Playing Card Generator User Guide

Guide for Playing Card Generator version 1.0 (CardCreate).

Introduction

A while back I was looking for software that would create playing card images. I found a bash script that would generate cards with images on them using the 'convert' command from ImageMagick. It was not what I wanted but it did motivate me to write some C++ software to generate a bash script which could generate each card the way I wanted. This software gave more control and flexibility for creating playing card images. I called this software 'cardgen'.

I then re-wrote it in java to be independent of the 'convert' command and use a GUI instead of command line parameters. To differentiate this java version, I called it 'CardCreate'

To compose the playing cards, 'CardCreate' (like 'cardgen') uses separate .png image files for the faces of the court cards, the indices and the pips. These images are kept in separate directories, with a sub-directory for each style. This allows for different decks of cards to be generated from different combinations of styles of these component parts. We will see examples of this later. The intention is that 'CardCreate' can be used to quickly prototype decks without having to create every individual card item from scratch.

Installing the software

System requirements

The system requirements for using 'CardCreate' are:

- Java Development Kit
- Maven
- git
- tar utility

To get started we first need a java runtime environment installed. To check if java is installed launch a terminal/console and run '**`java -version`**'. You should see something like the following:

```
$ java -version
java version "15.0.1" 2020-10-20
Java(TM) SE Runtime Environment (build 15.0.1+9-18)
Java HotSpot(TM) 64-Bit Server VM (build 15.0.1+9-18, mixed mode, sharing)
```

If not, go to the Oracle web site (https://www.java.com/en/download/) and install the version appropriate to your operating system.

Similarly check if maven is installed:

```
$ mvn --version
Apache Maven 3.6.3 (cecedd343002696d0abb50b32b541b8a6ba2883f)
Maven home: K:\apache-maven-3.6.3
Java version: 15.0.1, vendor: Oracle Corporation, runtime: C:\Program
Files\Java\jdk-15.0.1
```

```
Default locale: en_CA, platform encoding: Cp1252
OS name: "windows 10", version: "10.0", arch: "amd64", family: "windows"
```

If maven is not installed go to the Apache web site (https://maven.apache.org/install.html) and follow the instructions.

In the following examples the tar utility is used to extract the tar file, but most file explorers will extract the files also and can be used if preferred.

Clone and Build

The following commands clone and generate an executable jar file in the 'target' directory:

```
$ cd '/cygdrive/k/Users/Phil/Work/Playing Cards'
$ git clone https://github.com/PhilLockett/CardCreate.git
$ cd CardCreate/
$ mvn clean install
```

Set up environment

The 'CardCreate' package comes with java software and an environment in which to use it. This environment provides some basic images and scripts to get you started. This set up process is only required once. Create a directory where you wish to create your cards (in the example we will use '/cygdrive/k/Users/Phil/Work/Playing Cards/CardStage') and (if necessary) copy 'CardWork.tar.gz' into it, then execute the following commands from a terminal:

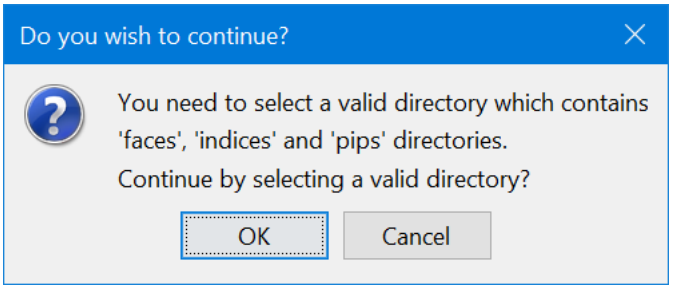
```
$ cd '/cygdrive/k/Users/Phil/Work/Playing Cards'
$ cp ./CardCreate/CardWork.tar.gz .
$ tar zxf CardWork.tar.gz
$ cd CardWork/
$ ./setup.sh
```

Run

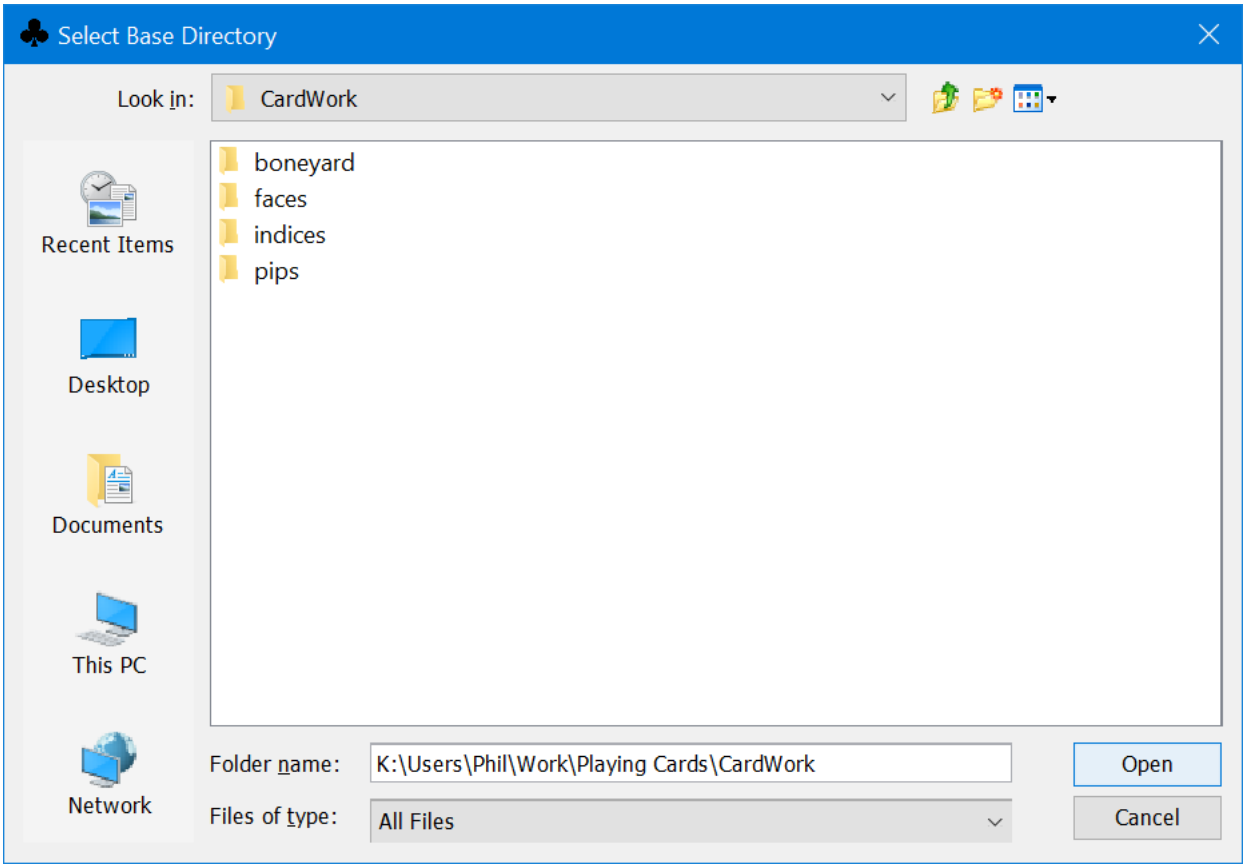
To run 'CardCreate' either double click the 'CardCreate-jar-with-dependencies.jar' file in the '/cygdrive/k/Users/Phil/Work/Playing Cards/CardCreate/target' directory or execute the following command:

```
$ java -jar ./target/CardCreate-jar-with-dependencies.jar
```

Since this is the first time launching, the following 'continue' dialogue will be shown:

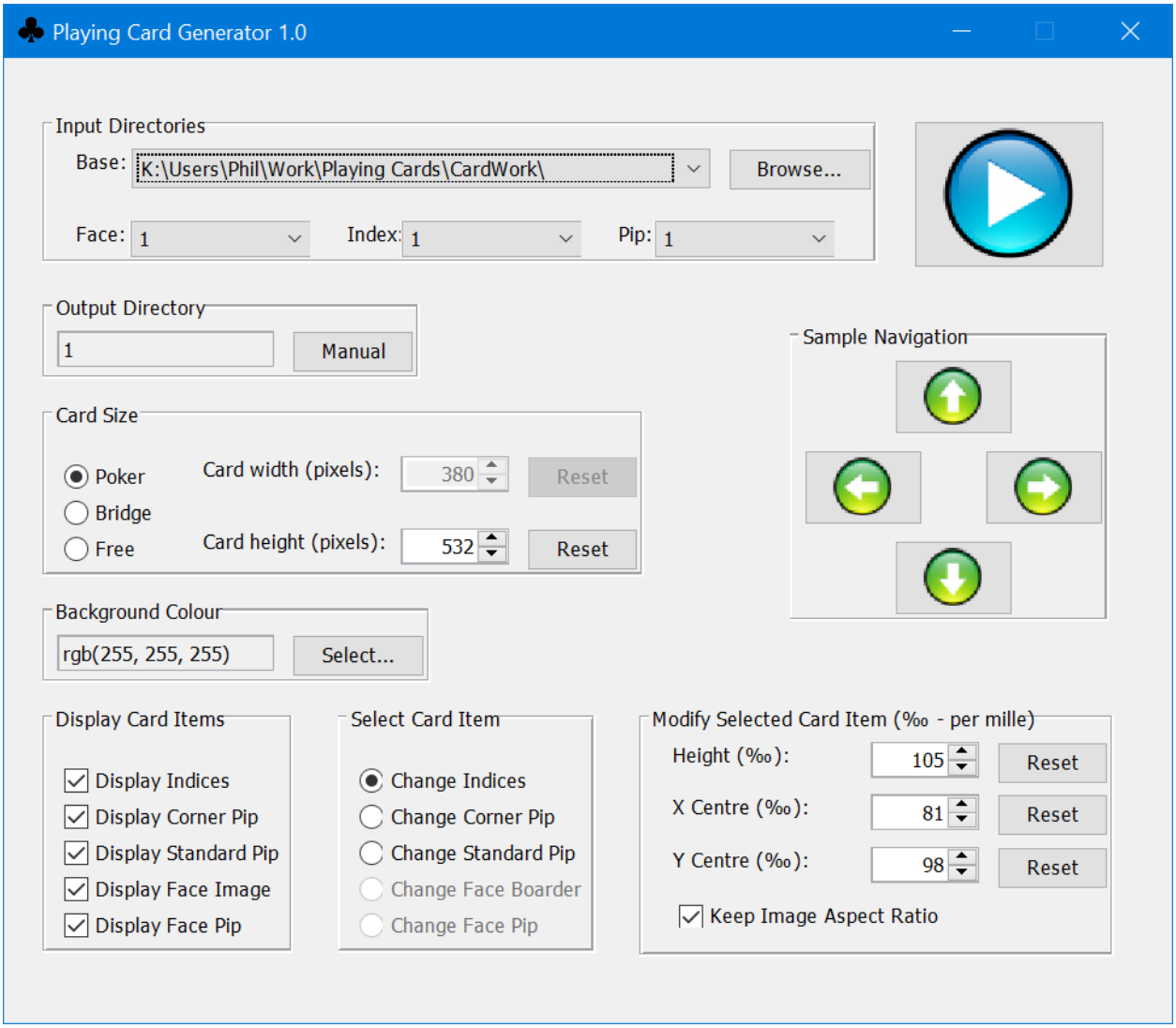


Selecting 'Cancel' will shut down the application. Selecting 'OK' will launch the following directory selection dialogue which allows you to navigate to a directory that contains subdirectories 'faces', 'indices' and 'pips' such as the one created above in the 'CardWork' directory:

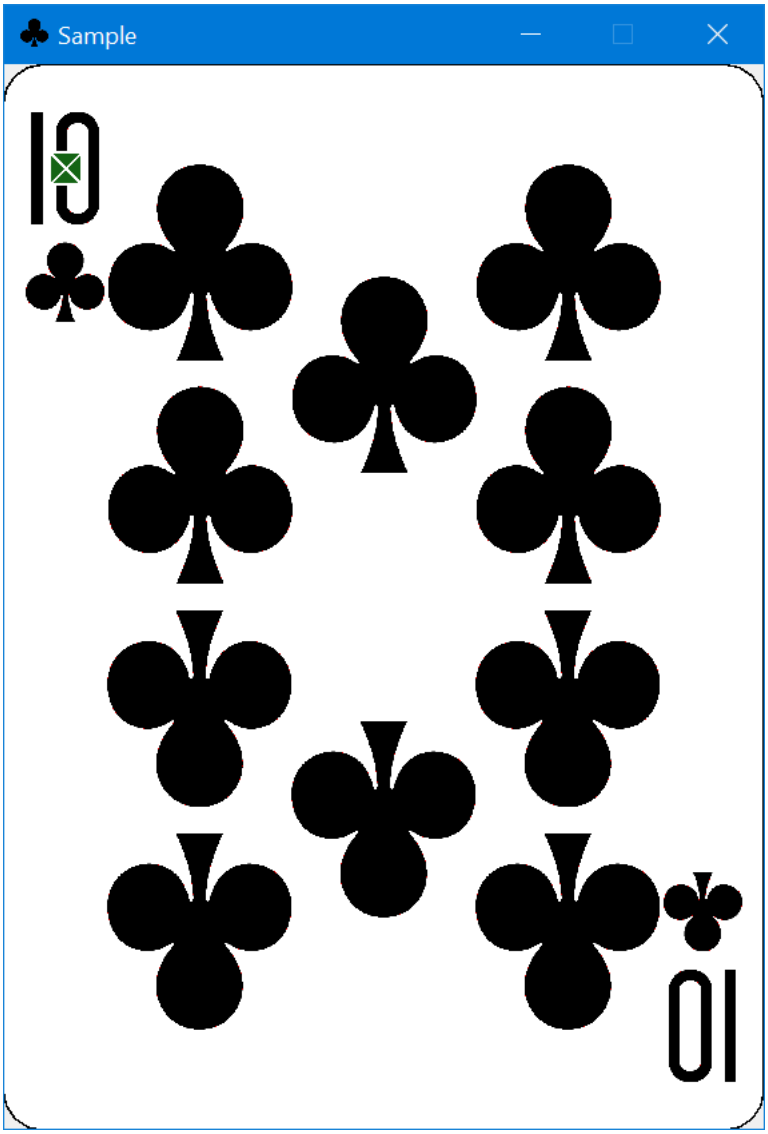


If ‘Cancel’ is selected at this point, or a directory which does not contain the necessary subdirectories is opened, you are returned to the ‘continue’ dialogue, where you can ‘Cancel’.

If a valid directory is opened, the ‘Playing Card Generator’ application and the card ‘Sample’ window will be launched:



Note that now a ‘Base‘ directory has been selected, it is not necessary to selected one again and subsequent ‘CardCreate’ application launches will automatically use the directory already selected. However, other valid directories can be selected using the ‘Browse…’ button, and these directories can then be selected using the pull-down.



The card composition takes place in the ‘CardWork’ directory. This ‘CardWork’ directory can be named as needed, but the subdirectories it contains should not be renamed as ‘CardCreate’ has them hardcoded and looks for them explicitly.

Environment breakdown

The ‘CardWork’ directory provides the following subdirectories:

- boneyard
- faces
- indices
- pips
- scripts

The ‘boneyard’ contains additional image files used for generating default Jokers. The ‘CJoker.png’ and ‘DJoker.png’ images files should be copied into the selected ‘indices’ directory as required.

The ‘faces’ directory contains subdirectories of images used for the face cards. Typically, these are the court cards plus the ace of spades image. The only difference between style 1 and 2 is the colour of the ace of spades. The Rouen subdirectory is a reimagining of an old-style deck of cards but with added ace of spades and jokers.

The ‘indices’ directory contains subdirectories of images used for the card’s indices. The only difference between style 1 and 2 is the colour of the club indices, black has been changed to white. We will see how to do that using scripts later in this guide. Subdirectory 3 contains four sets of indices. Typically, a deck only uses red and black indices, but this example uses different colours for each suit. If images for the spades indices is not found, clubs will be used for the spade cards. Similarly, if indices for hearts are not found, indices for diamonds will be used.

The ‘pips’ directory contains subdirectories of images used for the card’s pips. The only difference between style 1 and 2 is the colour of the club and spade pips, black has been changed to white. Subdirectory 3 contains only four pip images. These are used for both the standard pips and the corner pips. Optionally you could add a set of small pips which will be used as the corner pips.

The ‘scripts’ directory contains numerous bash scripts that are dependent on the ‘convert’ command. See the C++ software ‘cardgen’ for details (https://github.com/PhilLockett/cardgen.git). They will not be used here.

All of these images are used to compose cards by resizing and positioning them. It should be noted that if the selected ‘faces’ subdirectory contains an image for a card, the image is used, otherwise the standard pips arrangement is used.

Anatomy of a Playing Card

‘CardCreate’ composes playing cards from five items and allows the position and size to be modified, but in a manor consistent with all individual instances of the item e.g. changing the position and size of the index changes both the top-left and bottom-right index. The five items are:

- Indices
- Corner Pip
- Standard Pip
- Face Image
- Face Pip

All image files must be .png files and it is highly recommended to use transparent backgrounds.

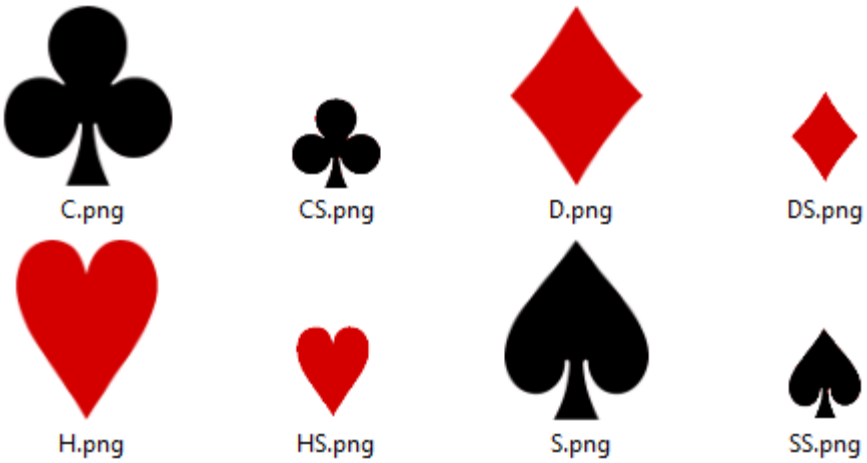
Indices

The index is the letter or number that appears in the two corners of the card. Images representing the indices are found in the ‘indices’ directory. The images are all .png files and use transparency as the background. The naming convention uses the initial letter of the suit followed by the index it represents. Obviously, ‘C’ represents Clubs, ‘D’ for diamonds, ‘H’ for hearts and ‘S’ for Spades. However, if the images for the Spades are not found, Clubs will be used because they are usually the same colour. Similarly, if indices for Hearts are not found, indices for diamonds will be used. This save unnecessary repetition, but also allows for Hearts to be a different colour to Diamonds and Clubs to be a different colour to Spades. Example:

This directory can also contain images for the Joker text, which initially are in the 'boneyard' directory. This will be added to the corners of the generated joker cards. There are no controls provided for the Jokers and the only options are to provide a joker image which can be augmented with the joker text. The images are all .png files and use transparency as the background. The naming convention uses the initial letter of the suit followed by 'Joker'. In this case the joker text must be explicitly provided for each suit requiring it. In the example below only the Jokers for Clubs and Diamonds will have the text.

Corner Pip

The Corner pip is the suit symbol displayed underneath the index. Images representing the Corner pips are found in the 'indices' directory. Like the indices, the pip images are all .png files and use transparency as the background. The naming convention uses the initial letter of the suit. These are used for the standard pip, the corner pip and the face pip on the court cards. Optionally a second set of images can be provided named using the suit initial followed by an 'S' (for small) used specifically for the corner pip. This allows for the option to have simpler suit signs for the smaller corner pip and more complex designs for the others. If the smaller image is available it is used, if not the larger image is used.

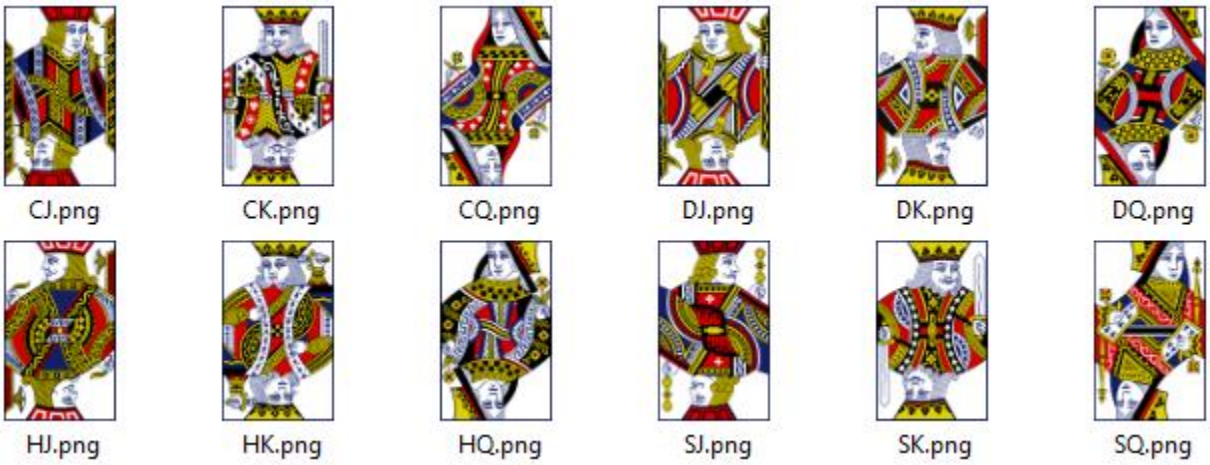


Standard Pip

The Standard pip is the suit symbol displayed in the centre of the numeral cards (Aces through 10s). Like the Corner pips, the images representing the Standard pips are found in the 'indices' directory and are all .png files and use transparency as the background. The naming convention uses the initial letter of the suit.

Face Image

The Face image is the image that appears in the centre of the card. Images representing the faces are found in the 'faces' directory. The images are all .png files and use transparency as the background. The naming convention uses the initial letter of the suit followed by the index it represents.



Typically, these images represent the court cards, but may also include an image for any other card, such as the ace of spades (SA.png). Notice these court card face images do not include the suit symbol which is controlled by the Face pip item and is overlaid on the face image.

Face images are not restricted to the court cards and ace of spades. Any card can be represented by a face image using the naming convention of the initial letter of the suit followed by the index. Joker images can also be provided also, using the naming convention of the initial letter of the suit followed by 'Joker'.

Face Pip

The Face pip is the suit symbol displayed in the corner of the face image of the court cards (Jacks through Kings) and use the same image files as the Standard pips. The naming convention uses the initial letter of the suit.

The Face pip item and is overlaid on the face image of the court cards.

'CardCreate' Controls

'CardCreate' uses two pop-up windows, the main control window titled 'Playing Card Generator' and the card representation window titled 'Sample', which also provides some control. Between them they provide the following control options:

- Input Directories
- Output Directory
- Card Size
- Background Colour
- Display Card Items
- Select Card Item
- Modify Selected Card Item
- Sample Navigation
- Generate
- Sample Controls

Input Directories

The 'Input Directories' control section contains the 'Base' directory combo-box which was initially populated during the set-up performed above. The 'Base' directory must contain the three subdirectories; 'faces', 'indices' and 'pips' which themselves must each contain at least one subdirectory. Other valid 'Base' directories can subsequently be selected by using the 'Browse…' button which launches a directory selection dialogue. The 'Base' directory combo-box keeps all the selected 'Base' directories and switches between them using the pull-down button. These 'Base' directories are persisted between sessions.

The 'faces', 'indices' and 'pips' combo-boxes are populated using the subdirectories found in their corresponding directory. The 'CardWork.tar.gz' package provides some example images to use. The 'faces' directory contains '1', '2' and 'Rouen' subdirectories. The 'indices' directory contains '1', '2', '3' and 'Rouen' subdirectories. Finally, the 'pips' directory contains '1', '2', '3' and 'Rouen' subdirectories also.

Each of these styles can be selected, independently, for the 'faces', 'indices' and 'pips' images used to compose the card.

Output Directory

By default, the cards are generated in a subdirectory under the 'cards' directory with the same name as the faces directory. So, if the selected 'faces' directory is '1, the 'Output Directory' is '1' and the cards are generated in the '…\cards\1' subdirectory.

However, the ‘Output Directory’ can be set manually by clicking the ‘Manual’ button and entering the name of the directory to use in the text box. Do not use spaces in the name. For example, If the name ‘test’ is entered the output will be found in ‘…\cards\test’. The ‘Manual’ button is a toggle button, so clicking it again will replace any manually entered text with the name of the selected ‘faces’ directory.

Card Size

Playing cards are usually made in two standard sizes, Poker size being 2½ by 3½ inches and Bridge size being 2¼ by 3½ inches. By default, the card size is selected as Poker with pixel values of 380x532. The ‘Card height’ can be adjusted using the spinner and the ‘Card width’ is automatically adjusted to maintain the aspect ratio. If Bridge size cards are selected, the ‘Card width’ is automatically adjusted to maintain the aspect ratio for Bridge cards.

If ‘Free’ is selected, the card width and height can be adjusted independently.

The ‘Reset’ buttons return the pixel count to the default values.

Background Colour

The ‘Background Colour’ is sued for the background colour of the card. The default ‘Background Colour’ is white, represented by ‘rgb(255, 255, 255)’ in the read-only text box. This is a standard notation for representing colours with red, green and blue values in the range 0 to 255. The colour can be changed by clicking the ‘Select…’ button which launches a standard colour selector dialogue and selecting the desired colour.

Display Card Items

The ‘Anatomy of a Playing Card’ section above lists the five card items as ‘Indices’, ‘Corner Pip’, ‘Standard Pip’, ‘Face Image’ and ‘Face Pip’. The ‘Display Card Items’ control section allows you to select which of the five card items you want displayed on the cards.

Note that the ‘Face Pip’ images are only ever displayed on the court cards and that ‘Standard Pips’ are only displayed if a corresponding face image file is not found in the ‘faces’ directory.

Select Card Item

The ‘Select Card Item’ control allows you to select which card item you want to modify using either the ‘Modify Selected Card Item’ control or the ‘Sample’ window.

The ‘Change Face Pip’ radio button can only be selected if ‘Sample’ is showing a court card. The ‘Change Face Boarder’ or ‘Change Standard Pip’ radio button is selectable based on whether ‘Sample’ is showing a card with a face image or not. Additionally, if the check box in the ‘Display Card Items’ section is unchecked the corresponding radio button will not be available at all.

Modify Selected Card Item

The ‘Modify Selected Card Item (‰ - per mille)’ control allows the selected card item to be moved or resized. This can also be done using the ‘Sample Controls’ in the ‘Sample’ window, but these controls provide a more precise way of doing it.

The values in the spinners are per mille values (‰) meaning parts per thousand, ten times more granular the percentages (%). For example, a centimeter is 1 percent of a meter (100 centimeters in a meter) and a millimeter is 1 per mille of a meter (1000 millimeters in a meter).

The ‘Height (‰)’ value is the height of the selected card item as a ‰ of card height (default: 105, i.e. 10.5% of the configured card height).

The ‘X Centre (‰)’ value is the X value of centre of the selected card item as a ‰ of card width.

The ‘Y Centre (‰)’ value is the Y value of centre of the selected card item as a ‰ of card height.

Why use per mille? It’s a compromise, it is 10 times more precise than percent without being too cumbersome by using parts per 10,000. It also means the spinners don’t have a decimal point in the way.

When the ‘Select Card Item’ is changed the values are updated to those for the item, for example the default value for the height of the corner pip is 75‰ whereas the default value for the height of the standard pip is 185‰.

The ‘Reset’ buttons return the current value to the default value for the ‘Select Card Item’.

The ‘Keep Image Aspect Ratio’ check box only applies to face images. When this is selected a box is drawn centrally on the ‘Sample’ window with the image proportionally drawn inside it. When the check box is unselected, the box is not drawn, instead the image is stretched to fit within the X and Y boarders.

When the ‘Select Card Item’ is the ‘Face Boarder’, you are not changing the position, but the X and Y boarders instead and the height is no longer applicable. The face image is always centrally positioned.

Sample Navigation

The ‘Sample Navigation’ control allows you to step through each of the cards which are displayed in the ‘Sample’ window. However, Jokers are not displayed.

Generate

The big blue button in the top right corner is the ‘Generate’ button. Clicking the ‘Generate’ button will create the cards in the ‘Output’ directory, based on the current selections.

Sample Controls

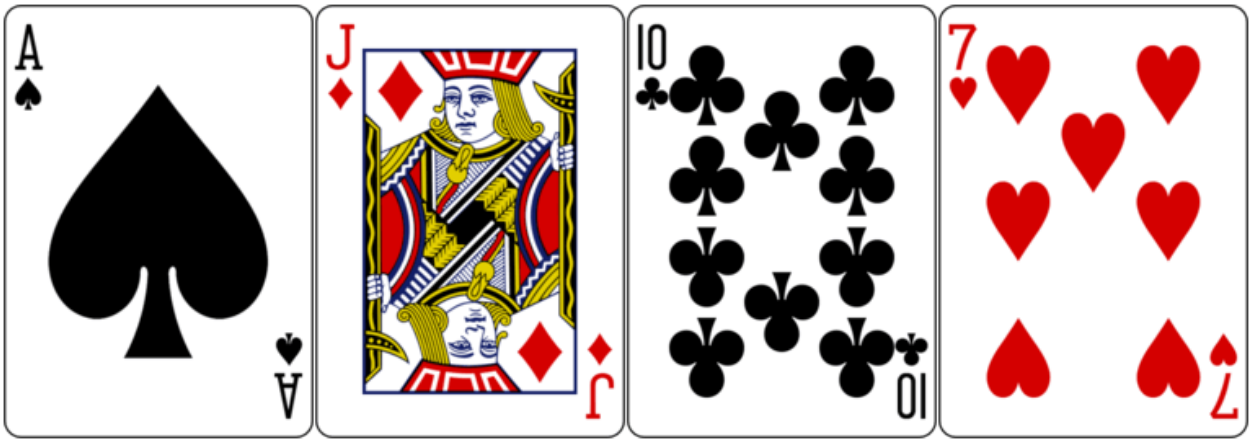
The ‘Sample’ window also provides some controls. A small green box indicates which card item is being adjusted and is used as a handle on that card item. Dragging the handle with the mouse moves the instances of the corresponding card item.

Clicking in the sample window, but not on the handle, while holding down the control key will increase the size of the card item. Clicking in the sample window while holding down the alt key will decrease the size of the card item. Clicking in the sample window will cycle through the card items.

Notice that the ‘Modify Selected Card Item’ control is updated while doing this.

Generate the Default deck

The following example uses the default parameters. Launching and clicking the Generate button, ‘CardCreate’ uses the default values, which means images from ‘faces\1’, ‘indices\1’ and ‘pips\1’ and generates card images in the directory ‘cards\1’. Sample output:

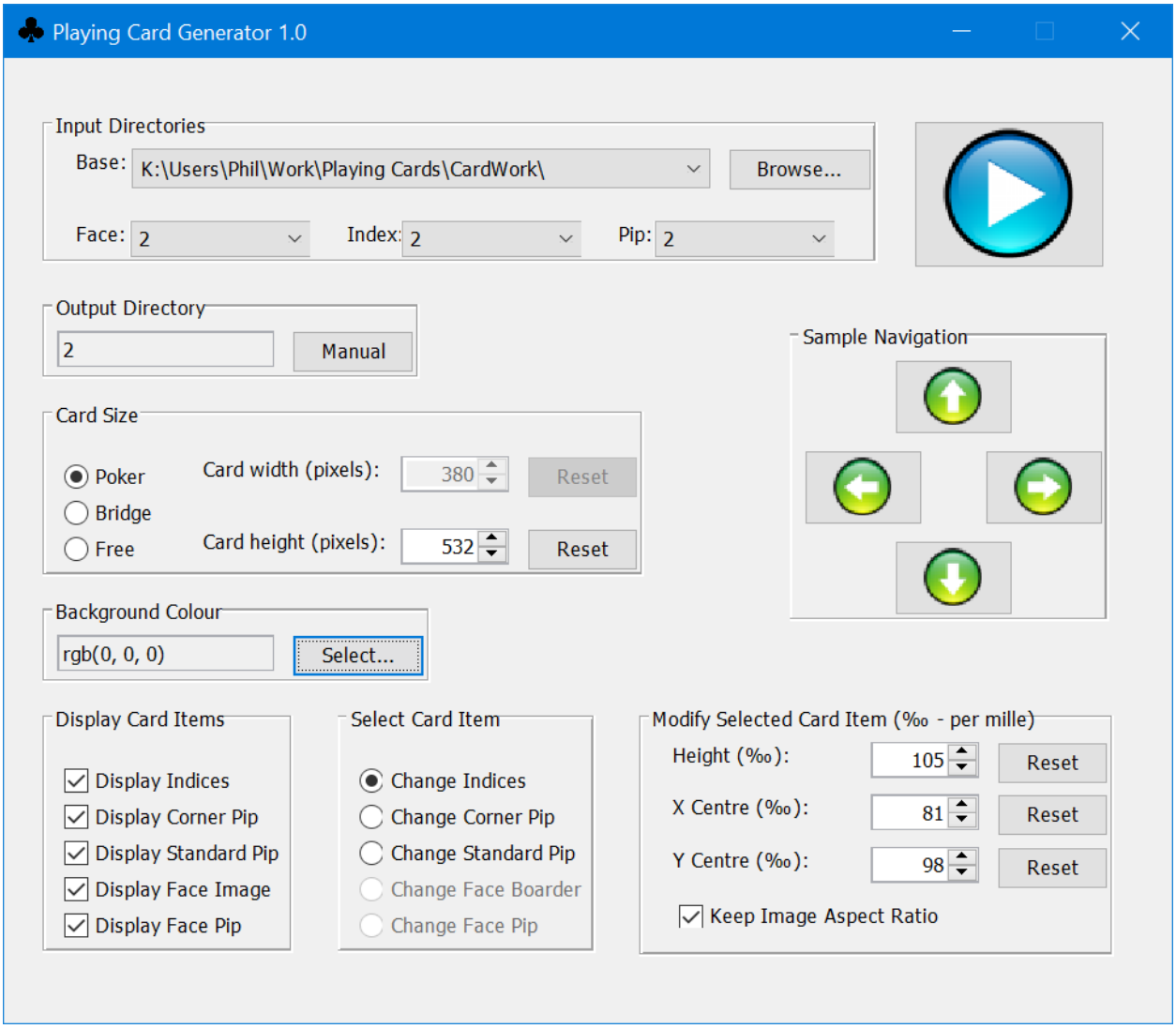


Generate some more decks

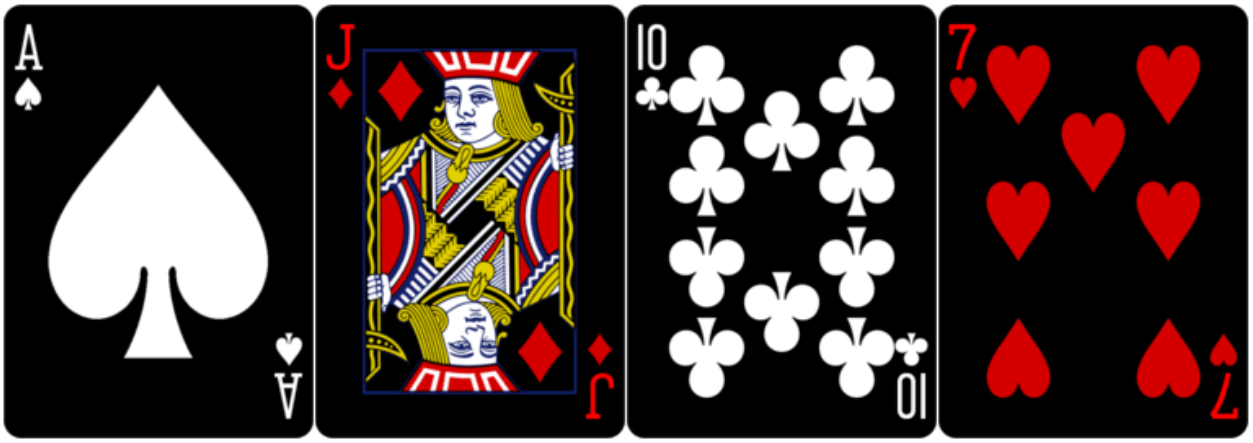
The following examples show how some of the controls are used.

Generate the Black deck

This example shows how to specify non default input files. Here we select the images we want from ‘faces\2’, ‘indices\2’ and ‘pips\2’ with the combo-boxes of the input directories. Also, the background colour has been set to black and the output directory has automatically changed to ‘cards\2’ corresponding to the ‘faces’ selection. This example shows the advantage of using transparency in the .png files, the black ‘Background Colour’ shows through the component images.

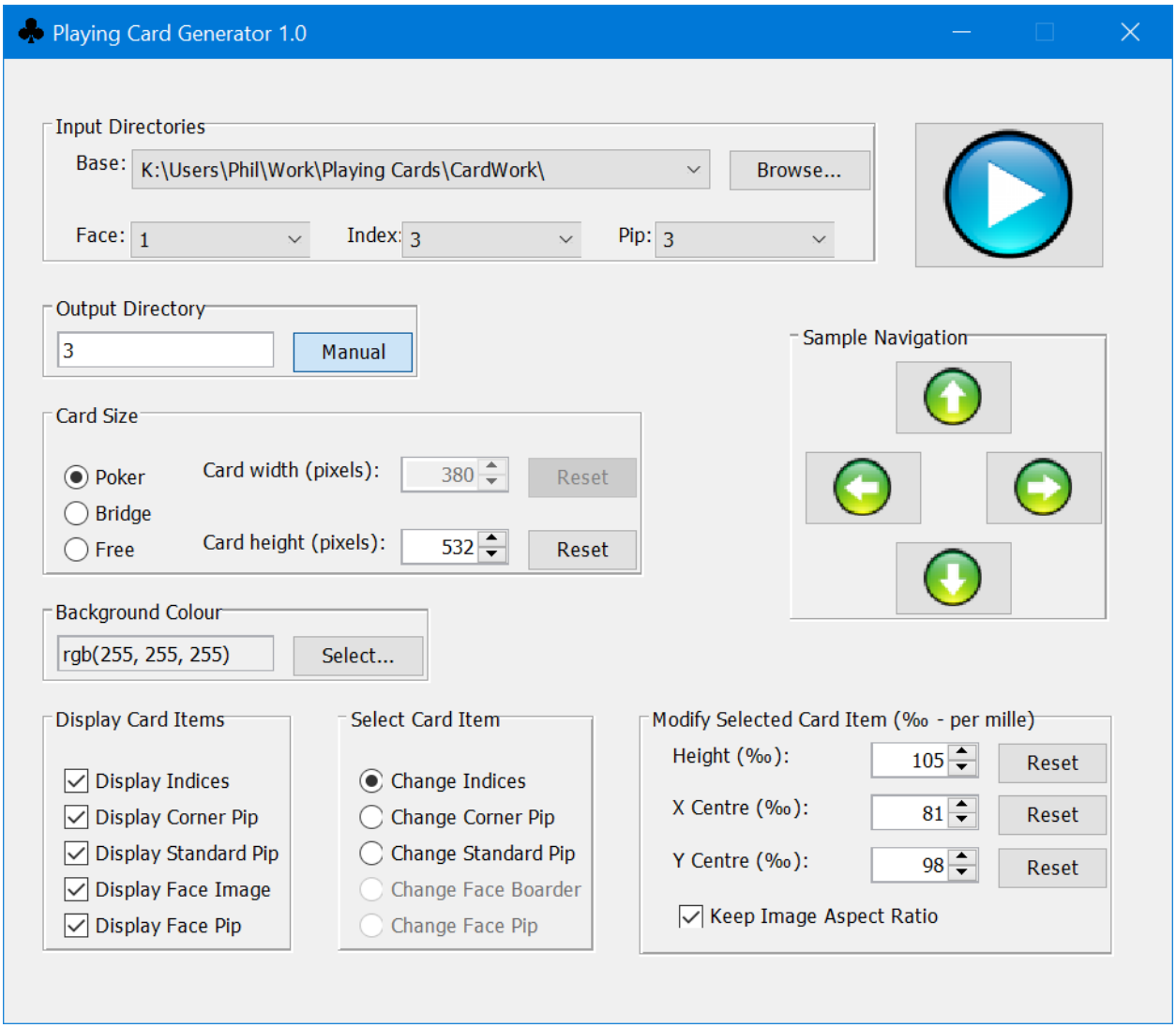


Sample output:

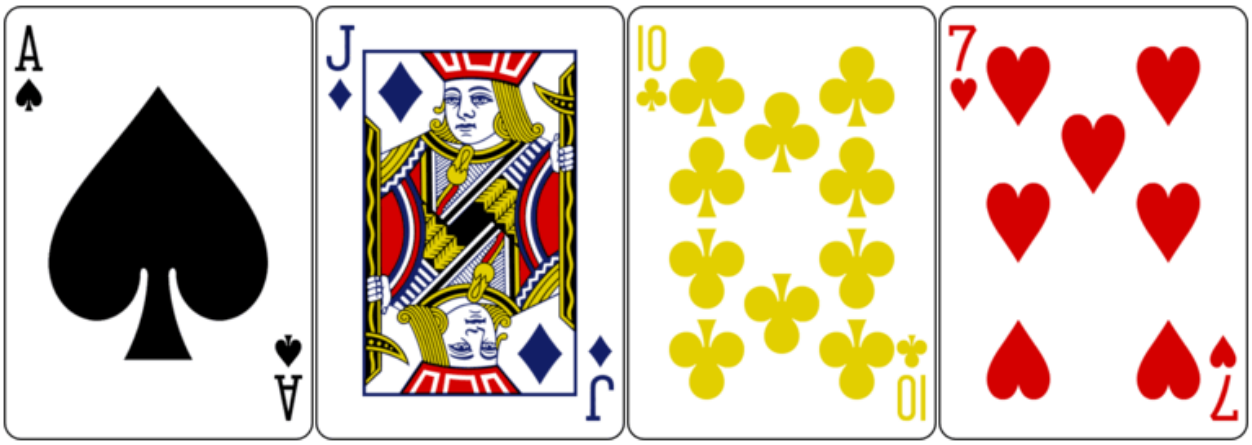


Generate the 4-colour deck

This example uses ‘indices\3’ and ‘pips\3’, but the default faces from ’faces\1’. However, this means that the output, by default, would be generated in the ‘cards\1’ directory, overwriting the contents. To avoid that we specify output to ‘cards\3’ by clicking the ‘Manual’ button and entering ‘3’ in the now editable text box. This example illustrates the advantage of removing the pips from the standard court faces and adding them during generation, they match the pips used for the rest of the suit.

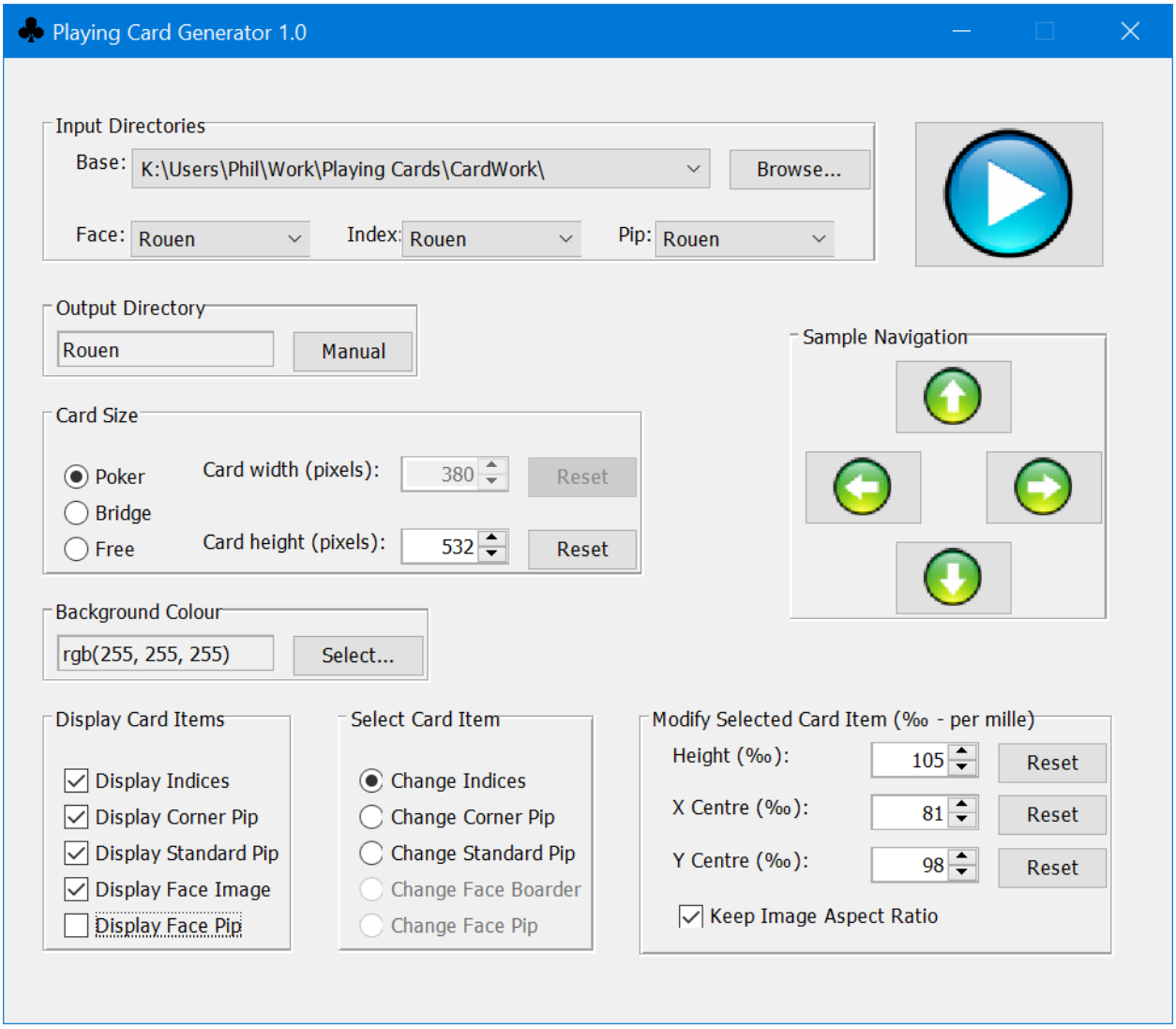


Sample output:

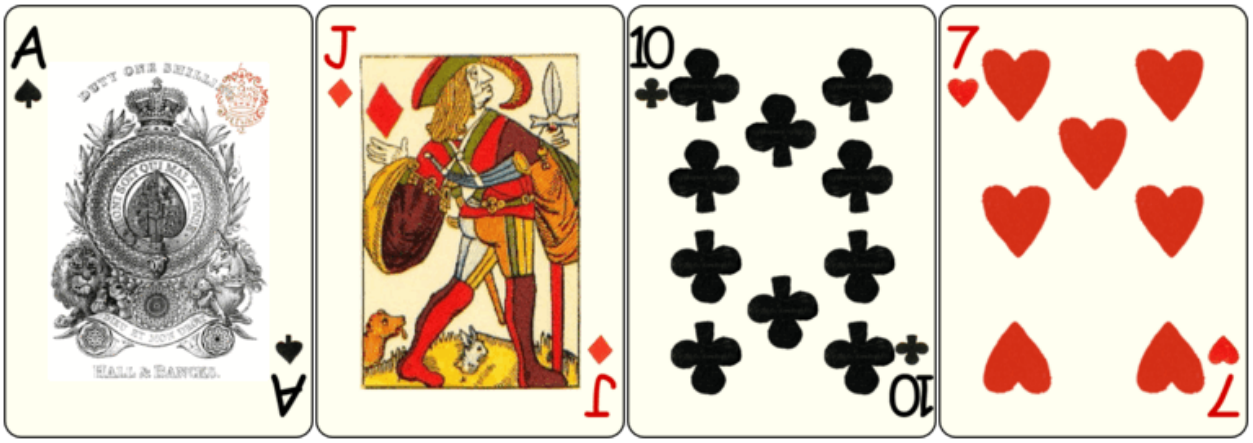


Generate the Rouen deck

This example uses custom faces, indices and pips. In this case the court card images are full length with individually placed pips, so we disable the generation of the pips on the images by unselecting ‘Display Face Pip’. This example also sets the background colour to give them an aged look.



Sample output:

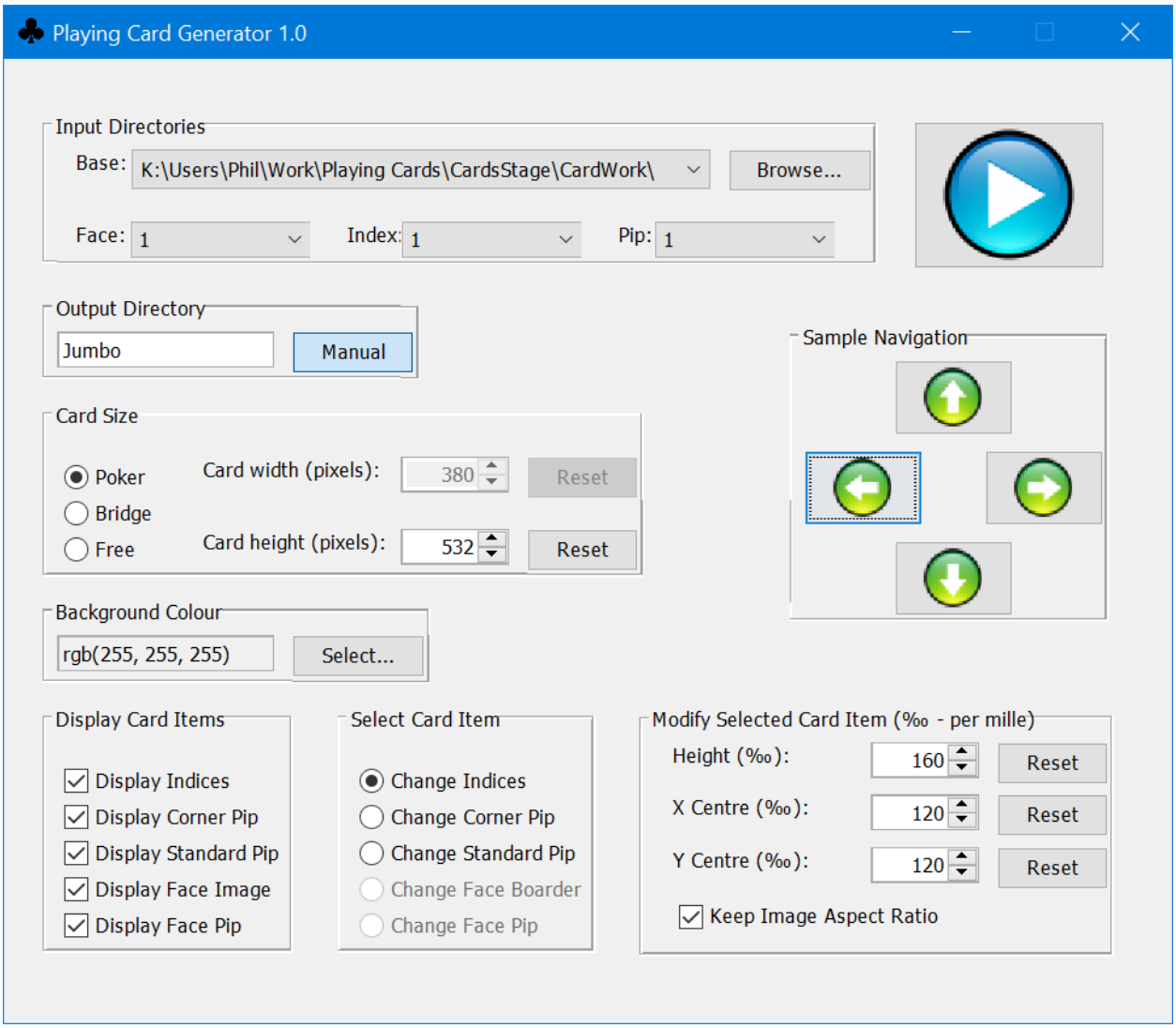


Generate Jumbo index

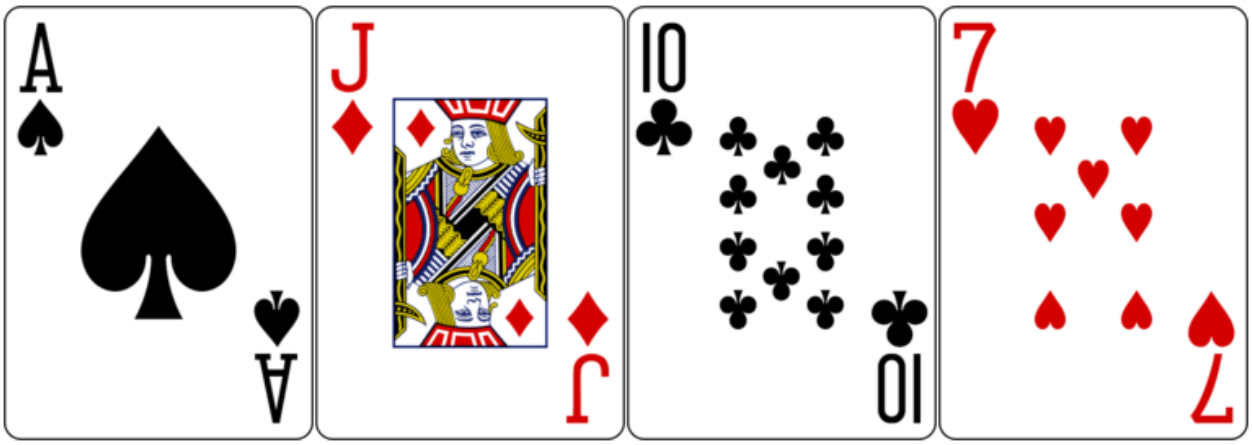
In this example we use standard faces, indices and pips, but modify several settings to adjust the size and position of the images to create an approximation of Jumbo index cards.

Here is a breakdown of the values used in the 'Modify Selected Card Item' for each of the card items:

	Indices	Corner Pip	Standard Pip	Face Boarder	Face Pip
Height	160	130	90		90
X Centre	120	120	360	250	339
Y Centre	120	280	300	101	287



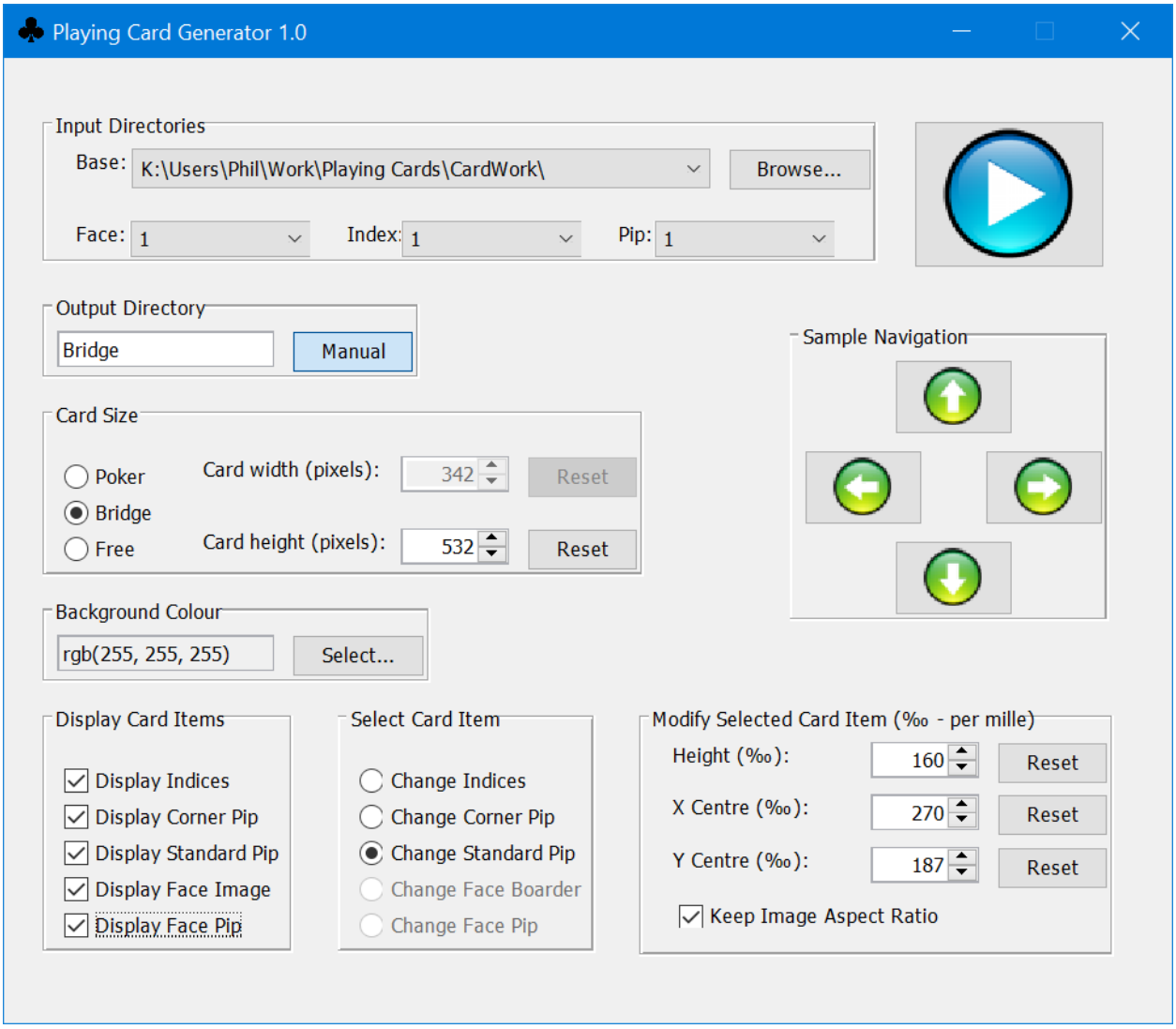
Sample output:

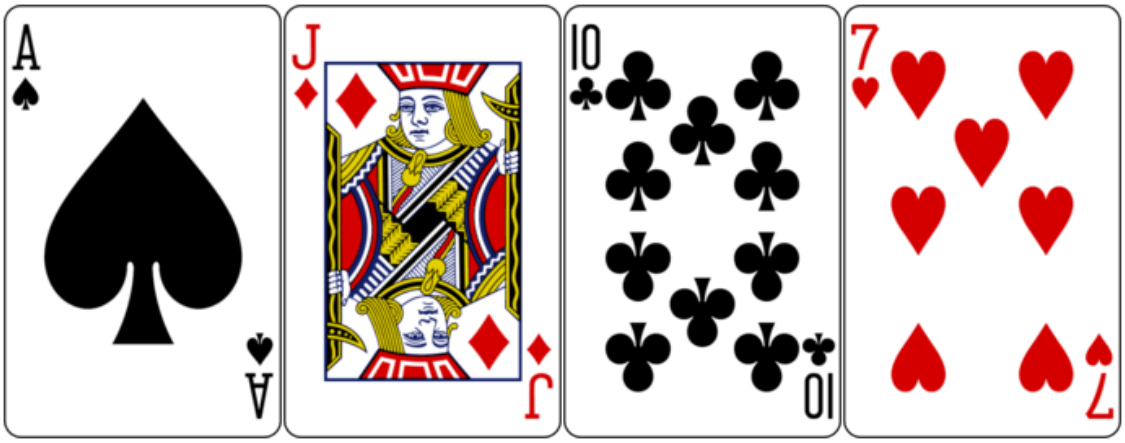


Generate the bridge deck

So far, all cards have been created as poker decks. Poker decks are 3.5 inches by 2.5 inches. The default width is 380 pixels and the default height is 532 pixels. Both of these can be changed using the 'Card Size' parameters. The narrower Bridge cards are also 3.5 inches high, but 2.25 inches wide, making it easier to hold more cards. Selecting the 'Bridge' radio button sets the correct width and height.

As well as adjusting the 'Standard Pip' as show below, I also adjusted the 'Face Pip' to have a Height of 130 and a 'Y Centre' of 220.


Playing Card Generator 1.0
Input Directories
Base:
K:\Users\Phil\Work\Playing Cards\CardWork\
Browse...
Face:
1
Index:
1
Pip:
1
Output Directory
Bridge
Manual
Sample Navigation
Card Size
Poker
Bridge
Free
Card width (pixels):
342
Reset
Card height (pixels):
532
Reset
Background Colour
rgb(255, 255, 255)
Select...
Display Card Items
Display Indices
Display Corner Pip
Display Standard Pip
Display Face Image
Display Face Pip
Select Card Item
Change Indices
Change Corner Pip
Change Standard Pip
Change Face Boarder
Change Face Pip
Modify Selected Card Item (‰ - per mille)
Height (‰):
160
Reset
X Centre (‰):
270
Reset
Y Centre (‰):
187
Reset
Keep Image Aspect Ratio



Add-ons

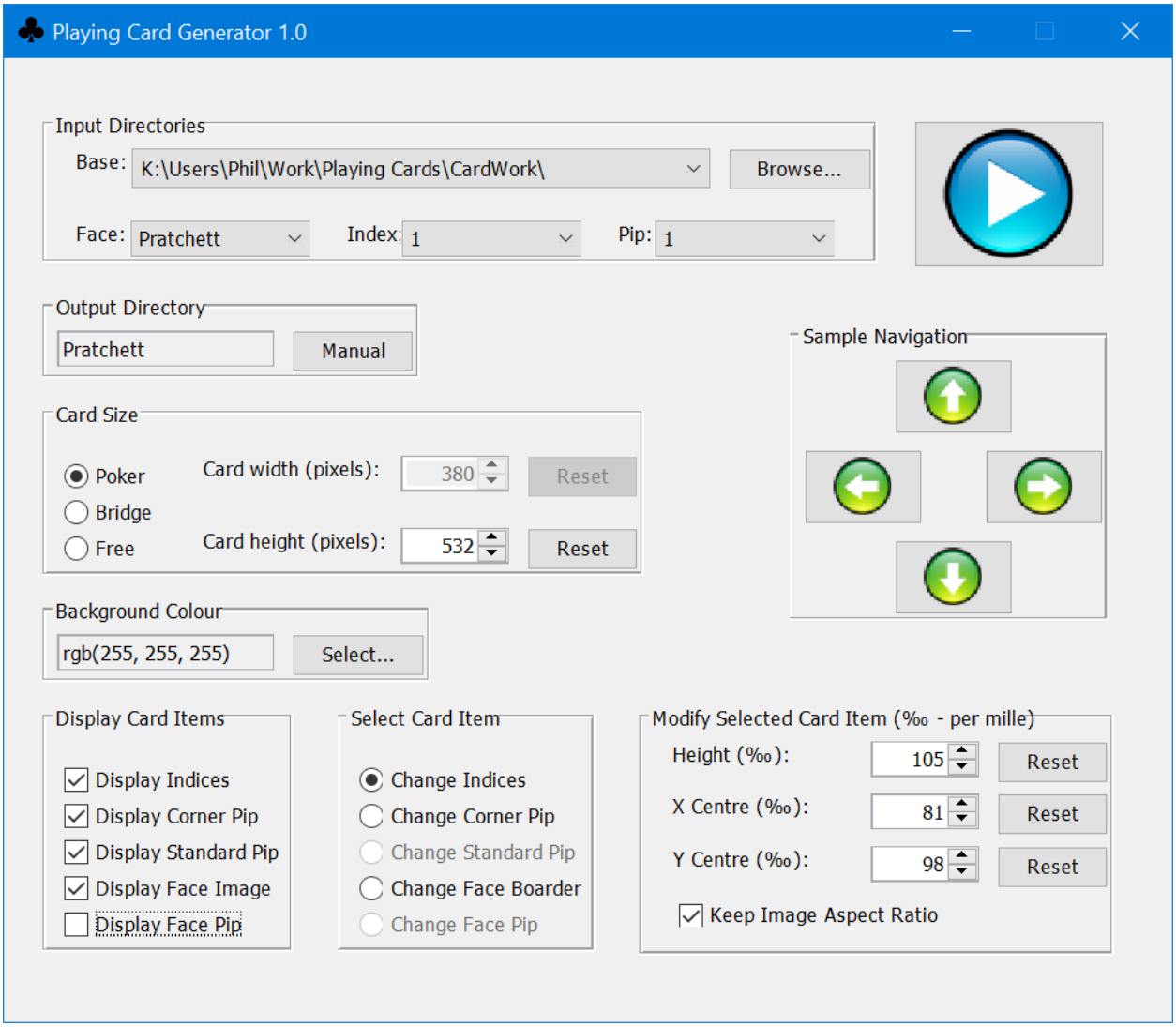
Now we are going to generate decks that use an image on every card.

Generate the Terry Pratchett deck

The first example uses book covers from Terry Pratchett books. These packages are not part of the CardWork package but are optional additions. First download then unzip the add-on package in the CardWork directory:

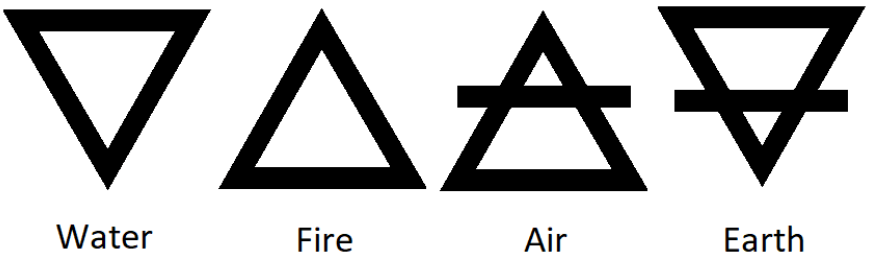
```
$ tar zxf Pratchett.tar.gz
```

Now restart ‘CardCreate’, select ‘Pratchet’ for the faces and unselect ‘Display Face Pip’.



Generate the Angels & Demons deck

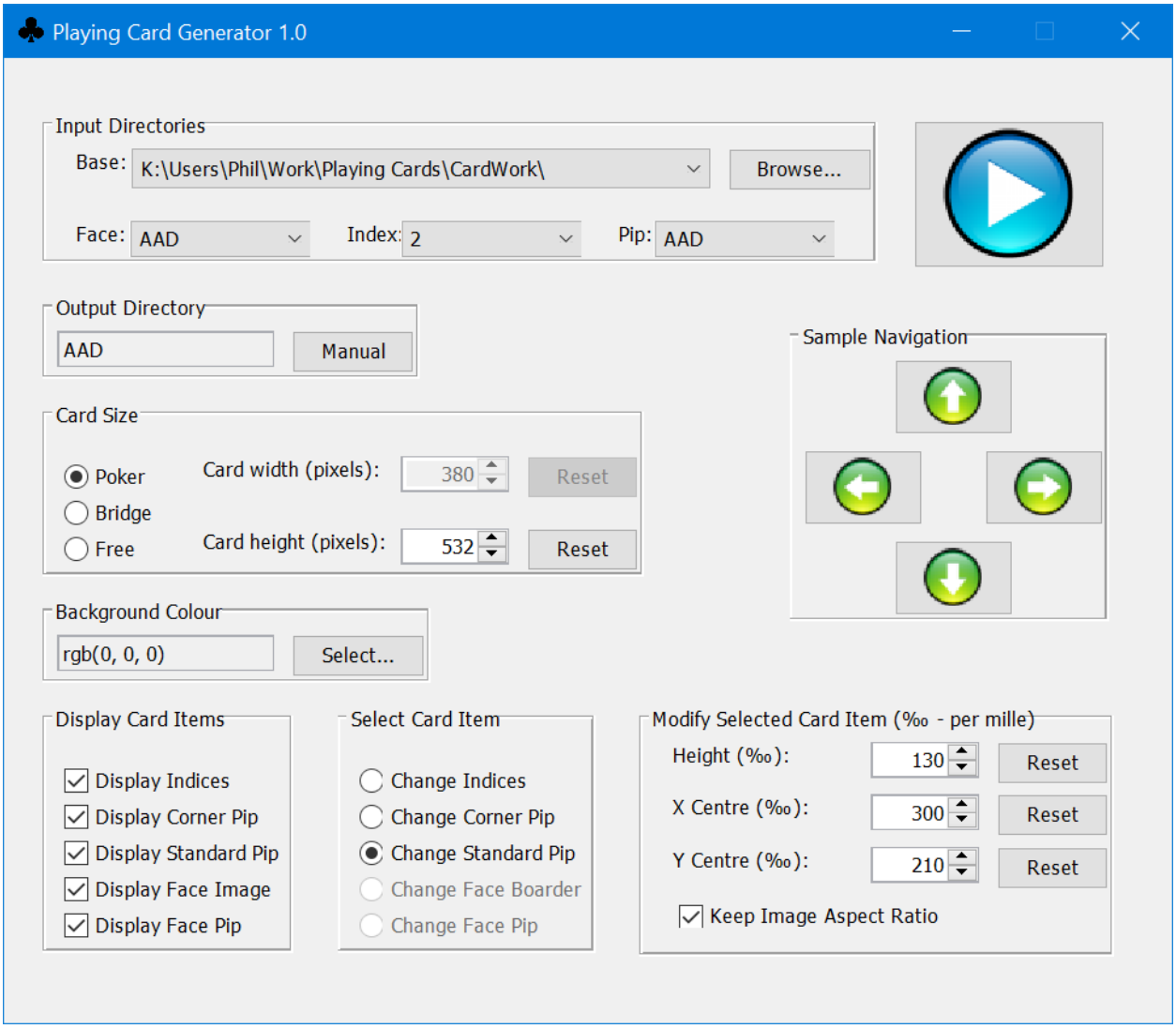
Now an example that uses custom pips and custom images for the aces. This deck is based on Dan Brown's Angels & Demons and uses the John Langdon created ambigram images from it for the aces, the advantage being that you can read the card which ever way up you are holding it. The deck also uses the ancient symbols for earth, air, fire and water. Angels are represented by the white pip cards of water and air. Demons are represented by the red pip cards of fire and earth.

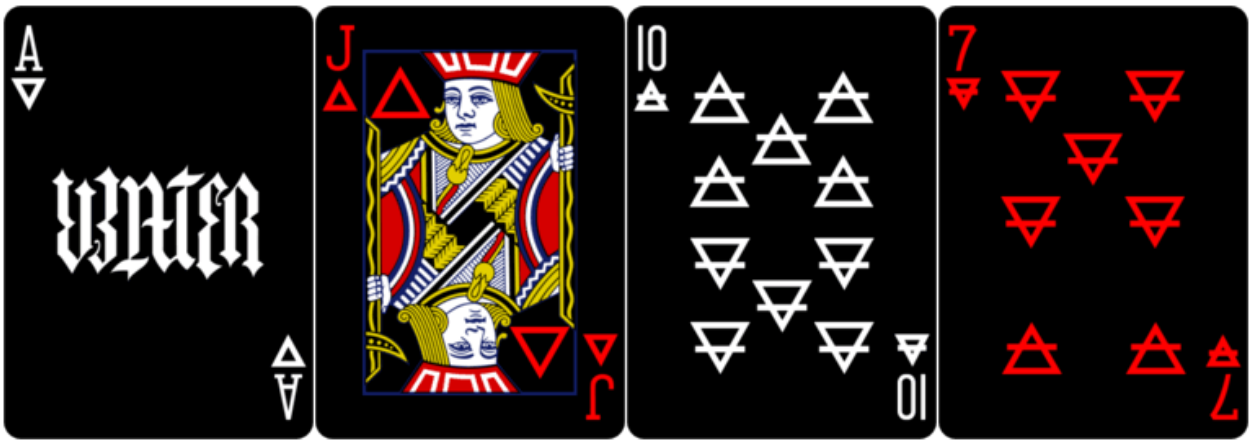


First download then unzip the add-on package in the CardWork directory:

```
$ tar zxf AAD.tar.gz
```

Now restart 'CardCreate', select as follows (note, as well as modifying the 'Standard Pip' as shown, I also reduced the 'Face Pip' Height to 120):


Playing Card Generator 1.0
Input Directories
Base:
K:\Users\Phil\Work\Playing Cards\CardWork\
Browse...
Face:
AAD
Index:
2
Pip:
AAD
Output Directory
AAD
Manual
Sample Navigation
Card Size
Poker
Bridge
Free
Card width (pixels):
380
Reset
Card height (pixels):
532
Reset
Background Colour
rgb(0, 0, 0)
Select...
Display Card Items
Display Indices
Display Corner Pip
Display Standard Pip
Display Face Image
Display Face Pip
Select Card Item
Change Indices
Change Corner Pip
Change Standard Pip
Change Face Boarder
Change Face Pip
Modify Selected Card Item (‰ - per mille)
Height (‰):
130
Reset
X Centre (‰):
300
Reset
Y Centre (‰):
210
Reset
Keep Image Aspect Ratio



Notes

All image files used are .png files because they provide transparency. To convert any image file to a .png file use convert from the command line, it is what convert was originally developed for.

The image files use a common brief naming convention of the initial letter of the suit followed by the card index.

If images for the spades indices are not found, clubs will be used because they are usually the same colour. Similarly, if indices for hearts are not found, indices for diamonds will be used.

Acknowledgement

Court card images were initially created from Chris Aguilar's .svg files:

> Vectorized Playing Cards 2.0 - http://sourceforge.net/projects/vector-cards/
> Copyright 2015 - Chris Aguilar
> Licensed under LGPL 3 - www.gnu.org/copyleft/lesser.html