

# Digitala skyltar

## Overview

Digitala skyltar is a program for visualizing library contents. It can be run in three modes:

- Mode 1 - recently returned books and new books  
There are two views containing clickable book cover images of which the user selects one. One view displays recently returned books and the other displays new books. If a book cover image is clicked more detailed information of the corresponding book will be shown.
- Mode 2 - magazine blog  
In this mode the display shows a list of blog posts about articles in different magazines.
- Mode 3 - youth department  
The last mode either displays blogged books or new books in the same way as mode 1. There are also a browsable set of subjects that are used for filtering the displayed books.

There is also an editor for the configuration files of the displays.

## Running the Software

This section is intended for administrators; it contains instructions on how to setup and start the software. Digitala skyltar is written in Python.

### Requirements

The file setup.py included in the source code can be used together with py2exe to create an executable file for Windows. Digitala skyltar can be run directly from source or by starting the executable generated by py2exe. Since there are three ways of running the software there are also three sets of requirements.

### Interpret the Python Source

In this mode the software is run via an interpreter. It should be platform independent in this mode although this has not been tested. To be able to interpret the source code, the following items need to be installed:

- Python 2.7  
<http://www.python.org/download/releases/2.7.3/>
- Python Imaging Library (PIL)  
<http://www.pythonware.com/products/pil/>

### Create the Executable

In order to create the executable, the items above are required. In addition to this py2exe needs to be installed:

- py2exe  
<http://www.py2exe.org/>

### Run the Executable

In order to run the executable created by py2exe a computer running Windows is required.

## **Create Executable**

This step is only needed if the software will be run as an executable. To create an executable, run the script `setup.py` and specify command line argument `py2exe`. This will create a subdirectory `dist` that contains all files needed to run the program as an executable. For more information, see <http://www.py2exe.org/>.

The configuration file editor executable is created by running `setup_admin.py` with command line argument `py2exe`. Note that the two executables end up in the same `dist` directory and that the `dist` directory must be copied between builds of the two executables.

## **Startup**

When the program is started, an option specifying which display to run must be passed (1, 2 or 3). To run the first display, type `varberg 1` at the command prompt if an executable has been created and `python varberg.py 1` if the program is run from source.

There is also a fourth mode where data related to mode 3 is downloaded. The arguments to be provided are `3 download=amount` where `amount` is the number of blog posts to consider.

The configuration file editor is started by running `admin.exe` (if an executable has been created) or `python admin.py` otherwise.

## **User Manual**

This subsection describes how to operate the program and the architecture of the GUI.



At the top of the screen there are two buttons. These buttons are context sensitive. In the middle of the screen there is a large white rectangle with rounded corners, this is the main area where most of the information is displayed. At the bottom there are two browse buttons and between them there is a bottom area that is sometimes used to display data.



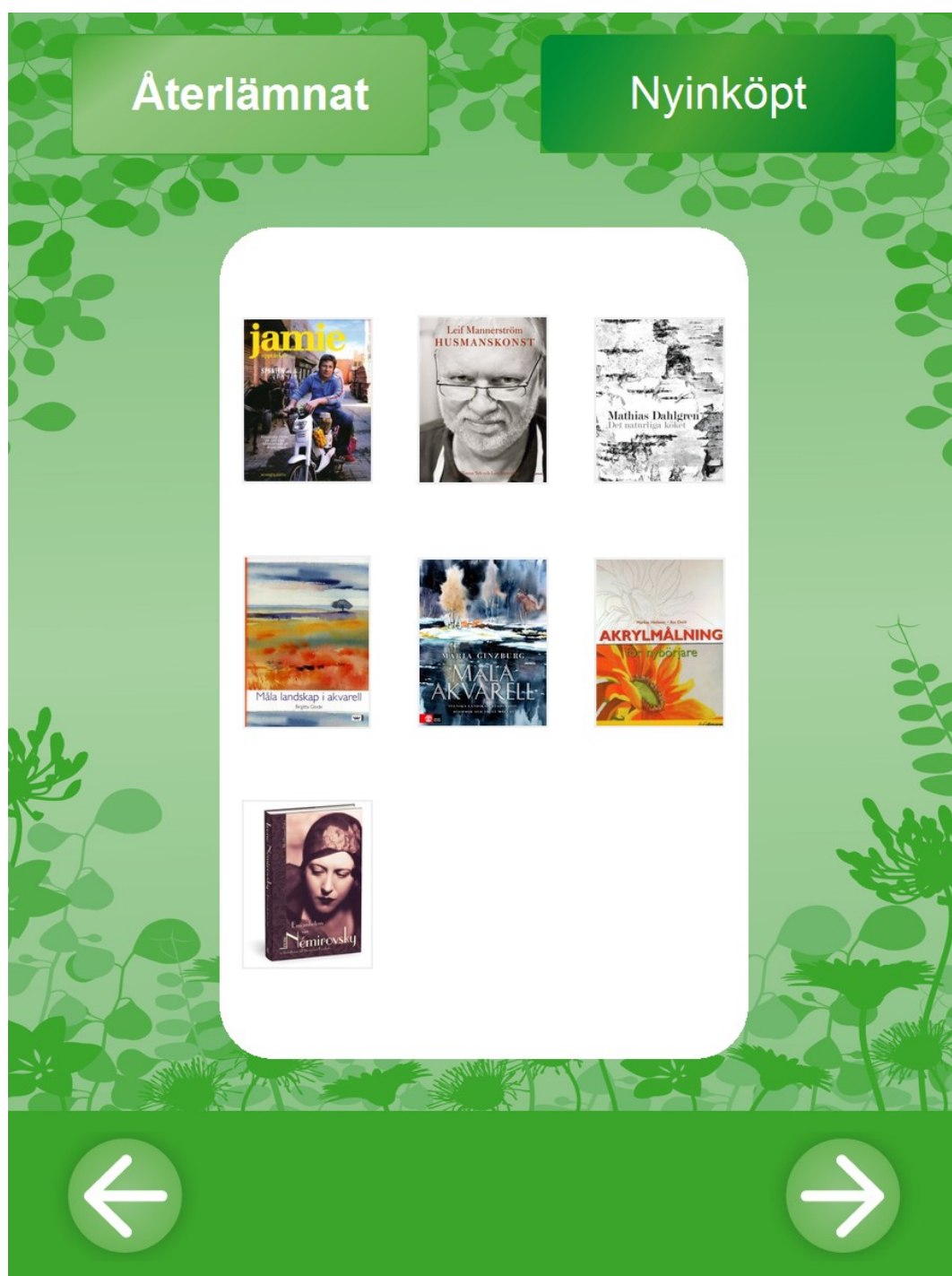
The second screenshot shows the item view and the carousel view. Throughout the program, an "item" is a generic word that is used to describe the data records that are handled by the program – book descriptions, blog posts and so on. An item view displays an item. It is scrollable. The carousel view is used for displaying some of the available items in a cyclic way. The currently selected item – the one that is displayed in the item view – is highlighted with a border and a circular segment.

## Mode 1

In the first mode, books from two sources are displayed. TBD Schedulable???

Each source is configured by the configuration files and tied to the two upper buttons. In the screenshot below the recently returned books are displayed and this is indicated by an emphasized text on the top left button. If the program has found more books than are possible to display at once

the browse buttons will browse between sets of books. If the upper right button is pressed the list of recently bought books will be displayed. If the left button is pressed the displayed list of books will be updated with any books that have been harvested since the last time the upper left button was pressed.



If a book image is pressed, detailed information about that book is displayed in the item view as indicated by the screenshot below. Note that the books displayed in the screenshot above will be in a carousel view at the bottom of the display. The browse buttons will browse between the books in the list, both in the carousel view and in the item view. If one of the top buttons is pressed the list of books from that source will be displayed and if any new books have been harvested in the meantime they will be added to the list.





## Mode 2

The second mode displays blog posts about magazines from a Wordpress blog. Each blog post begins with the name of the magazine, followed by a # which in turn is followed by the issue number, white space and a four digit year. The operation in mode 2 is similar to mode 1 but the list view is different; instead of clickable images there is a list of panels containing some information about the blogged magazine. The browse button browses between different sets of blog post if there are more blog posts than it is possible to display at once.

Varbergs bibliotek –  
nyheter, trender, opinioner

Bloggat om



National Geographic

nummer 3 / 2012

Artikeltips: Efter 100 år  
är ljuset tätt

Läs!



OPSIS BARNKULTUR nummer 1  
/ 2012

Artikeltips: Uppfostran?

Läs!



ICON nummer 3 / 2012

Artikeltips: Öppna inte  
dörren!

Läs!



AMELIA nummer 8 / 2012

Artikeltips: Glad Påsk!

Läs!



FLM nummer 16 / 2012

Artikeltips: Svindlande  
höjder

Läs!



If the button to the right in a panel is pressed, the blog post is displayed as indicated by the screen shot below. When this view is active the browse buttons will browse between individual blog posts.



### Mode 3

When run in the third mode the display will have two sources; blog posts and recently bought books. Blog posts end with the text ISBN followed by the ISBN number for the corresponding book.

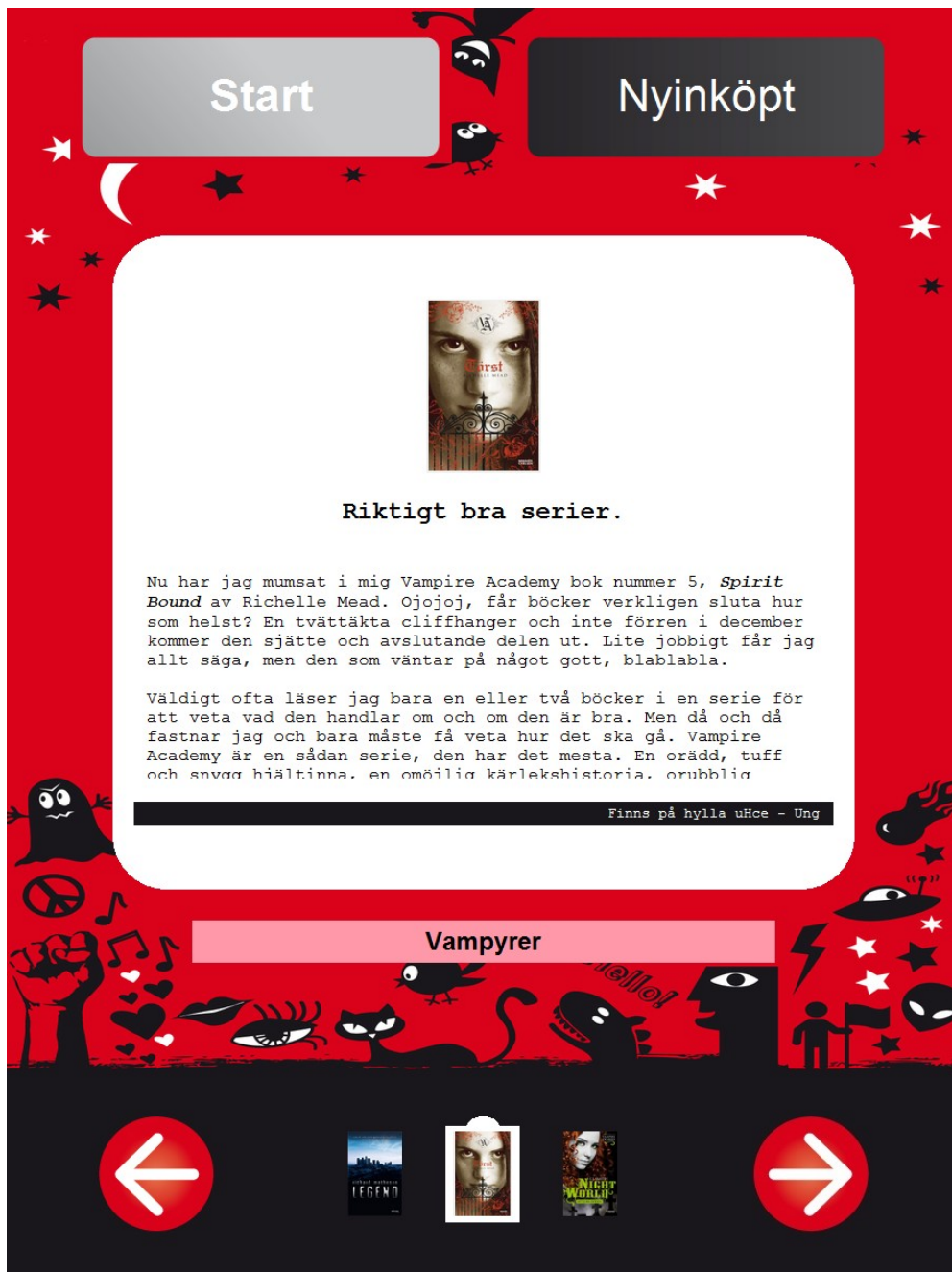
Compared to the to other modes, the third mode will add the concept of subjects. In the list view, only items belonging to the currently selected subject will be shown. The browse buttons are used for browsing between subjects when the list view is shown and the carousel view displays the subjects. In addition to the carousel view, there is a text label that indicates the currently selected subject.

If there are more items than space in the display, any excess items will not be shown.





If an item is pressed it will be shown in the item view. When this view is active, the browse buttons will browse between items in the item list and the carousel view will display these items. Note that all items in the list, not just the ones displayed in the list view, will be available.



## Configuration

The program is controlled by inifiles, one for each mode. Many of the options are common for all three modes. All settings that are described in this section can be edited graphically by using the configuration file editor.

## Common options

### Theme

A theme defines the images, colors and fonts of a display. Theme settings could look like this:

[Theme]

bgimage = green\_1080x1721.jpg

```
bgcolor = #3ba52b
softbuttonimage = green_knapp_1.png
softbuttonimageactive = green_knapp_2.png
prevbuttonimage = green_pil.jpg
nextbuttonimage = green_pilr.jpg
softbuttonfontname = Arial
softbuttonfontstyle =
softbuttonfontsize = 32
softbuttonactivefontname = Arial
softbuttonactivefontstyle = b
softbuttonactivefontsize = 32
softbuttonoffsetx = 60
softbuttonoffsety = 20
softbuttonbgcolor = #3ba52b
```

bgimage is the background image, to be placed in the working directory. Bgcolor is the background color. softbuttonimage and softbuttonimageactive are images that are used for the two upper buttons; the latter image shows a pressed button. prevbuttonimage and nextbuttonimage are used for the browse buttons at the bottom of the display. Then there are six properties for the fonts of the top buttons; three for the pressed button and three for the other button. fontname and fontsize are the name and the size of a font; fontstyle is a combination of the four letters bius (bold, italic, underline, strikeout). softbuttonoffsetx and softbuttonoffsety defines the location of the two upper buttons. Finally, softbuttonbgcolor is the color that is used behind the two upper buttons.



## Dimension

The dimension settings define different dimensions on the display.

[Dimensions]

`mainareacornerradius` = 50

`mainareamarginx` = 200

`mainareamarginy` = 100

`previewx` = 120

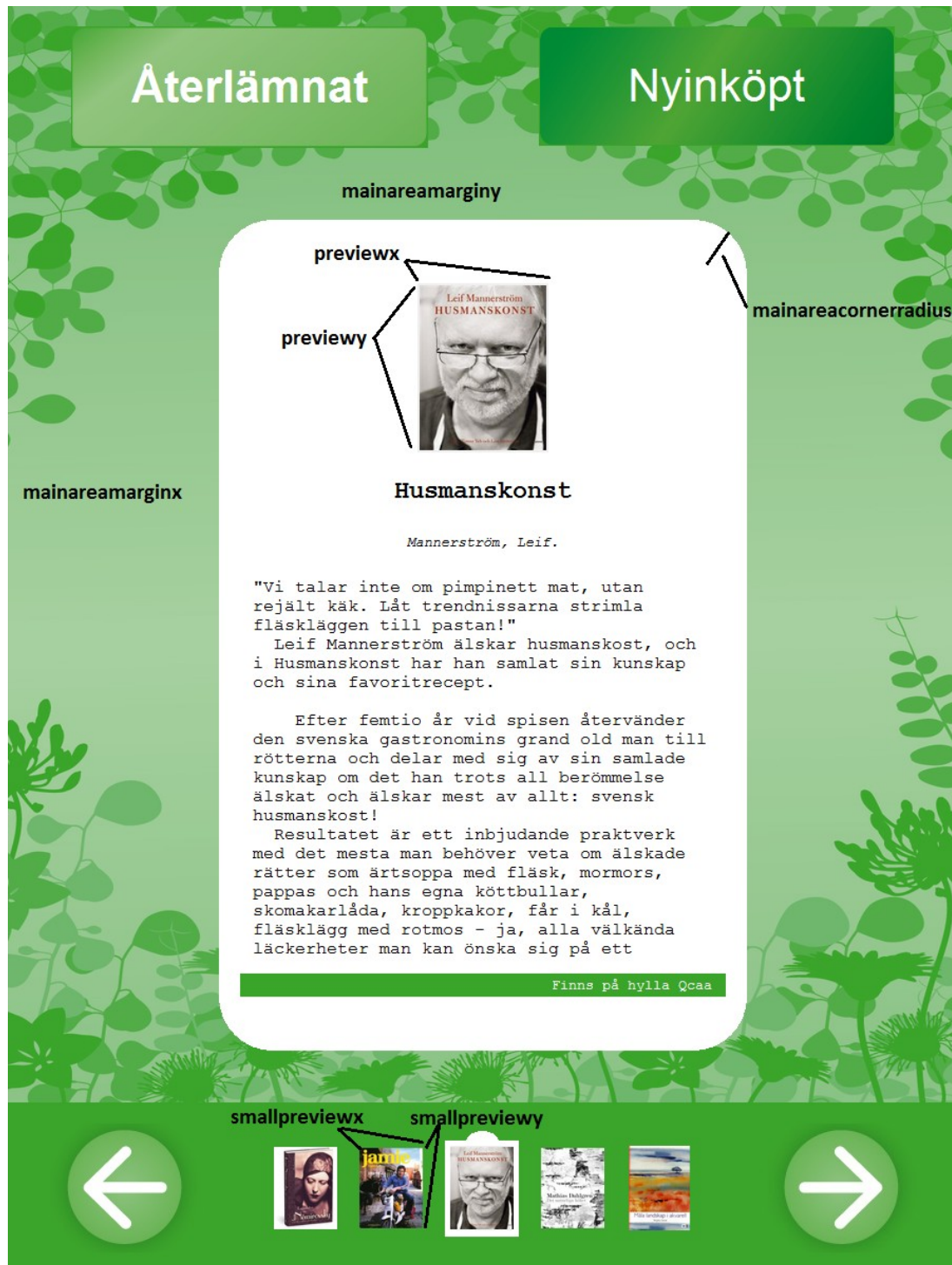
`previewy` = 160

`smallpreviewx` = 60



smallpreviewy = 80

mainareacornerradius defines the radius of the rounded edges in the main area. Mainareamarginx and mainareamarginy specifies the margin around the main area. previewx, previewy control the dimensions of images displayed in the item view. Finally, smallpreviewx and smallpreviewy define the size of images in the carouselview and in the panel list view in mode 2.



## **Itemview**

Itemview settings control the appearance of the item view.

*[ItemView]*

*headerfontname = Courier*

*headerfontsize = 18*

*headerfontstyle = b*

*authorfontname = Courier*

*authorfontsize = 10*

*authorfontstyle = i*

*normalfontname = Courier*

*normalfontsize = 12*

*normalfontstyle =*

*footerfontname = Courier*

*footerfontsize = 10*

*footerfontstyle =*

Fonts are specified in the same way as in the theme settings. There are four kinds of fonts; header, author, normal and footer. Note that author font is not used in mode 2.



## Husmanskonst

Mannerström, Leif.

"Vi talar inte om pimpinett mat, utan  
rejält käk. Låt trendnissarna strimla  
fläsklägggen till pastan!"

Leif Mannerström älskar husmanskost, och  
i Husmanskonst har han samlat sin kunskap  
och sina favoritrecept.

Efter femtio år vid spisen återvänder  
den svenska gastronomins grand old man till  
rötterna och delar med sig av sin samlade  
kunskap om det han trots all berömmelse  
älskat och älskar mest av allt: svensk  
husmanskost!

Resultatet är ett inbjudande praktverk  
med det mesta man behöver veta om älskade  
rätter som ärtsoppa med fläsk, mormors,  
pappas och hans egna köttbullar,  
skomakarlåda, kroppkakor, får i kål,  
fläsklägg med rotmos - ja, alla välkända  
läckerheter man kan önska sig på ett

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footer

### Source

Although there is no section called source there are sections in mode 2 and 3 that describe a data source. These sections are called Blog in mode 2 and 3 and New in mode 3.

[Blog]

*url = http://varbergsbibblan2.wordpress.com/feed/*

*historylength = 27*

*cachedir = C:\Projekt\Digital delaktighet\dd\src\test\varberg\cache2\Blog*

*interval = 20*

url is the url of the data source. historylength specifies the number of items to keep - any excess items will be deleted as new items are harvested. cachedir is the location of the cache; each source shall have its own cache dir. Erasing a cache dir will trigger a new harvest of all required data, at most historylength items. interval specifies the time in seconds between the occasions when the program will look for new data at the source.

### **Common**

All modes have a section common that contains settings that are common for all data sources in the mode. The option library is common for all these sections, it contains the name of the library for which items will be harvested.

### **Mode 1**

Mode 1 has no additional sections to the ones described above. In section Common there are two more options; cachedir is the location of the cache directory and configfile is the name of an XML file that contains source descriptions.

TBD describe the XML file if it will be used!

### **Mode 2**

In addition to the sections described above, mode 2 has one section for the horizontal panels in the list view and one section for the top left text that replaces the upper left button.

#### **HorizontalPanel**

*[HorizontalPanel]*

*panelspace = 20*

*panelheight = 100*

*fontname = Courier*

*fontsize = 18*

*fontstyle = b*

*marginx = 100*

*marginy = 50*

panelspace defines the space between two panels; panelheight defines the height of each panel. The font to be used within the panels is specified as described above. Finally, marginx and marginy are the margins of the main area.





### TopLeftText

This section describes the text that will be displayed instead of the upper left button.

[TopLeftText]

fontname = Arial

fontsize = 24

fontstyle = i

text = Varbergs bibliotek – nyheter, trender, opinioner

textcolor = white

left = 60

top = 40

linewidth = 400

The font is specified as described above, text is the text to show, textcolor is the color of the text, left and top defines the location of the text and linewidth determines the maximum length of a line after which there will be a newline if the text is too long.



## Mode 3

The third mode have two additional sections; Subjects which lists all subjects and BottomArea which defines the area where the currently selected subject is shown.

### **Subjects**

This section can have an indefinite number of options; each option shall have the name "subject" followed by a sequence number starting at 1. In this section, each option defines two properties; the name of the subject and an image of the subject. These two properties are separated by a pipe character.

*[Subjects]*

*subject1 = Kärlek|love.png*

*subject2 = Fantasy|fantasy.png*

*subject3 = Vampyrer|vampire.png*

*subject4 = Skräck|horror.png*

*subject5 = Serier|comics.png*

*subject6 = Deckare|detective.png*

*subject7 = Från verkligheten|reality.png*

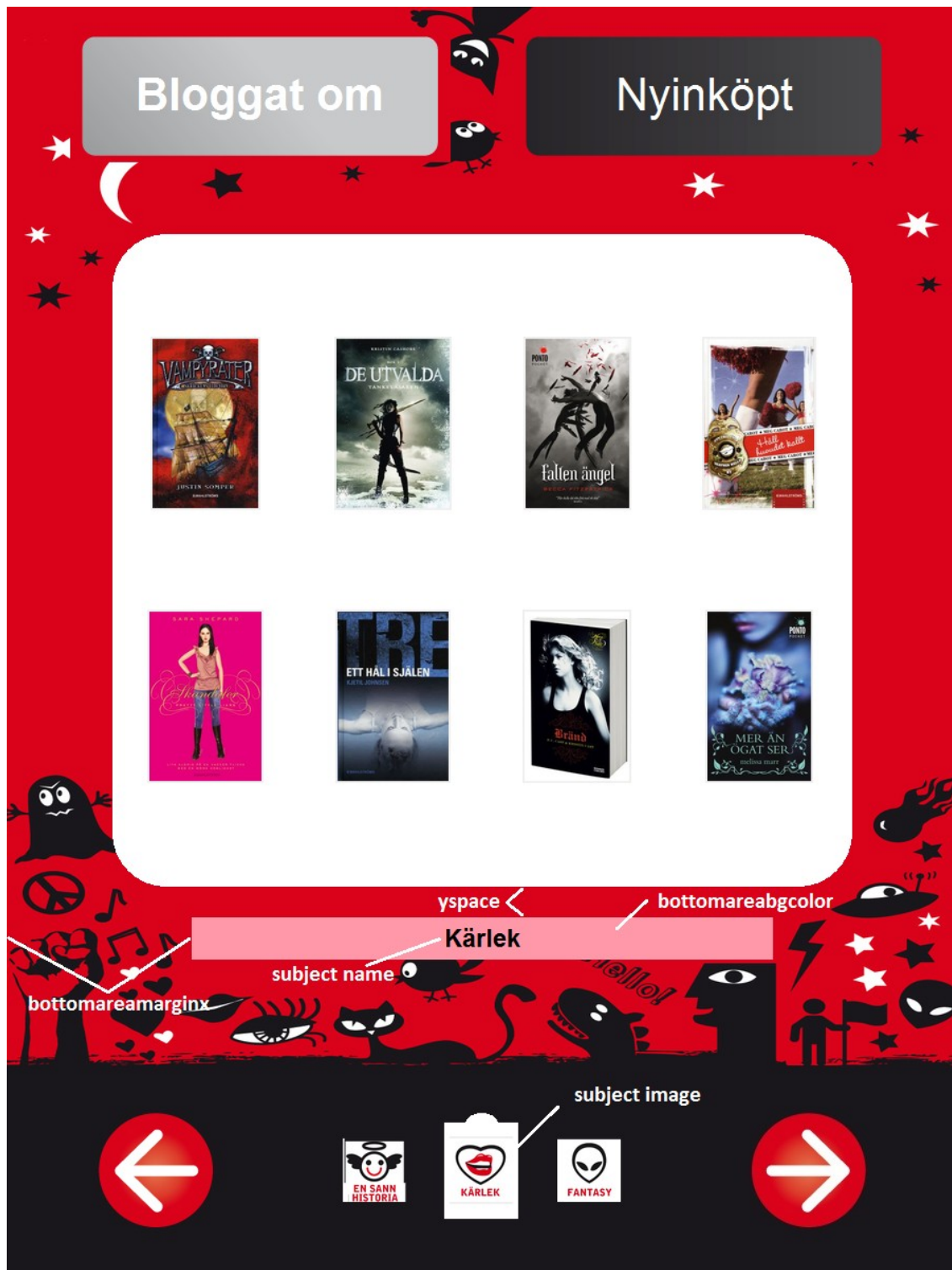
### **BottomArea**

*[BottomArea]*

*yspace = 80*

*bottomareamarginx = 200*

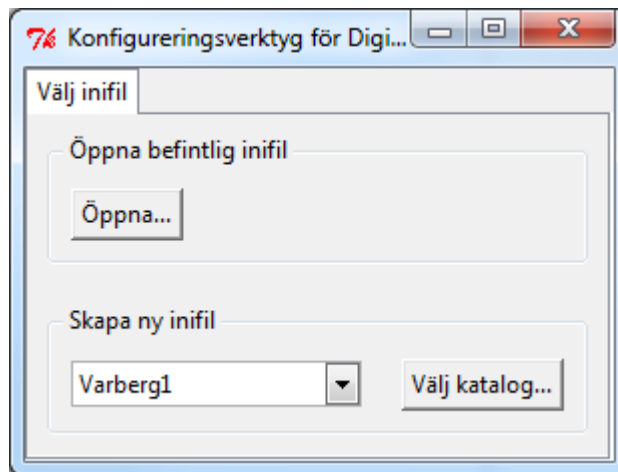
*bottomareabgcolor = #ff99aa*



## Configuration File Editor

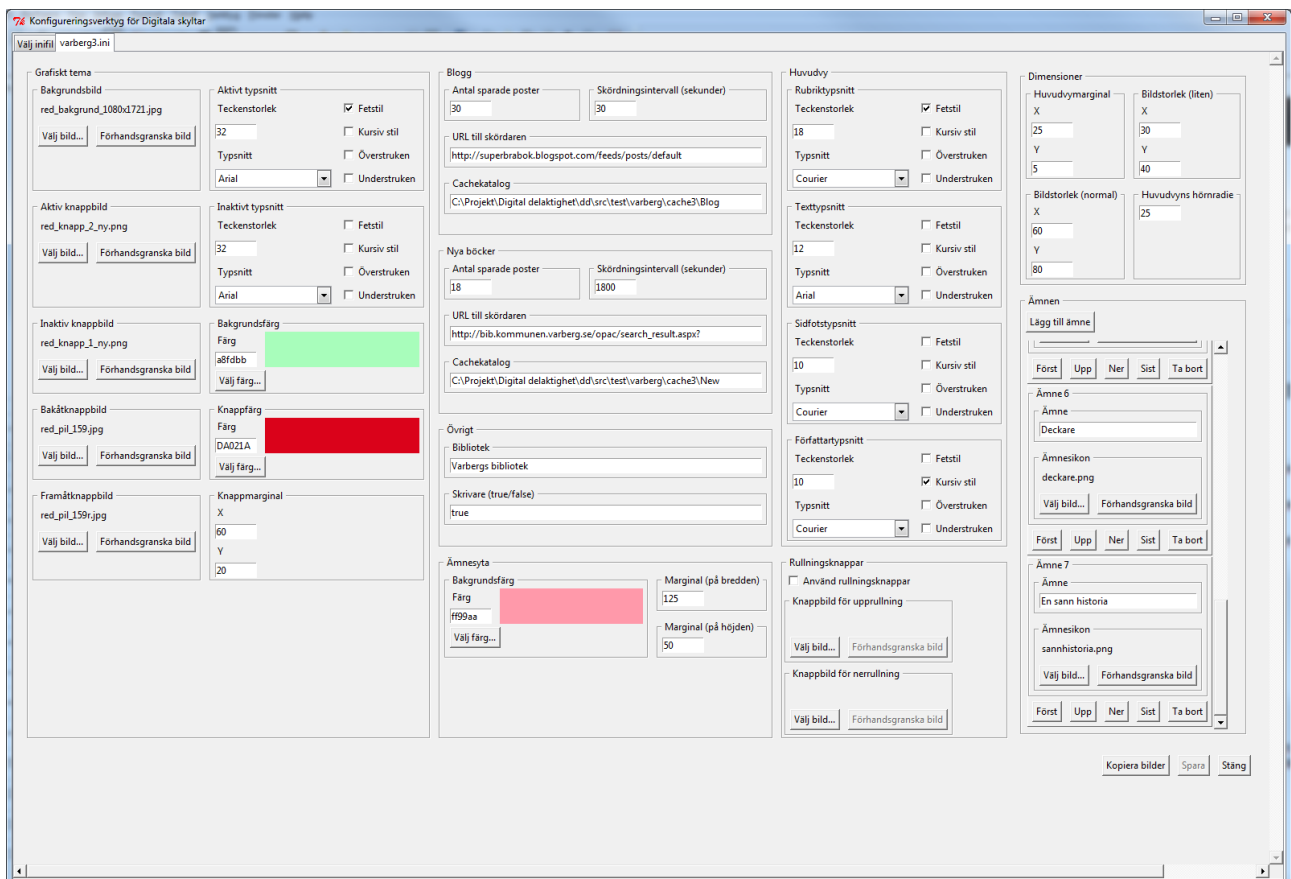
The editor consists of a number of tabs, where the first one is used for selecting files to edit and the other ones are tied to a configuration file. The tool automatically recognizes the format of an already existing configuration file for one of the displays.





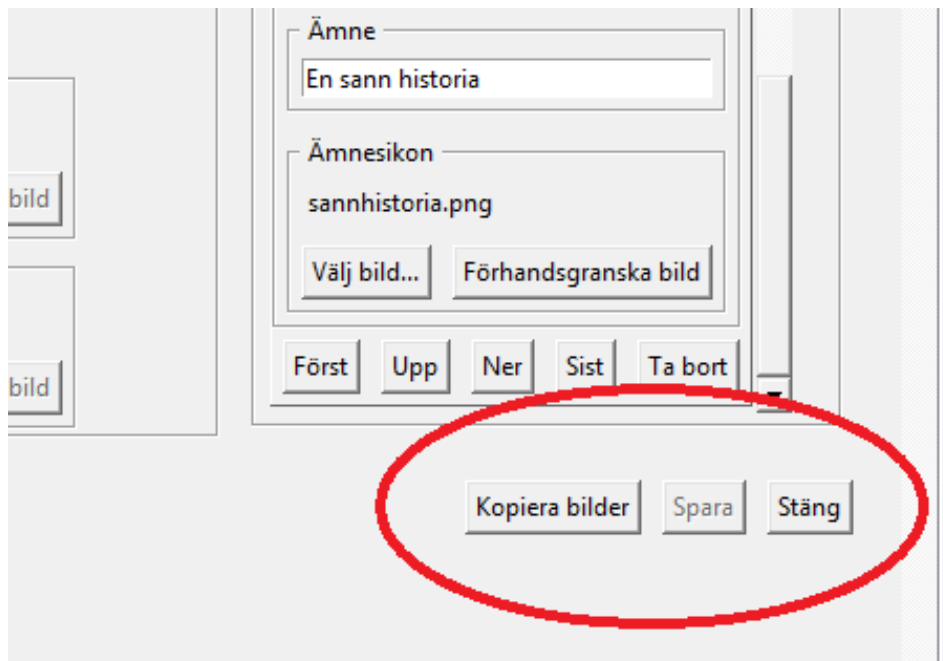
*The first tab is used for opening existing files or creating new ones.*

When a file has been opened, it is displayed in a new tab by various widgets for different types of data.



*All available options for the third display.*

Regardless of the type of configuration file, there are always three buttons at the low right corner. The left one copies all images to the same folder as the configuration file is located in; this should make it easier to distribute a setup of a display. The button in the center saves the configuration file and the button to the right closes the tab and ends the editing session.



*The three buttons in the low right corner.*

## Source Code

This section contains information about the architecture of the software. It is intended for developers.

### Overview

The program is organized according to the Model-View-Controller design pattern. Data is passed in a class called Item.

### Model

On startup data is loaded from a cache if a cache exists. Then the data is updated periodically using harvesters that look at a specified source on the Internet.

### View

There are two configurable buttons at the top and two browse buttons at the bottom. The rest of the space in the GUI typically contains graphic objects that are used to display a clickable set of Items (class ListView and its descendants), a detailed view of one Item (class ItemView and its descendants) or a cyclic list of Items (CarouselView).

### Controller

The controller class is called Controller and one implementation exists for each program mode. It is responsible for setting up the model and creating the graphical objects in the view. It also handles the events for the upper two buttons and the graphical objects. Events for the browse buttons are configured by passing browsable objects to the main GUI class.

### Editor

The editor is a standalone tool. It uses few display functions and it does not use the same text identifiers for configuration file data as the displays (there are room for improvements here).

## ***Detailed Description***

### **Common Classes**

#### ***Item***

This class has many descendants that add properties such as images and texts. It has functions to load associated data, clean associated data and to return an XML representation that can be stored in a cache.

An item can also be created from harvested data, typically XML. Each type of data source has its own item class.

The main text of an Item is added to a text widget by function Item.addDescription that maintains the format of the text, if any.

#### **Source files**

- item.py
- vbgopacbookharvester.py
- wpharvester.py
- blogspotharvester.py

#### ***Settings***

When the program is started, the inifile for the selected mode is read by a ConfigParser. This ConfigParser is read by a descendant of class Settings to ensure that all required settings have been provided in the ini file. Settings related to the GUI are read by class GuiSettings.

#### **Source files**

- settings.py
- guisettings.py

#### ***FormattedText***

This class reads HTML formatted text and has a function that renders the text onto a Tkinter Text widget.

#### **Source file**

- formattedtext.py

#### ***Language***

This unit defines all texts in the user interface. It also has dictionary containing a translation to Swedish. If this program will be used in other countries, the language file has to be changed.

#### **Source file**

- language.py

## **Model**

Each program has a scheduler and one data manager for each data source. The scheduler calls the data manager at periodic intervals. A data manager maintains all items from a data source. It has a harvester that can read the data source and a cache that stores all items.

### ***Scheduler***

The Scheduler is a thread that has a collection of updatable objects containing a function update and an object Interval that describes how often update shall be called. The unit of Interval is seconds.

### **Source file**

- scheduler.py

### ***Harvester***

A harvester is a class, one per type of data source, that gathers data and create Item instances containing the gathered data. When created, the harvester classes take an argument that is a function which is called when a new data item has been harvested. The function also determines when enough data has been harvested. A function called update is executed periodically to search for data.

### **Source files**

- vbgopacbookharvester.py
- wpharvester.py
- blogspotharvester.py

### ***Datamanager***

This class and its descendants have a function update that is typically called periodically by a scheduler. Function update uses a harvester to gather data and some criteria to decide which data to keep. A Datamanager implements a function that gathers an item and determines if more items shall be harvested; this function is passed to the harvester and mentioned in the harvester section above.

To pass data to the view in a synchronous way there is a function called getItems.

There is also a cache that stores all items that are maintained by the data manager. The cache is loaded when the program is started and saved, if needed, whenever update is called.

### **Source files**

- datamanager.py
- varbergdatamanager.py

### ***Cache***

A Cache can load data and save data. When created, it gets a directory, the class of the items it maintains and arguments to pass to the items when they are loaded.



## Source files

- `cache.py`

## View

The view is managed by class `PublicDisplay` that creates the GUI and is responsible for creating frames that can be used for creating the other classes in the view.

### ***PublicDisplay***

This class creates the Tk object and all areas inside it. There are generic functions performing different tasks:

- Create shapes and return frame objects
- Configure the top buttons
- Add or remove browsable objects associated with the two bottom buttons – a browsable object shall have a function `next` and a function `prev`

There are also functions that are specific to certain modes.

## Source files

- `publicdisplay.py`

### ***ListView***

A `ListView` is used for displaying a set of items. If it has more items than it is possible to display at once there are two functions `next` and `prev` that can be used for browsing between subsets of items. These functions are typically tied to the `PublicDisplay` object by adding the `ListView` as a browsable object.

There is also a function called `notify` that looks for new items in a data manager and updates the view accordingly.

A `ListView` handles events that occur when the user clicks one of the displayed items in the list.

The `ListView` class shall not be used directly. It has two subclasses; `BookListView` that is used in mode 1 and 3 and `PanelListView` that is used in mode 2.



*PanelListView*



*BookListView*

## Source files

- listview.py
- booklistview.py
- panelview.py

## ItemView

ItemView displays one item from a set of items. It has next and prev functions that can be used for browsing between the items, typically by adding the ItemView to the PublicDisplay object.

There is also a function toHtml that returns an HTML representation of the item. The HTML representation can be used for printing the item.

There are subclasses for book items (used in mode 1 and mode 3) and blog items (used in mode 2 and mode 3).



## Husmanskost

*Mannerström, Leif.*

"Vi talar inte om pimpinett mat, utan rejält käk. Låt trendnissarna strimla fläsklägggen till pastan!"

Leif Mannerström älskar husmanskost, och i Husmanskost har han samlat sin kunskap och sina favoritrecept.

Efter femtio år vid spisen återvänder den svenska gastronomins grand old man till rötterna och delar med sig av sin samlade kunskap om det han trots all berömmelse älskat och älskar mest av allt: svensk husmanskost!

Resultatet är ett inbjudande praktverk med det mesta man behöver veta om älskade rätter som ärtsoppa med fläsk, mormors, pappas och hans egna köttbullar, skomakarlåda, kroppkakor, får i kål, fläsklägg med rotmos - ja, alla välkända läckerheter man kan önska sig på ett

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## Source files

- itemview.py
- bookview.py
- blogview.py

## CarouselView

The CarouselView is somewhat similar to the ListView; it displays items and it is browsable. There are two subclasses; ImageCarouselView and TestCarouselView (not used).



*ImageCarouselView*

## Source files

- carouselview.py

## Controller

There is one controller class for each mode and all of them are called Controller. In the main unit it is decided which Controller to use.

When initialized, the Controller creates the model and the view and ties its event handlers to the top buttons of the GUI and the ListViews.

## Source files

- varberg1.py
- varberg2.py
- varberg3.py

## Editor

Beside a basic framework, the editor consists of a number of building block of the same base class EditInput. That base class is a group box that can display a description, read an inifile and save to an inifile. If it has any images it can copy them to the current directory.

The other base class is EditTab that represent a tab in the tool.

File editinputsections.py contains collections of EditInputs representing sections of configuration

files.

To extend the editor with support for other display types, a subclass of `EditTab` should be created and then populated with `EditInput` building blocks representing the data in the configuration file. Then a file similar to `varbergtabselector.py` should be created.