Introduction

This plugin provides the following functions:

- Tabulates any selected concepts (ontology terms) relevant to (observed on) a set of selected patients.

- Offers different formats and levels of detail.

- Optionally replaces patient IDs with ascending numbers.

- Optionally adds a selection of demographic patient details.

- Optionally resolves concept codes and displays their denotation.

- Optionally includes ontology path of concept codes.

- Exports tabulated data into a CSV file that can easily be used by Excel, SPSS and other statistics software.

Instructions

1. Navigate to the "Specify Data" tab. Drag and drop a Patient Set and one or more concepts (ontology terms) onto the appropriate input box(es).

2. Select the output format:

   o 1 row per observation (duplicates removed, 1 column per observation set): A new row is created for each observation. All observation details (concept code, value, unit ...) are written into one cell. One column is created for each concept that has been dragged onto the input box in step 1. **Attention:** Duplicate entries are removed! This format only returns a list of the **different** observations that were found.

   o 1 row per observation (all, with timestamps, 1 column per observation set): Similar to the option above, **but**: timestamps of the observations are tabulated as well. Therefore, duplicates are not possible and nothing is removed.

   o 1 row per observation (detailed, 1 column per observation detail): This is the most detailed option. A new row is created for each observation and all observation details (concept code, value, unit ...) are written to dedicated columns.

   o 1 row per patient, 1 column per observation set: A new row is created for each patient. One column is created for each concept that has been dragged onto the input box. All observations of a patient are then written into one cell (with respect to the concept column).

3. Option: If you want to replace the patient IDs with an ascending numbers (starting with 1), check the 'Replace Patient IDs with Ascending Numbers starting at 1' box. This works independently from other i2b2 anonymization / pseudonymization features and <u>always</u> replaces the patient IDs. Please consider: the numbers count for the current view of the table and are not related to real patient IDs. If the queried concepts are changed in a way that the resulting patient set is changed as well, the ascending numbers used to

designate the patients of a previous query may not be the same in a new query!

4. Option: A number of demographic data items can be tabulated as well. Check the respective boxes to include these data items.

5. Option: If you want to resolve the concept and modifier codes (e.g. ICD codes) to see their denotation, check the box 'Resolve Concept/Modifier Codes'. <u>Warning:</u> this will also require massive database querying and can therefore cause a very long running time. It is a good idea to select this option only right before you are sure your dataset is complete and ready to be exported. As long as you are still varying your query, this option should be left unchecked.

6. Option: If you want to include the ontology path of the concept codes, check the box 'Include Ontology Path of Concepts'. <u>Warning:</u> this as well requires massive database querying and can therefore cause a very long running time. However, if you check both 'Resolve Concept/Modifier Codes' and 'Include Ontology Path of Concepts' options, the running time will **not** double, since both options require the same ontology querying.

7. Finally, select the "View Results" tab to view the table of the observations.

   - If you want to export the table into a CSV file, click the `CSV Export` button. This initiates the download of a file named `'i2b2-export_patient-observations_[timestamp].csv'`.

   - If you want to export the table into an HTML encoded Excel file, click the `HTML/XLS Export` button. This initiates the download of a file named `'i2b2-export_patient-observations_[timestamp].html.xls'`. The file is HTML, but due to the suffix it can directly be opened with Excel. If you want to open it in a web browser, simply remove the `'.xls'` suffix. **Note:** Excel may launch a warning message if the file is loaded. This message can be ignored/confirmed (click 'Yes').

Settings

There are two global settings available on the "Settings" tab:

- The default export CSV file encloses all data cells in quotation marks ("). This is necessary to export special characters like line breaks within a cell. However, some statistics software may get confused with the quotation marks. In this case, check the 'Exclude CSV Cell Delimiter (") Where Possible' box to permit the writing of quotation marks <u>where possible</u>. Cells with special characters will still be enclosed in quotation marks, though... but it will be way less work to remove them manually than if it had to be done for every cell...

- If a query would return very large result sets, the server automatically pages the result. This causes a considerable delay that sometimes will fail or hang, due to timeouts. If you encounter this problem, the query can be paged manually by setting the 'Query Page Size' value. This is still slower than an 'at-once' query, but faster than automatic paging and it avoids server overload. The necessary value cannot be predicted in general and strongly depends on the number of observations returned, but 20 - 50 is a good idea. Higher values result in faster processing but higher risk of server overload.

Release Notes

The following features have been added:

- Added possibility to export table as CSV file.
- All occurrences (observations) of a concept are now exported, not just the first one.
- Concept codes (`concept_cd`), values (Text/`tval_char`, numerical/`nval_num`, BLOB), units (`unit_cd`) and modifiers (`modifier_cd`) are now tabulated.
- Added possibility to select from four different formatting options for most flexible post processing of exported data.
- Added option to force replacement of patient IDs with ascending numbers (independent from i2b2 features).
- Added optional denotation of concept/modifier codes.
- Added optional inclusion of ontology paths.
- User now gets progress feedback for long running queries.
- Paged server answers are now fully respected and queries are automatically re-launched if necessary.
- Added optional manual paging of queries to minimize server load and to speed up overall processing time for large results.

The following previously existing features have been improved:

- Added user options for flexible selection of demographic data that shall be tabulated.
- Changed file extension of exported `.xls` file to `.html.xls` to make clear it is an HTML with `.xls` extension for Excel import.
- Demographic State/City/ZIP result can now be tabulated into separate fields for state, city and zip.

Browser Compatibilities

- This plugin has been successfully tested with the following browsers: Firefox (v18.0.2), Internet Explorer 32/64 (v9.0.13 - there seems to be a problem with scrolling bars in small windows, though), Chrome (v24.0) and Safari (v5.1.7)
- The i2b2 web client itself does not work with Opera (v12.11).

i2b2 version compatibilities

This version (v3.0) is compatible with i2b2 v.1.3-1.6.

ExportXLS

This plugin populates a table of selectable concepts/observations and provides the possibility to download the result as a file.

Version History

1.0	Initial release, for i2b2 v1.5. By Mauro Bucalo, Universita' di Pavia, Italy.	June 2011
1.6	Updated for i2b2 v1.6. By Mauro Bucalo, Universita' di Pavia, Italy.	January 2012
2.0	Updated for i2b2 v1.3-1.6, Internet Explorer compatibilities; added flexible column exclusion, table title & caption, leading row count column, and other enhancements. By Wayne Chan, Rajani Sadasivam, Thomas Houston, & the rest of the BMI-Core, University of Massachusetts Medical School, Worcester; and Mauro Bucalo, Universita' di Pavia, Italy.	February 2012
3.0	Major upgrade; many new features (CSV export, detailed tabulating of all observations, formatting options, paged queries...), heavily re-engineered. By Axel Newe, Friedrich Alexander University Erlangen-Nuremberg, Germany.	February 2013

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