COUNT) followed by the path to the calculation target:

The screenshot shows the LIME interface for a 'Calculated Type' item, #Grandchildren, with ID 20220120.215039. The interface is divided into several sections:

- Inbound:** Contains a 'Calculating For' button (showing Person).
- Attributes:** Contains fields for 'Title *' (#Grandchildren), 'Description' (The count of all grandchildren.), and 'Calculation Formula *' (COUNT(Children > Children)).
- Outbounds:** Contains a 'Data Type *' button (showing Integer).

Item Collections

An important aspect of information management is to create, check, edit, exchange, and delete items. A convenient - and often the only viable - way, is to use tables where items can be compared and quickly changed or deleted. LIME provides a generic form for managing Item Collections that allows to create custom views by applying filters and sorting, bulk edit a number of items with one click, export all information, import new items, and to delete a selection of items.

To open an Item Collection, you can click on the pop-out icon of any list. For example, to view all People, find the 'Person' Item and click on the 'Instances' pop-up in the 'Look-Up' Panel at the bottom-right of the form.

The collection will open in a new window, with all the Items dynamically displayed, so that any newly created Item is immediately added to the list and any change to an Item reflected (see figure below, in which the Item of 'Henry VII' is edited and the validation Error shown on both instances at the same time)

The screenshot shows the LIME interface for a 'Lookup' item. It displays a list of instances: Anne Boleyn, Elizabeth I, Henry VII, and Henry VIII. A 'Pop Up' button is visible next to the list.

The screenshot shows the Lime software interface. On the left, a table titled 'Instances of Person' lists historical figures. On the right, a detailed view for 'Henry VII' is shown, including attributes like Name, DoB, Photo, and Height, and a calculated field for '#Grandchildren'.

Item	Name	DoB	Photo	Height
Henry VIII	Henry VIII	28/06/1491		189
Elizabeth I	Elizabeth I	07/09/1533		156
Anne Boleyn	Anne Boleyn	01/07/1501		1,23
Henry VII	Henry VII	28/01/1457		157a

Value is not a valid number. arents

Attributes

Name * : Henry VII

DoB : 28/01/1457

Photo :

Height : 157a

Value is not a valid number.

Calculated

#Grandchildren : 1

Html-Attributes

Items can feature Attributes of Data Type 'Html', which typically store lengthy texts. As these are difficult to correctly display in a table, they are instead displayed to the right in a dedicated box, whose content displays the text(s) of the selected Item. You can write any text, format it, insert tables etc. as you'd expect from an Html-Editor. You can also insert links to other Lime Items (Here [Elizabeth I](#)), which you can copy by clicking on the Item link for 1 sec.

The screenshot shows the Lime software interface. On the left, a table titled 'Instances of Person' lists historical figures. On the right, a detailed view for 'Henry VIII' is shown, including attributes like Name, DoB, Photo, Height, Nationality, and Children. The 'Info' tab is selected, displaying a detailed biography of Henry VIII.

Item	Name	DoB	Photo	Height	Nationality	Children
Henry VIII	Henry VIII	28/06/1491		189	England	Elizabeth I
Elizabeth I	Elizabeth I	07/09/1533		156	England	
Anne Boleyn	Anne Boleyn	01/07/1501		147	England	Elizabeth I

Info

Henry VIII (28 June 1491 – 28 January 1547) was King of England from 22 April 1509 until his death in 1547. Henry is best known for his six marriages, including his efforts to have his first marriage (to Catherine of Aragon) annulled. His disagreement with Pope Clement VII about such an annulment led Henry to initiate the English Reformation, separating the Church of England from papal authority. His daughter [Elizabeth I](#) went on to become one of England's most important monarchs.

Defining Views

Items tend to have a lot of 1st and 2nd level relationships, which can lead to wide tables. You can therefore select which aspect of the information you want to show. The default view is 'Attributes' and 'Outbound'. The other aspects can be toggled on and off by clicking the square buttons in the form header. Also, each Column allows for sorting and filtering. You can set any number of filters, with each of them being applied (AND - logic).

The screenshot shows the Lime software interface. On the left, a table titled 'Instances of Person' lists historical figures. The table has columns for Item, Name, DoB, Photo, Height, Lookup, Parents, Grandchildren, Grandparents, and #Grandchildren. The 'Lookup' column is selected, showing a list of related items.

Item	^v Hen	DoB	Photo	Height	Lookup	Parents	Grandchildren	Grandparents	#Grandchildren
Henry VIII	Henry VIII	28/06/1491		189	Elizabeth I	Henry VII			0
Henry VII	Henry VII	28/01/1457		157	Henry VIII		Elizabeth I		1

Bulk Edit

Bulk editing is a very powerful feature in Lime. You can select any number of Items in a collection and then change a value on one of them to change it on all. For example, we

want to add 'Nationality' as a Relationship to a Person. After adding the Relationship to the Person Type definition, it will show up when you open the collection again.

Instances of Person A real person.									
☒	Item	Name	DoB	Photo	Height	Children	Nationality	Parents	Grandchildren
☒	Henry VIII	Henry VIII	28/06/1491		189	Elizabeth I		Henry VII	
☒	Elizabeth I	Elizabeth I	07/09/1533		156			Anne Boleyn Henry VIII	Henry VII
☒	Anne Boleyn	Anne Boleyn	01/07/1501		1,23	Elizabeth I			
☒	Henry VII	Henry VII	28/01/1457		157	Henry VIII			Elizabeth I

Click on 'Edit' in the Header and check-boxes will appear at the left of each Item. You can select them individually or all by clicking the box at the top of the election column. As they were all English, we select all Items and click on the 'Edit' button in any of the 'Nationality' cells

The Relationship Editor will appear, where you can now select 'UK' (okay, the UK didn't exist then, but let's ignore that for now, as we can easily change that to English ;).

The value will be changed on all selected Items and the selection removed to avoid accidental changes on your next edit:

Edit Relationship

Available

Filter...

AT

CH

DE

ES

FR

IT

UK

ZA

>

>>

<

<<

Selected

Cancel

OK

LIME Jadoo 0.0.8 (c) 20211029 jckt.com

☒	Item	Name	DoB	Photo	Height	Children	Nationality	Parents	Grandchildren
☐	Henry VIII	Henry VIII	28/06/1491		189	Elizabeth I	UK	Henry VII	
☐	Elizabeth I	Elizabeth I	07/09/1533		156		UK	Anne Boleyn Henry VIII	Henry VII
☐	Anne Boleyn	Anne Boleyn	01/07/1501		1,23	Elizabeth I	UK		
☐	Henry VII	Henry VII	28/01/1457		157	Henry VIII	UK		Elizabeth I

If you now click on one of the 'UK' links, the Item for the UK will open and you can change its name to 'England', which will be reflected in the collection after saving the Item.

The screenshot shows the LIME interface. On the left, a table titled 'Instances of Person' lists several historical figures. On the right, the 'England' country item is selected, showing its attributes and related items.

Item	Name	DoB	Photo	Height	Children	Nationality
Henry VIII	Henry VIII	28/06/1491		189	Elizabeth I	England
Elizabeth I	Elizabeth I	07/09/1533		156		England
Anne Boleyn	Anne Boleyn	01/07/1501		1,23	Elizabeth I	England
Henry VII	Henry VII	28/01/1457		157	Henry VIII	England

The 'England' item details show:

- Country:** England
- Attributes:**
 - Name:** England
 - Description:** United Kingdom
- Inbound:**
 - Citizens:** Anne Boleyn, Elizabeth I, Henry VII, Henry VIII
 - Cities:** Edinburgh, London, Oxford

Export and Import

You can easily export all data in a Collection by clicking on the green arrow in the Header. All information will be exported as a comma separated value (csv) file. If you press Ctrl at the same time, only the IDs of the references will be exported.

The screenshot shows the 'Export Data' button in the LIME interface. The button is labeled 'Export Data (press Ctrl to export IDs)'.

You will notice that a) Dates are exported as numbers in the yyyyMMdd format, and b) references with more than one target Item are separated by three semicolons:

Name	DoB	Height	Nationality	Children	Parents	Grandchildren	Grandparents	Partners
Henry VIII	14910628	174	England	Elizabeth	Henry VII			Anne Boleyn
Elizabeth	15330907	170	England		Anne Boleyn;;;Henry VIII		Henry VII	
Anne Boleyn	15010701	165	England	Elizabeth I				Henry VIII
Henry VII	14570128	157	England	Henry VIII		Elizabeth I		

This is on purpose, as it allows formatting in most spreadsheet software. In MS-Excel, for example, you can replace them by 'Ctrl + j' and the items will be shown as a list:

Name	DoB	Height	Nationality	Children	Parents	Grandchildren	Grandparents	Partners
Henry VIII	14910628	174	England	Elizabeth I	Henry VII			Anne Boleyn
Elizabeth I	15330907	170	England		Anne Boleyn Henry VIII		Henry VII	
Anne Boleyn	15010701	165	England	Elizabeth I				Henry VIII
Henry VII	14570128	157	England	Henry VIII		Elizabeth I		

To import data, click on the orange arrow, and a new form will open. Click on the 'Schema' button to copy the Columns to the Clipboard.

The screenshot shows the 'Instances of Person' form in the LIME interface. The 'Schema' button is highlighted, and the form fields are visible.

Name	DoB	Photo	Height	Children	Nationality
	03/02/2022				

You can now enter the data of the items to be imported in a spreadsheet, including paths to images. Dates can be in the yyyyMMdd format, or your local format, here 11/02/1466. Note that you can enter relationship data either using IDs or the Titles. The latter have to be unique to avoid errors, though.

Name	DoB	Photo	Height	Nationality	Children
Elizabeth of York	14660211	D:\Tmp\Elizabeth-York.jpg	149	England	Henry VII

Select the row by clicking its header on the left and paste the data using Ctrl + V.

The data is interpreted and the image created. When all items are there, click 'OK' and they will be added to the collection. Click 'Refresh' to update all 2nd-level relationships.

Instances of Person					
A real person.					
Name	DoB	Photo	Height	Children	Nationality
Elizabeth of York	11/02/1466		149	Henry VII	England

Instances of Person										
A real person.										
Item	Name	DoB	Photo	Height	Children	Nationality	Parents	Grandchildren	Grandparents	#Grandchildren
Henry VIII	Henry VIII	28/06/1491		189	Elizabeth I	England	Henry VII		Elizabeth of York	0
Elizabeth I	Elizabeth I	07/09/1533		156		England	Anne Boleyn Henry VIII		Henry VII	0
Anne Boleyn	Anne Boleyn	01/07/1501		1,23	Elizabeth I	England				0
Henry VII	Henry VII	28/01/1457		157	Henry VIII	England	Elizabeth of York	Elizabeth I		1
Elizabeth of York	Elizabeth of York	11/02/1466		149	Henry VII	England		Henry VIII		1