PSI

Personal System for Information Management and Retrieval

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This application has been written in Prolog, using LPA MacProlog™, a formidable product from Logic Programming Associates Ltd., London, England. The development and runtime software are copyright of LPA.

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OVERVIEW

PSI (pronounced "psee") is a handy system for the management and retrieval of your personal data, be it addresses, CD collections, or bibliographic references. It is intended for the non-commercial user. Recently, PSI has grown into a full data-base and information retrieval system. It may not be as full-fledged as some data-base systems, but it has many features that you won't find in most commercial systems. Also, you may find it easier to set up and faster to use, especially once you grasped the idea. (Try the sample sessions!) PSI is comparably small, versatile, and useful for a broad range of data. Indexing with descriptors makes searching for the data you need fast, and the interface to other data-base formats (import and export) is quite powerful.

The idea of PSI was to simulate a register, a file with cards that contain arbitrary information. In PSI, cards (or records) are defined by schemas; a simple language allows to define fields and layout of the cards. Then, descriptors help to annotate the cards, and above all to quickly retrieve their information. Descriptors can be grouped into classes of descriptors. The information of the cards may be exported (listed or printed) in any format; a simple export description language allows to define arbitrary print procedures. Information may also be imported from data bases (fixed format) or from files where data is ordered by keywords (like Refer); a simple import description language allows to define arbitrary read procedures.

* The following help information is mainly structured by functions and their menus and buttons. Introductions and sample sessions help experience the functionality. *If you use PSI for the first time, it may be a good idea to load "Sample Sessions" in PSI (or start PSI by double-clicking on that file) and try the sample sessions while reading this text.* You can also load "PSI Help"; wherever you are, you may select "Texts:Help:Active window" to get information about what you are currently doing. See the information about "Texts:Help" below.

Also look at the Constraints and Frequently Asked Questions sections at the end of this text.

SAMPLE SESSIONS

In the following, a term "M:E" means entry "E" of menu "M".

First session: Using the file "Videos"

*   I this session, you will retrieve information from an existing PSI file,

using descriptors and templates. The file "Videos" contains information about (mostly science fiction) movies. (The texts are in German.)

1   To start PSI and load "Videos":

Double-click on file "Videos", or double-click on PSI and then open "Videos" with menu "File:Open …". (A card window "Video" should open on loading; if no such window appears, open it with menu "Schema:Video".)

2   To search for movies of a specific category:

a   Press button "Descriptors". In the descriptor selection window, select "Animation" in the list menu on the right and press "Okay". ("Category:Animation" appears on the bottom of the card window.)

b   Press "Find"; since several animations are stored, a window opens that allows to select one of them. Select one and press "Okay" to see its full information in the card window. To see the next one, press ">>"; to see a previous one, press "<<" (repeatedly). (There are nine movies belonging to category "Animation".)

3   To search for movies that belong to several categories:

a   Press "Clear" and then bring up the descriptor selection window again by pressing "Descriptors". Select both "Animation" and "Science Fiction" and press "Okay".

b   Press "Find" to find movies that are both animations and science fictions; as only one movie is annotated as such, this one is displayed immediately in the card window.

4   To search for movies of several categories:

a   Press "Clear" and select descriptors "Animation" and "Fantasy" in the descriptor selection window, select the radio button "or" (i.e. switch from "and" to "or"), and press "Okay".

b   Press "Find" to find movies that are either animations or fantasies; there are eleven movies described as either "Animation" or "Fantasy" (or both). Select one; scroll through them with "<<" and ">>".

c   In the descriptor selection window, to switch to the other descriptor class, select it and press "Show", or double-click on it. Descriptor selections remain valid when you switch classes. Press "Clear" in the descriptor selection window to clear all selections. Try to find movies for some of your selections.

5   To search for movies by templates:

a   In the card window, press "Clear". To look for movies directed by Terry Gilliam, enter "*gilliam*" in the field labeled "Director". Press "Find" and select movies as before.

b   Press "Clear" and then "Pattern", so that your previous template reappears. To look for movies Terry Gilliam directed in 1984, enter "1984" in the field labeled "Year". Press "Find" (only one such movie exists).

c   Combine field entries to search for other movies that match your templates.

6   To search for movies by descriptors and templates:

        Combine descriptors and templates. For example, select descriptor "Science Fiction" and template (director) "*gilliam*" in order to look for SF movies directed by Gilliam. Or use the same pattern, but check "not" in the descriptor selection window in order to find movies directed by Gilliam that

were not SF movies.

Second session: Creating a new file

* In this session, you will create a new PSI file, define a new card schema, and then enter and describe (annotate) cards for this schema.

(To monitor your operations, turn on logging, i.e. check "Write log" in the Options window.)

1 *To start PSI, create a new file, and define a new schema:*

a Start PSI, and create a new file with menu "File:New …".

b Select "Schema:Schema", and a dialog window "Schema" appears; enter "Address", the name for your first schema, in the field "Name", position the cursor to the field "Fields" and enter

Name, 3, Title, 1, "Home:", 3, Street, 3, ZIP Code, 1, City, 2

Press the "Add" button to define the schema.

You just defined a schema "Address" with the fields "Name", "Title", "Street", "ZIP Code", and "City", and with the additional text "Home:".

c   Press "Close" to close the window "Schema".

2   To add and find cards of your schema:

a   Select "Schema:Address" to open the dialog window for your schema "Address".

b   Enter a sample address in the fields of the window and press "Add". You just defined a new card for the schema "Address".

c   Add more cards to "Address" by repeating the previous step.

d   Check if all fields of the window are empty (press "Clear" if not) and press "Find". If you have entered several cards, a menu window offers all names of the address you defined; if only one card exists, it is displayed immediately.

e   If several cards where found, you may browse through these with the "<<" and ">>" buttons.

3   To define descriptors:

a   Select "Schema:Descriptors" to open the descriptor-handling window. Enter a new descriptor class (e.g., "relation") in the left edit field (labeled "Descriptor class") and press the "Add" button on the left. Add new descriptors for that class (e.g., "relative", "friend", "business") via the right edit field (labeled "Descriptor"), pressing the "Add" button on the right after entering each term. Try and add more descriptor classes and descriptors.

b   In the list menu on the left, the descriptor classes are listed; to the right, the descriptors for the currently selected class are listed. Double-click on a class (or select one and press "Show") to switch from class to class.

c   Press "Close" to close the window.

4   To describe your cards:

a   Back in the "Address" window, find and display one of your addresses as you did before.

b   Press "Descriptors", select one or more fitting descriptors in the various classes for the current address and press "Okay". (Note the terms appearing on the "Descriptors" line. The current address has been described (or annotated or indexed) with these terms.)

c   Press "Modify" to replace the old address by the new one.

d   Annotate and modify all your addresses in the same way. (For new addresses, you will of course add the descriptors at the time you enter the texts.)

5   To find cards by templates and descriptors:

To find cards matching patterns, proceed as in steps 2 through 6 of the first session.

6   To list cards matching patterns:

Define patterns, but instead of pressing "Find", press "List" to list all matching addresses.

(See below on how to define export procedures to list your addresses differently, as well as how to define import procedures to read addresses from other files. Also look at the examples that accompany PSI.)

7   To save your information:

Save you data with "File:Save"; quit with "File:Quit".

Third session: Using the file "References"

*   In this session, you will experience card-to-card links and card-to-text links. Imagine you want to build a database of book references and notes concerning these books (two

kinds of cards). Usually, you will look in your notes to find literature for a certain topic; once you have found it, you are interested in the actual bibliographic data of the books. Finally you might want to get an abstract or summary of the book.

1   To start PSI and load "References":

Double-click on file "References", or double-click on PSI and then open "References" with menu "File:Open …".

2   To test the links:

a   Open card "Book" and move the window towards the bottom or side of your screen. (Note that "Book" will show bibliographic data.)

b   Open card "Note"; try to move the window so that it doesn't obscure the "Book" window.

c   Assume that you are interested in literature that gives advice on alcohol problems. Select the descriptors "Advice" and "Alcohol" in card "Note" and press "Find"; the only card pointing to an adequate text reference is displayed immediately.

Note how the card referred to by the link in field "Ref" is displayed in the "Book" card.

d   Select the "Book" card and press "File"; the text referred to by the link in field "File" is loaded into a new text window. You can change and save this text.

e   Repeat step c with other "Note" cards.

3   Background:

The "Ref" button and the automatic card-reference function are active if the schema contains a field called "Ref". The link syntax is *Schema:FirstField*.

The "File" button is active if the schema contains a field called "File". The link has to be a standard Macintosh path name, which can be abbreviated to denote a path relative to the home folder of the current PSI file.

FUNCTIONS

The following documentation of PSI's functions is ordered by menus and buttons. If you see references to "Menu:Entry", look for the Menu and then its section on the Entry. Use the sample files for sample sessions, and look in the template files for examples for the following explanations.

File

Open, create, and save PSI or text files, close text files, add data from other PSI files, set options, and set the number of processes. While PSI files hold your data and thus are your main files, text files can also be manipulated and thus prepared for use with PSI cards.

New …:

Create new PSI file, or new text window.

Open …:

Load PSI file, or a text file into a new text window. Only one PSI file can be loaded at a time; if the current file has been changed, you are asked if it is to be saved first. *Note that a text window cannot hold more than 32K of text.*

Close text:

Close the active text window. *Note that an active listing or log window cannot be closed.*

Close ExportFile:

> Close the currently open export file. Only available if the export file is actually a file (and not a window).

Save:

> Save the current PSI file, or the active text window to the text file it is associated with. The PSI file is saved if no text window is active (i.e. the front window).

Save as …:

> Save the current PSI file with a different name and/or in a different folder or volume, or the active text window to a new text file. The PSI file is saved if no text window is active (i.e. the front window).

Add …:

> Add schemas, cards, export/import procedures and/or descriptors of other PSI files to the current file.

> You are presented with the names of all schemas of the selected file and the entry "All Descriptors". Select the items you want to add (from).

> Subsequently and for each schema to add, you are presented with a dialog window where you choose in which way the schema is to be added. There you can choose to add or ignore the new cards, to add the schema definition resp. replace the existing schema definition by the new one, and to add the new export/import procedures, replace the existing ones, or ignore the new ones. Finally, you can also choose the name which the schema to be added should have in the current file. If this name already exists, the chosen items are added to or replacing the existing items as you chose it.

> *Note that you can only add a schema (or its cards or procedures) to an existing one if the numbers of fields match.*

> New descriptors describing the added cards are automatically added to the global list of descriptors.

> If you select "All Descriptors", all descriptors of the chosen file are added to the global list of descriptors.

> *Note that only schemas of PSI Text files (option Text file type) can be added, i.e. you first have to save a PSI file in Text mode before you can add from it (see also CONDITIONS and "File:Options …").*

> *Note that PSI files of old PSI versions first have to be transformed to the newest version before they can be added.*

Options …:

> Set options for PSI.

> *Buttons and controls:*

> Card (Open Card): Select the card window that is to be opened when loading the current file. Choose one of the schemas or "- No card -". If you select a schema, the schema's card window is opened automatically whenever the current file is loaded.

> Cards (Two fields): Select card windows that are to show the first two field values in the find selection dialog (by default, only the first field value of each found card is shown). The two-field mode is useful for schemas where the first field doesn't give enough information.

> Log: Set the log file to a file or a window. By default, it is set to the window "Log". ("Reset" restores this setting.)

> Write log (radio button): Switch logging on or off. If logging is on, each PSI function writes a log about its operation to the log file.

File type: Select here if a PSI file is to be saved in a different type. By default, a new PSI file is of type Code, which is larger, but can be loaded and saved faster than a PSI Text file.

And,or,not: Set the text used for the Boolean connectives AND, OR and NOT in descriptor formulae (see "Schema:Descriptors"). You may use any combination of special characters (e.g., "&", "|" and "¬") and text (e.g., "and", "or" and "not"). In the latter case, add preceding and trailing spaces to the texts to separate them from the descriptors. Suggested texts are (sample descriptors a:A, a:B, and b:C):

Texts	And sample	And Not sample	Or sample
" and ", " or ", "not "	a: A and B and b: C	a: not A and not B and b: not C	a: A or B or b: C
", ", "; ", "¬"	a: A, B, b: C	a: ¬A, ¬B, b: ¬C	a: A; B; b: C
"&", "|", "¬"	a: A&B&b: C	a: ¬A&¬B&b: ¬C	a: A|B|b: C

Closeness: Set the threshold for similarity search (see "Schema:YourSchema:Find"). In similarity search, a ratio of 100% means that the search word and the found word are identical, or that one is contained in the other. A ratio of 60 to 80% means that the words are more or less similar. Use a threshold in this range; the surer you are that your search word is spelled correctly, the higher the threshold should be. The default is 80%.

Eval. space: Increase the evaluation space when dealing with large files. For example, when searching or sorting a large number of cards, you may get the message "No more memory available"; you may then increase the evaluation space. The number to the right indicates the maximum amount by which the evaluation space may be increased. *Note that since free space may be segmented, it is possible that only a part of the memory indicated is available.* No change will happen in this case.

You cannot set an evaluation space of less than 24K. The default is 120K. *Note that the default configuration is tight; you have to increase the application size (in the Finder) before you can increase the evaluation space. The larger the application size, the larger the possible evaluation space. Note that you have to close all dialog windows for the change to come into effect.*

Note that if you increased both application size and evaluation space and later want to decrease the application size, you have to decrease the evaluation space first!

Save: The current option settings are written to a file called "PSI Options". Next time you start PSI, the settings of this file are used. You may have several such option files and start PSI by opening these to use their options.

Okay: Close the options window.

Processes …:

Set the maximum number of concurrent processes.

Each dialog window takes up an internal process. There is a limit to the number of concurrent processes (the default is 2); if you open more windows than processes are available, menus and Cut and Paste are no longer available, and you get the message "Sorry, too many processes active". Close one of the windows to get back to normal.

If you want to open more windows regularly, e.g., if you always want to open two card windows and the descriptor handling window at the same time, you can adjust the process number limit. Set the limit to the number of dialog windows you wish to open concurrently. *Note that this option works in a way different from the others:* the process limit is saved in the application itself and does not take effect until you start PSI the next time. Therefore, after setting the process number limit, quit PSI and then start it again. *Note that each processes takes 48K of memory, whether it is active or not. Be*

sure to increase the application size by the appropriate amount before increasing the process limit.

Quit:

Quit PSI. If your file has been changed, you are asked if you want to save it. If text windows other than the log and listing windows are open, you are asked if you want to discard them. (If you answer No, you can decide for each individual text window whether to save it or not.)

Edit

Undo, Cut, Copy, Paste:

Undo editing; cut, copy, or paste text in the active text window or edit field.

Balance:

Extend the cursor to include the next outer pair of matching brackets ("( ) { } [ ]"). Useful when defining export and import procedures with alternatives and loops; works only for text windows.

Select all:

Select the entire text in the active text window.

Schema

Schema:

Define, modify, delete, and find a schema for your cards. A schema has a name, an optional keyboard command (which appears in the menu), fields, optional export procedures, and optional import procedures.

The name of the schema can be any text with no more than 18 characters. The command must be one character. The fields have the format "Name1, Position1, Name2, Position2, …", i.e. each field has a name and a position, all separated by commas.

A field denotes one piece of information you can fill in on your card, such as a name, a street, or a title. On the card, a field consists of two parts, namely its name and an edit field that allows to enter the information.

A field name can be any text, except that it should not contain one of the characters "/", "(", "[", "{", "=", "≠", or """". The position number determines its position in its card window and must be a positive integer. 1 means a short edit field on the left, 2 a short edit field on the right, and 3 a long edit field; all increments of 3 to these positions denote the same width, but more lines. (For instance, 5 means two short lines on the right.) Thus, almost all combinations of window positions are possible.

Note that PSI does not distinguish key or indexed fields, but offers the first field whenever you have to select among several cards. Therefore, it is advisable to define a unique field as the first one.

You may also specify text that is to be printed on the card window without an edit field. Write ""Text"" (i.e., """", your text, and again """") instead of a field name, and use the same positioning format as above. If the Text contains two items separated by ",", the first is written at the field name's place, the second at the edit field's place. Otherwise, the Text uses the entire length of name and edit field. You may also structure your card window layout with ""'s in the schema definition (i.e. with empty text).

Export and import can be defined and set by "Export/Import" (see this button). The fields "Export" and "Import" reflect the procedures currently selected for this schema.

Buttons:

Add: Add the schema currently defined in the window.

Modify: *If the schema name matches an existing one:* replace the schema with the same name by the one currently defined in the window. In case you change the fields (names or order), there are two possibilities: either you just change the names, i.e. the cards of this schema are not affected; or you change the order of the fields, add new ones, and/or remove old ones. In the second case, the field values of all cards of this schema are rearranged. *Note that you cannot rename and re-order/add/delete fields at the same time.*

If the schema name does not yet exist: replace the name of an existing schema with the new name. You are asked which schema's name you want to change.

Note that for all modifications that involve the schema name, the number of fields, or the order of the fields, the cards are modified, too.

Delete: Delete the schema with this name. If cards for this schema exist, you are asked if you really want to delete them.

Find (Return key): Find a schema. A scroll menu offers all schemas (except if there is only one, which is filled in immediately).

Clear: Clear the edit fields of this window.

Close: Close the schema window. In case you didn't update your changes, you are asked if it is okay to discard the current schema definition (i.e., the one in the window).

Export/Import: Get the export/import handling window for the current schema, and add, modify or delete export and import procedures.

An export or import procedure is defined by a name and a procedure written in a special description format. The procedure defines what and how cards are exported (written to a file or window) or imported (read from a file or window). The procedure text is defined in a text window that is connected to the export/import dialog window; this allows long procedures with adequate indentations.

The procedure can use the schema fields, special keywords, or normal text. It is also possible to specify alternatives and loops. All these items must be separated by ",", alternatives (also in loops) by ";". For example, if an export procedure for address cards says "Name, /n, Street, /n, City, /n2" (= value for field "Name", new line, value for "Street", new line, value for "City", and two new lines), then the addresses are listed as they could appear on an envelope, with an empty line after each address.

Instead of writing the full field name, it is sufficient to write just the beginning of its name (should be disambiguous). "D" stands for the descriptors of a card.

PSI can export cards in RTF (Rich Text Format); RTF is a description of a text and its format using commands in a plain text file. Applications such as MS Word can read RTF and transform it to their format. RTF can contain font information, and this is the way to define the type, size and face of exported text. For example, an extension of the above example could be "(/Palatino, (/i, Name), /n, Street, /n, (/b, City), /n2)", which writes the entire text in Palatino, the name in italics, and the city in bold face.

To export cards in RTF, the procedure name must start with the three letters "RTF". If a procedure name doesn't start with "RTF", font commands are disregarded. You can list in RTF only to files, and only one set of found cards can be listed per file. (Note that the resulting RTF code is just enough to be accepted by MS Word, i.e. not all non-ASCII characters are transformed to RTF code.) The default font is Times.

You can define several export and import procedures, of which at most one can be active (see button "Use").

If you rename or delete fields of a schema which are used in a procedure that is in use, make the procedure "unused" (in the export/import handling window, press "Use" with an empty name field), then change the schema, and finally changed the procedures.

Look at the procedures of the template files!

EXPORT: Format, Format, ...

For the following examples, we assume that an address schema is defined (Name, Street, City), and that the following two sample cards exist:

Name	Street	City	Descriptors
King	Hi Bldg, 5th Street	Monterey	a:a0 & a1 & b:b2
Rey		PA	c:c1

A procedure consists of a sequence of formats, separated by commas.
Formats and what they print:

Format	prints	e.g., sample procedure	1st card	2nd card
Basics				
Field	value of Field	Name	King	Rey
"Text"	Text	"in ", City	in Monterey	in PA
	(a ",", "]" etc. is expected immediately after the """; may contain """"" to denote """)			
/s	1 space	Name, /s, City	King Monterey	Rey PA
/t	1 tab			
/n	1 new line (end of paragraph)			
/l	1 line feed (end of line)			
/"	1 """			
/sN	N spaces (N is a positive number)			
/tN	N tabs			
/nN	N new lines			
/lN	N line feeds			
/"N	N """'s			
D	the descriptors as Class:Descriptors list	D	[a:[a0,a1],b:[b2]] [c:[c1]]	
DD	the descriptors written as in card windows	DD	a:a0 & a1 & b:b2	c:c1
Elements				
/eNField	Nth (0,1,…) element of Field (the value of Field is treated as a list whose elements are separated by comma	/e1Street	5th Street	
/eND	Nth (0,1,…) element of the descriptors (written as Class:Descriptor)	/e1D	a:a1	
Alternatives				
[C1,R1,R2,…; C2,R3,R4,…; …]	if C1 then R1,R2,… else if C2 then R3,R4,… else … (Cx are *conditions* of the form F1=F2, F1≠F2, F1, or "else"; Fx must be field name, "D" or text; F1 alone is the same as F1≠""; "else" is the "catch-all")	[City="PA", "Palo Alto"; else City]	Monterey	Palo Alto
		N,[St,"at ",St]	King at Hi Bldg, 5th Street	Rey
Loops				
{F,R1,R2,…}	R1,R2,… for all elements of list F (F is field or "D"; all *references to F* within R1,R2,… refer to each individual element of F)	{St,"-",St,/n}	-Hi Bldg -5th Street	
{F,R1,R2,…; B1,B2,…; L1,L2,…}	R1,R2,…,B1,B2,… for all elements of list F except for the last two, R1,R2,… for the last but one element, L1,L2,… for the last one; R1,R2,… if F contains only one element (descriptors are written as	{D,D; ", "; " and ",D}	a:a0, a:a1 and b:b2	c:c1

Class:Descriptor)
(thus, B1,B2,… may be the text bet-
ween the elements; all *references*
to F within R1,R2,… refer to each
individual element of F)

Fonts (RTF)
(/F,R1,R2,…) R1,R2,… in the font defined by F   (/i,N),/l,   *King*   *Rey*
(RTF only; F can be *font name*, a   {St,St,/l},   Hi Bldg   **Palo Alto**
number for the *size*, or a *face*   (/b,[City="PA",   5th Street
abbreviation;   "Palo Alto"; **Monterey**
the supported *fonts* are: Avant   else City])
(for Avant Garde), Chicago, Courier,
Geneva, Helvetica, Monaco, Palatino,
Times, Zapf (for Zapf Chancery);
the *face* can be any RTF code in
lower case, e.g., b for bold, i for
italic, ul for underline, outl for
outline, shad for shadow)

IMPORT: Format, Format, ...

A procedure consists of a sequence of formats, separated by commas.
Formats and what they read:

Format	reads
Field	value for Field
"Text"	Text (may contain """" to denote """)
/s	till space
/t	till tab
/n	till new line
/l	till line feed
/"	till """
-	any text (will be ignored)
D	descriptors (may be separated by ","; are added to "Miscellaneous" or the first descriptor class)
[Format;Format;…]	alternatives; each Format should be Text, FieldName (a field may appear only once; the alternatives should be followed by /s, /t, /n, /l, /", or single-character text: read text till this character, process text as one of the alternatives)
{Format;Format;…}	loop (several alternatives in random order); each Format should be Text, FieldName (a field may be repeated; the loop should be followed by two of /s, /t, /n, /l, /", or single-character text: read text till the first of those characters, process text as one of the alternatives - repeat until both final characters appear)

Sample import procedures:

To read cards in a fixed format (as it often comes from data-base systems), assuming that the fields are separated by tabs and the records are separated by new lines, the import procedure is defined as follows.

Title, /t, Name, /t, Street, /t, ZIP Code, /t, City, /n

Note that here and so far, you cannot have a field name appear more than once; fields can only be added up in loops (see below).

To read cards in Refer format, assuming "%N" stands for the last name, "%F" for the first name, "%T" for the title, "%S" for the street, "%Z" for the ZIP code, "%C" for the city, and "%K" for some key words, a possible import procedure goes as follows.

        {"%T ",Title; "%N ",Name; "%F ",Name; "%S ",Street;
        "%Z ",ZIP Code; "%C ",City; "%K ",D},/n,/n

i.e.: read a line (= till new-line character "/n"), and if this line starts with "%T ", add the rest of the line to the Title field, if the line starts with "%N ", add its rest to the Name field, if it starts with "%F ", … etc.; then read the next line and again add it to one of the fields; stop at an empty new line (the second "/n"). Field names may appear more than once (like "Name"); they are all added up in the same field, separated by commas. Within one loop alternative, it is possible to have more than just one item, meaning that the line is put together from these items.

Buttons:

Export - Import (radio button): Work on either export or import procedures, i.e. the procedure type is either export or import.

Add: Add the currently defined procedure as procedure of the current type.

Modify: Replace the procedure with the current name and of the current type by the currently defined procedure.

Delete: Delete procedures of the current type from those offered in a scroll menu.

Find (Return key): Find a procedure of the current type. A scroll menu offers all available procedures.

Samples: List possible sample cards as expected by the current export procedure.

Each procedure expects that cards come in a certain way, e.g., that names are always present, titles may be empty, and street fields may contain several lines. The quite powerful Samples function allows to verify these expectations as well as the export format defined for those cards. The Samples function analyzes the export procedure and assumes several different cards according to this analysis. In these cards, certain fields may be empty, present, or a list (i.e. text with commas: see element and loop formats above and the introduction to "Schema:YourSchema"). Define any export procedure and press "Samples" in order to see what to expect from your procedure. *Note that samples for an RTF procedure can only be listed to files.*

List: List all procedures of the current type.

Use: Make the procedure appearing in the window the schema's current export or import procedure (only the entered name and type are relevant). If the name field is empty, the schema has no current procedure. This button also closes the window (see also button "Close"). *Note that you can switch to a different export or import procedure later on, using the respective submenu if the card window is open (see "Schema: YourSchema").*

Close: Close the export/import window. In case the text in the procedure definition field is not a procedure of the current schema, you are asked if it is okay to discard it. *Note that all export/import modifications are made permanent instantly for the current schema, so you don't need to modify the schema if only the procedures have changed.*

Descriptors:

Define, modify, and delete the descriptors of the global descriptor list. The descriptors are grouped into classes of descriptors. In the list menu on the left part of the descriptor handling window, classes are listed; in the list menu to the right, the descriptors of the currently selected class are listed. The current selection is shown in the lower part of

the window whenever "Show" is pressed, in the same format as in the descriptor selection window and in card windows (see "YourSchema:Descriptors").

Buttons:

Show: Show the descriptors for the selected class. Descriptor selections (made in the right-hand list) are remembered; thus, combinations of descriptors involving several classes can be selected. (If the edit fields are empty, double-clicking on a class name and the Return key also switch classes.)

Clear: Clear the descriptor selections in all classes, i.e. unselect all descriptors.

Add (left button): Add the text entered in the left edit field as new descriptors class. (If the right edit field is empty, the Return key also adds the class name.)

Rename: Rename the currently selected descriptor class to the text entered in the left edit field. *Note that the name is also replaced in the cards.*

Delete (left button): Delete the selected descriptor class (and all its descriptors). *Note that the descriptors are also removed from the cards.*

Add (right button): Add the text entered in the right edit field as new descriptor of the current class. (The Return key also adds descriptors.)

Modify: *If exactly one descriptor is selected and a replacement is entered in the right edit field*: rename the selected descriptor to the entered one. *Note that the descriptor is also renamed in the cards.*

If a combination of descriptors (possibly of several classes) is selected, and a replacing combination is selected in the subsequently appearing descriptor selection window: replace the first combination by the second one in cards described by the first combination. Thus, the second case allows to replace existing descriptors by other existing descriptors, but a descriptor combination is replaced only in cards that are described by that combination (i.e. cards that would be found in an And-search).

Delete (right button): Delete the selected descriptors of the current class. *Note that the descriptors are also removed from the cards.*

List: List all classes and their descriptors.

Close: Close the descriptor handling window.

YourSchema (a card name):

Define, modify, delete, find, and list cards of this schema. A card consists of the values of the schema's fields, and of the descriptors it has been annotated with.

A field value can be any term. Its length should not exceed 255 characters.

If a field value contains commas, the value can be treated as a list, i.e. the terms separated by the commas can be addressed individually when exporting the value.

The field "Descriptors" reflects the descriptors currently associated with this card, or the descriptors previously selected in the descriptor selection window.

The card window can be in two operation modes, either in *cleared mode* (e.g., directly after opening it, or after pressing "Clear") or in *subset mode* (e.g., after a successful search when a subset of all cards has been found). Certain operations are only available in the subset mode. For instance, you can only modify a card or scroll through a subset of cards if a subset is available. On the other hand, retrieving the last search pattern is only possible in cleared mode.

After you opened a card window, the respective menu entry changes. In the new submenu, to front allows to make the window active if it is somewhere in the background, and the Export and Import submenus allow to switch between the existing procedures while the card window is open.

Buttons:

Add: Add the card currently entered in the window. This card consists of the text entered in the edit fields, and the descriptors selected in the descriptor selection window (see "Descriptors" below).

Note that if you have an unregistered version of PSI and the file already has 30 or more cards, you cannot add another card. (All other functions remain available.)

Modify: Replace the current card or the complete subset of previously found cards according to the card entered in the window. The current card is the one last found with "Find" or accessed with ">>" or "<<".

If you want to modify one card: change the current card, press "Modify", and then answer "One" to replace the old card by the new one. After the modification, you are still in subset mode and can go on modifying other cards of the subset.

If you want to modify the complete subset of found cards: choose one of its cards, empty all the fields that ought to remain unchanged, and edit those fields that should change in the cards. (Do not press "Clear".) Prepare the descriptors similarly. Then, you can modify by either adding or replacing. By adding, the new edited values are added only to cards where the respective fields have been empty. By replacing, the new edited values replace the old values, whether those have been empty or not. If you enter "-" in a field, the old text is removed (in both add and replace mode). If you negate the descriptors, they are removed from the cards; otherwise they are added. To modify a subset, edit and then press "Modify", answer "All", and then choose either "Add" or "Replace".

Apply the Modify All operation several times if you can't achieve what you want in one operation because of different individual conditions.

(The Modify operation is only available after a Find operation, i.e. in subset mode. This button is alternating with the "Pattern" button. As soon as you press "Clear", you leave the subset mode.)

Delete: Delete the cards that match the card currently defined in the window. The same matching rules as for "Find" apply. If more than one card matches the search pattern, you can either delete all of them (answer "All") or select those that are really to be deleted.

Find (Return key): Find the card or cards that match the card currently entered in the window (called the search pattern). If more than one card matches the search pattern, a scroll menu offers all matching cards. (In two-field mode, the first two field values of each found card are shown; in one-field mode, only the first field values are shown. See "Options …:Cards (Two fields)".)

A search pattern is defined by the field template and the selected descriptors. Simply fill in the fields and select the descriptors that should appear in the cards you are looking for.

The match rules for field values are:

```
    template        matches
    --------        -------
                anything (empty)
    ExactText     any exact text (not case sensitive)
    Text*         field values that begin with Text
    *Text         field values that end with Text
    *Text*         field values that contain Text
    ?Text         field values that are close/similar to Text
    -            empty fields
```

Similarity (for "?Text") is defined in percents; the threshold for "close enough to match" is set in the Options window (see "File:Options …:Closeness"). Similarity search is rather slow, but useful if you don't remember how you spelled a word.

The match rules for descriptors are (the connectives and descriptors are selected in the descriptor selection window; see "Descriptors" below):

```
connectives   match
-----------   -----
and        cards that are described (at least) by all the
           selected descriptors (e.g., "d1 and d2")
or         cards that are described by at least one of the
           selected descriptors (e.g., "d1 or d2")
and not    cards that are described by none of the selected
           descriptors (e.g., "not d1 and not d2")
or not     cards that are not described by either one of the
           selected descriptors (e.g., "not d1 or not d2")
```

You have to be in cleared mode to do a new search. With the Find operation, you switch to subset mode. As long as you do not press "Add", "Clear", or "Delete", you can browse through the subset with ">>" and "<<", or you can jump to any card of the subset pressing "Find" and selecting another card. You may modify one or all of the cards you found. To get the same set of cards again after leaving the subset mode, use "Pattern" and "Find".

Pattern: Recall the search pattern of the last successful Find, List or Delete operation.

The search pattern is preserved when the card window is closed. However, if the card window contains field values that do not match any existing card, and the window is closed, then these values are saved as the pattern and can be recalled using "Pattern" when the card is opened the next time.

This button is alternating with the "Modify" button and is only available in cleared mode. If you want to recall the search pattern directly after a Find operation, you first have to press "Clear".

>> (Next): Get the next card of the subset found in the last search.

<< (Previous): Like Next, but get the previous card.

Descriptors: Describe (annotate) the current card with descriptors by selecting them from the global descriptor list.

The descriptor selection window displayed is similar to the descriptor handling window (see "Schema: Descriptors"). Use "Show" (or double-click on a class) to switch to the selected descriptor class. Select descriptors in the list menu on the right; the selections are remembered if you switch classes. Use "Clear" to clear the entire selection.

Select either "and" or "or" for an And or Or search, and check "not" for a negation in search (see the match rules for "Find" above). Also check "not" for the removal of descriptors in a subset modification (see "Modify" above). If you annotate new cards, the connectives "and", "or" and "not" are not considered. (Annotating descriptors are always And-connected.)

The current search formula is shown in the lower part of the window; it is updated whenever "Show" or "Clear" is pressed. The formula reflects the selected descriptors and the connectives. The descriptors are written as *Class:Descriptor*; the class name is not repeated if more than one descriptor of the same class is selected. The text used for the connectives can be set in the Options window (see "File:Options …:And,Or,Not").

Press "Okay" to use your selections for the card window, or "Cancel" to discard changes. The Descriptors line of the card window shows the current descriptor selection in the same format as the descriptor windows.

Only descriptors previously defined in the descriptor handling window can be used.

List: List the cards which match the card currently entered in the window. The same rules as for the search pattern of the Find operation apply. The current export procedure of the card's schema is used to list the cards. If no export procedure is defined, a default procedure is used. You are asked whether the data should be exported to a file or a window. As long as you export to the same file (long button, Return key), this file is not closed and the listing is appended to former listings to this file (except if listing with an RTF procedure). If you choose a different export file the next time you list something, the previous file is closed (if it is not a window). You may also close a file explicitly by using "Texts:Close ExportFile".

You can switch export procedures using the card's menu ("Schema:YourSchema: Export:YourProcedure"). *Note that with an RTF procedure, you can only list to files.*

Sort: Sort all cards of this schema. You can sort them by any field(s) in any order. To indicate the order, mark the fields (i.e. fill in the edit fields) that are relevant for your order with numbers, beginning with 1. For example, you may choose 1 for "Last name", 2 for "First name", and 3 for "City". After pressing the button, you are asked if you want to sort in ascending or descending order.

The sorting algorithm is most efficient for cards which are only slightly in disorder.

Read: Import cards for the schema of the current card window. The current import procedure of this schema is used to read the cards. Import can be done from files or windows.

You can switch import procedures using the card's menu ("Schema:YourSchema: Import:YourProcedure").

File: Load the related text file. This button and function is enabled only if a field with the reserved name "File" has been defined. The values of this field should be standard Macintosh file names.

When a card is displayed (e.g., after a search) and "File" is pressed, the file named in the "File" field is loaded just like a normal text file (see "Texts:Open …" and "Texts:Path …"). If you use a relative path, i.e. just the file name or a path beginning with ":", the path is assumed to be relative to the home folder of the current PSI file. This allows to have portable file names. *Note that a text window cannot hold more than 32K of text.*

Ref: Display the related card(s). This button and function is enabled only if at least one field with the reserved name "Ref" has been defined. The values of these fields can be texts of the form *Schema:FirstFieldTemplate*.

When a card is displayed and "Ref" is pressed, PSI searches for and displays cards of schema Schema with a first field matching FirstFieldTemplate. Search and display via "Ref" is done automatically after a search, scrolling with "<<" and ">>", a modification, or a deletion. (Thus, the "Ref" button is only needed if you changed one of the card windows, but didn't use any of those operations.) A schema can have more than one "Ref" field. Only references to cards with open card windows are considered.

For FirstFieldTemplate, the same match rules as for text in the Find operation apply. If more than one card is referred to, the first one is displayed. Once the referenced card is displayed, the respective card window is in subset mode as if a normal search was done and can be used accordingly.

Referenced cards can in turn refer to cards, which can lead to cascades of card searches if all the card windows in a reference chain are open. In fact, even reference chains involving the same schemas more than once are allowed; the search and display of cards is terminated if a card is already displayed. For example, if A:a1 refers to B:b1, which refers to A:a2, which also refers to B:b1, pressing "Ref" for either card a1 or a2 of schema A will eventually display card a2 for schema A and card b1 for schema B. In

general, those "near-cycles" are discouraged; they might be useful for some applications, though.

Clear: Clear the edit fields and descriptor selection of this window.

Close: Close the card window. In case you didn't update your changes (and thus the currently entered card doesn't exist), the data is saved in the search pattern and can be recalled using "Pattern" when the card is opened the next time.

Texts

Select path names, find text in windows, load and get help, and activate a text window.

Path …:

Select a path and file name by stepping through the standard file menu. The full file name of the selected file is written to the listing window (or file). This name can be used in a card's "File" field.

Find …:

Find the subsequently entered text in the active text window.

Find again:

Find the text entered in "Texts:Find …" again.

Help:

Active window: Load the PSI help file if necessary and scroll to the help text for the currently active window.

Index …: Load the PSI help file if necessary and access help information using its index. A list of topics is displayed in a dialog window; double-click on a topic (or select it and press "Find") to scroll to the help text for this topic.

Note that the PSI help file has to be called "PSI Help" and is expected in either the same folder as PSI or in the System Folder.

WindowName:

Bring this window to the front (make it active).

Fonts

Select font type and size for the active text window.

CONDITIONS

* *PSI file types*

PSI handles three kinds of files, PSI files, text files, and option (settings) files.

PSI files are the actual PSI data files; they can be of two types, either Code or Text. PSI Code files can be loaded and saved faster. PSI Text files can be read using a text editor. (See also "File:Options …".)

PSI File (Code)   PSI File (Text)

Text files are created whenever you export (list) something to a file, or save a window in a file. "PSI Help" is such a file, too.

Text file

Option files contain the settings of the Options window (see "File:Options …").

PSI Options

You can start PSI with any one or with a set of these three kinds of files. If this startup set contains a PSI file, it is loaded as such; all text files of the startup set are loaded into text windows; and if the startup set contains an option file, the options are set accordingly.

PSI files can also be loaded with "File:Open …", text files with "Texts:Open …".

* *Process interruption*

Wherever you are, you may interrupt a process by pressing Command-".". You may then resume or abort the process, but note that there are many operations (like sorting or modifications) where it is not safe to abort, i.e. some data may be missing afterwards. (If it is important, i.e. if you aborted but need the data, try repeating the same operation.)

* *Background working*

Under MultiFinder and under System 7, PSI is able to work in the background. After starting, say, a list or sort operation, you may switch to another application.

CONSTRAINTS, WARNINGS, KNOWN BUGS

* PSI is not 32-bit clean. If you try to run it in 32-bit mode, you get a type 1 error.

* PSI is not able to compute the path to a file on a different volume than the boot volume. If you try to use "File:New …", "File:Open …", "File:Save as …" or "Texts:Path …" for such a volume, an error is reported ("Error -43: File not found"); press the button "Fail call". *DO NOT press "Succeed call"!* The system may bomb.

This problem also seems to occur with files that are on the desktop or in folders that are placed on the desktop in System 7. Move the file if you get an error.

Note that this does not affect the ability to create, open or save text files with the "File" menu or with the "File" function for cards. In the latter case, though, you have to construct the path name yourself.

* PSI 1.0 files can only be read and converted if they have been saved in Text mode. For each PSI 1.0 file, load it in PSI 1.0 and save it in Text mode, then load the file in PSI 2.3 and save it in Code mode again. PSI 2.0 and later versions will not load PSI 1.0 Code files.

* After a search, the color of part of the text in card windows is not restored at first. This has no further consequences.

* In prefilled edit fields, if the text is longer than the field, the last word that should be partially visible is initially not visible at all. This is a Macintosh problem.

* All strings (e.g., edit field entries) are restricted to a length of 255 characters. This might be problematic when defining a large schema.

* Whenever a string is interpreted as a list, spaces before a "," or brackets are significant.

* PSI can export in RTF, but you may experience limitations (e.g., a certain font not supported, or a special character not exported correctly). Write if you have problems.

MODIFICATIONS

2.0   A lot has changed since version 1.0. Caveats: load PSI 1.0 files in text mode only, and check old export and import procedures.

2.1   Windows adapt better to small screens.

        The "Fonts" menu shows the font of the active text window.

2.2   Export procedures can define font information (type, size and face), which is transformed to RTF.

        The export/import definition window has been changed to allow for long procedures.

2.3   The find selection dialog can show either the first or the first two field values of the found cards.

        File manipulation (open, save etc.) is now in menu "File" for both PSI and text files.

        The import of numbers is done correctly.

        PSI needs less run-time memory.

Frequently Asked Questions

?   *What Mac configuration do I need to run PSI?*

PSI runs on any Mac and both under System 6 and System 7 (in 24-bit mode). However, your Mac should have at least 2MB of main memory. If only 1MB is available, PSI's application size may be downsized to 1MB and still run under System 6 without MultiFinder. Remember to decrease the evaluation space first. The smallest you can make PSI is some 900KB (decrease the evaluation space first!). (See "File:Options …:Eval. space".)

?   *How many cards (or records) can be handled in PSI?*

Obviously, this depends on the size of the schema, i.e. the number of its fields. With an application size of about 1.2MB and an evaluation space of 250KB, PSI can comfortably handle up to 500 cards the size of a typical address. Files with up to 1000 cards have been tested. By increasing PSI's application size and evaluation space, there is no actual limit on the number of cards. (See "File:Options …:Eval. space".)

?   *How can I see more about what a PSI operation did?*

Turn on logging in the Options window. Each operation writes a log to the log window, explaining what card was deleted, what descriptor was added etc. Once you get more experienced, logging will usually be turned off and no logging window will be displayed. (See "File:Options …:Write log".)

Load the PSI help file "PSI Help" (e.g., via "Texts:Help:Index …") and use either of the two help modes to get help. (See "Texts:Help".)

?   *What about printing?*

Write your listings to a file or save the list window to a file and use your favorite word-processing program to print it.

?   *When I want to open a card window, I only get the message "The window is to high for this screen!".*

You either just defined a schema with too many lines, or you got a PSI file from somebody with a larger screen than yours. In either case, the resulting card window does not fit onto your screen, and you have to remove some of its lines. If you tried to structure the

layout by introducing (empty) texts, remove some of them; if you have no text and just fields, you have to restructure the layout or may even have to remove some fields. For example, open the schema definition window ("Schema:Schema"), find the schema (press "Find" and select its name if there are more than one), and delete the items in """ together with their position (e.g., """,3,"); then press "Modify" and try to open the card window again. (See "Schema:Schema".)

? *I have some troubles with my export and import procedures — is there help?*

Look at the sample files; they have various kinds of export and import procedures, for fixed formats (e.g., data-base formats), free formats (e.g., typical pretty-print format), and formats determined by keywords (e.g., Refer). (Also see "Schema:Schema:Export/ Import".)

For export procedures, use the Samples function! This facility tells you quite reliably what your information will look like if exported through your procedure. To get an idea, you might try it in the sample files. (See "Schema:Schema:Export/Import:Samples".)

? *PSI refuses to run, and I get a type 1 error. What's wrong?*

Switch to 24-bit mode. PSI is not yet 32-bit clean.