"CARD" PROGRAM FOR COMMODORE 64 – BASIC V2

USER MANUAL

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WHAT IS THE CARD PROGRAM FOR

The CARD program is used to draw playing cards on the screen of a Commodore 64 Computer. The cards are displayed using redefined graphic symbols. It is possible to display any type of card in any part of the screen.



In the image above, an example of playing cards printed randomly as the initial background of the game "Briscola 2" written in BASIC using the CARD program.

STRUCTURE OF THE CARD PROGRAM WITH BASIC V2

The CARD program consists of two prg files: **CARD SYMBOLS** and **CARD ROUTINES**.

CARD SYMBOLS

The **CARD SYMBOLS** file contains the data for the redefined graphic symbols and before being loaded into memory, the memory needs to be protected from BASIC usage with

```
POKE44,16
```

After that, you can load the prg file from disk with

```
LOAD"CARD  SYMBOLS",8,1
```

or from tape with

```
LOAD"CARD  SYMBOLS",1,1
```

The file loaded this way occupies 2K of RAM memory in the BASIC area, specifically locations 2048 to 4095 inclusive.

CARD SYMBOLS

The **CARD ROUTINES** file contains all the machine language routines that allow drawing playing cards on the screen. This prg file is loaded from disk with

```
LOAD"CARD  ROUTINES",8,1
```

or from tape with

```
LOAD"CARD  ROUTINES",1,1
```

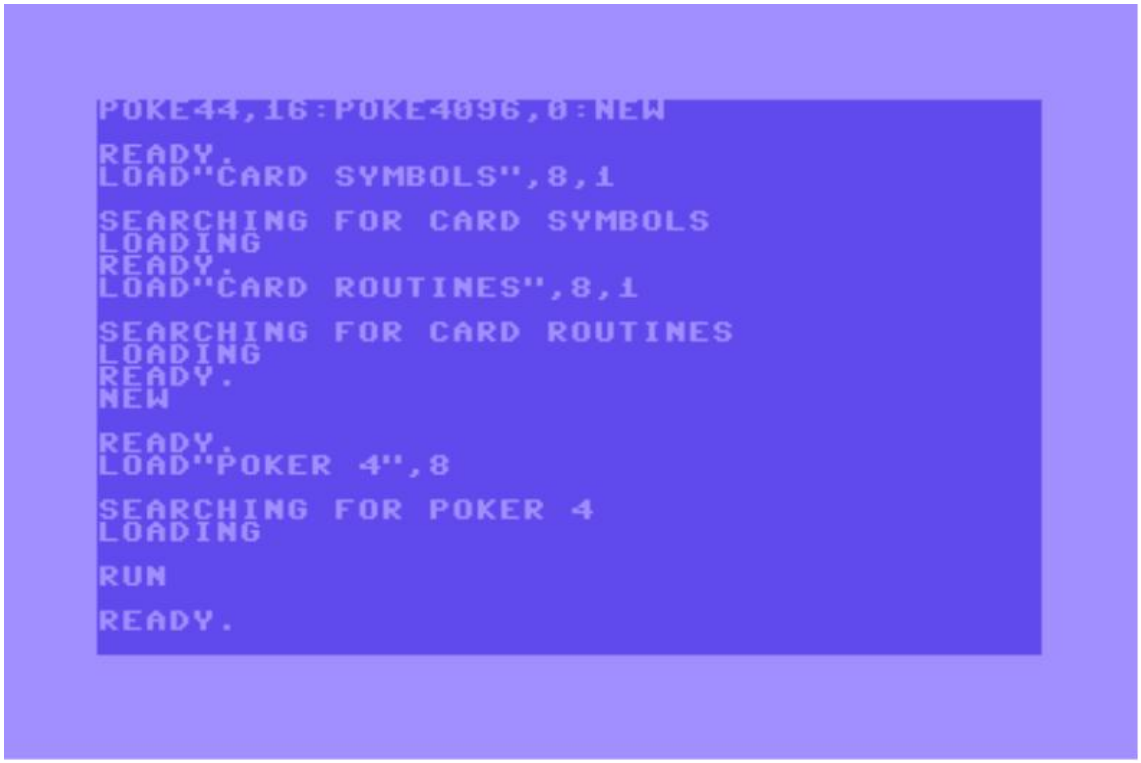
and does not occupy memory in the BASIC area, but locations between 49152 and 49788. After loading these two files, you need to issue the commands

```
POKE4096,0
```

then

```
NEW
```

At this point you can start writing your BASIC program or load one from disk or tape.



In the image above, an example of the loading sequence for the game "Poker 4"

USING THE `CARD` COMMAND

To use the `CARD` command, you must, at the beginning of your program, assign the value `49152` to a variable (e.g., `K1`) and call the routine `K1+138` which, in addition to enabling the `CARD` command (which if not enabled would cause a `?SYNTAX ERROR`), disables the shift and Commodore keys (uppercase/lowercase switching) and enables the new character set that contains, in addition to letters, numbers, and other non-graphic symbols (e.g., `!"#$%&'()+-£`), the redefined graphic symbols for drawing cards.

WARNING: if the `THEN` instruction is followed by `CARD`, you must add a ":" (colon) between the two instructions to avoid a `?SYNTAX ERROR` (e.g., `IFA<0THEN:CARD0,1,2,3`).

THE 4 PARAMETERS OF THE CARD COMMAND

The CARD command is followed by 4 numeric parameters separated by commas.
The first two parameters indicate the X and Y position on the screen where the upper left corner of the card will be displayed (e.g., if both parameters are zero, the card is displayed in the upper left corner of the screen). To avoid an ?ILLEGAL QUANTITY ERROR, the X position of the card must have a value between 0 inclusive and 34 exclusive, while the Y position must have a value between 0 inclusive and 17 exclusive.
The third parameter refers to the card to display on screen: values 1 to 10 refer to cards from ace to 10, while values 11 to 13 refer respectively to jack, queen, and king; value 14 refers to the joker, while value 15 refers to the face-down card (or card back); finally, value 0 clears the card displayed at the position specified by the two previous parameters.
The fourth and last parameter refers to the card suit: 0=**spades**; 1=**clubs**; 2=**diamonds**; 3=**hearts**.
However, if the card to display is the face-down card (third parameter=15), the last parameter refers to the deck being used: 1=**blue deck**; 2=**red deck**.
If the card to display is the **joker**, it will be black or red depending on the suit in the last parameter (if the last parameter is 0 or 1, i.e., spades or clubs, the joker will be black, otherwise it will be red).
Finally, if the card to display is the "clear" card, the last parameter can have any value between 0 inclusive and 4 exclusive, but it cannot be omitted.
The program below continuously displays a random card (except the clear card) in a random part of the screen using the RND(0) function.

```
10 K1=49152
20 PRINTCHR$(147):POKE53280,0:POKE53281,15
30 SYSK1+138:REM ENABLE CARD COMMAND
40 CARDRND(0)*34,RND(0)*17,RND(0)*15+1,RND(0)*4
50 GOTO40
```

LIST OF CARD ROUTINES

Enabling routines:

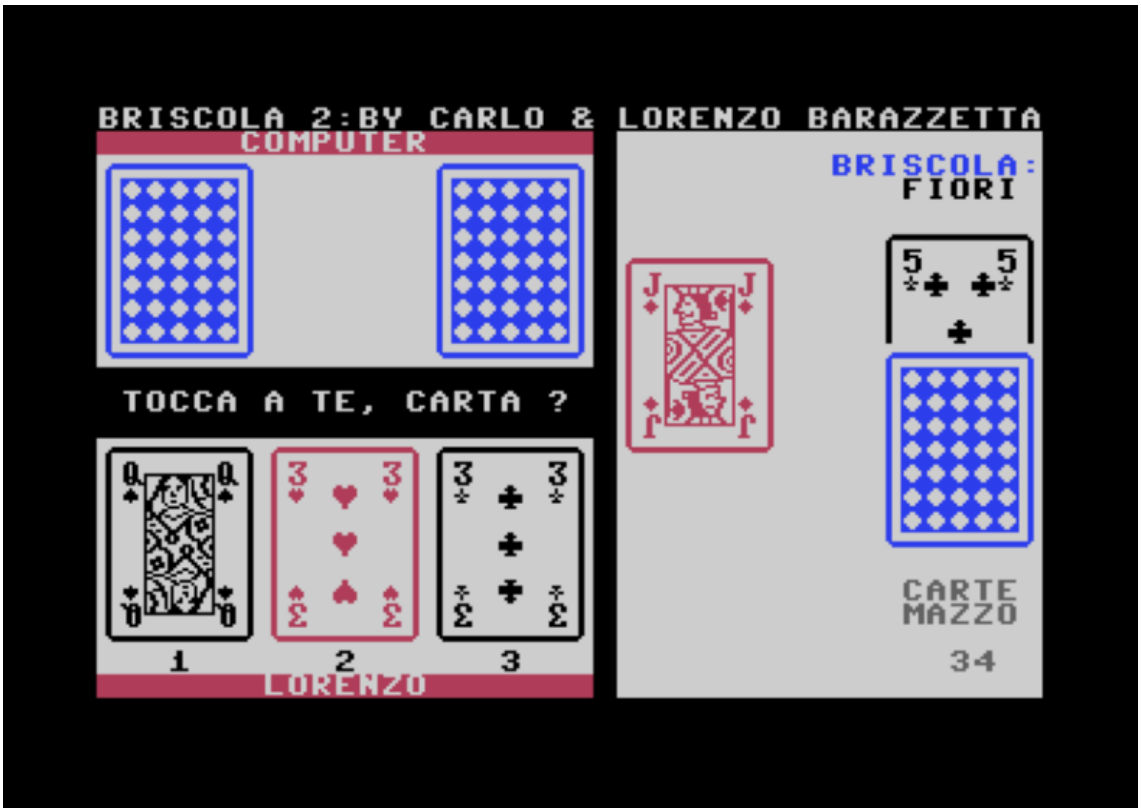
K1+138: enables the CARD command and calls K1+150.
K1+150: disables the shift and Commodore keys (uppercase/lowercase switching) and calls K1+158.
K1+158: enables the CARD character set.

Disabling routines:

K1+169: disables the CARD command and calls K1+181.
K1+181: disables the CARD character set.

Other routines:

K1+232: replaces the CARD command (e.g., CARD0,1,2,3 can be replaced with SYSK1+232,0,1,2,3). This way you can also avoid enabling the CARD command with SYSK1+138, by only doing SYSK1+150.
K1+269: redraws the previously drawn card (The parameter values of the last drawn card are found in locations K1+132 to K1+135 inclusive).



In the image above, the "desktop" of the game "Briscola 2" fixed in 2024

CHANGING THE COLORS OF FACE-DOWN CARDS

When displaying a face-down card (third parameter=15), it is displayed in blue or red depending on the deck number in the last parameter (1=blue deck, 2=red deck). These two colors are specified in locations **K1+136** (which contains 6, i.e., blue) and **K1+137** (which contains 2, i.e., red). By modifying the contents of these two locations, you can change the color of the two decks (e.g., **POKEK1+136,5** changes the color of deck 1 from blue to green).

CARD ROUTINES 2 - OFF-SCREEN CLIPPING

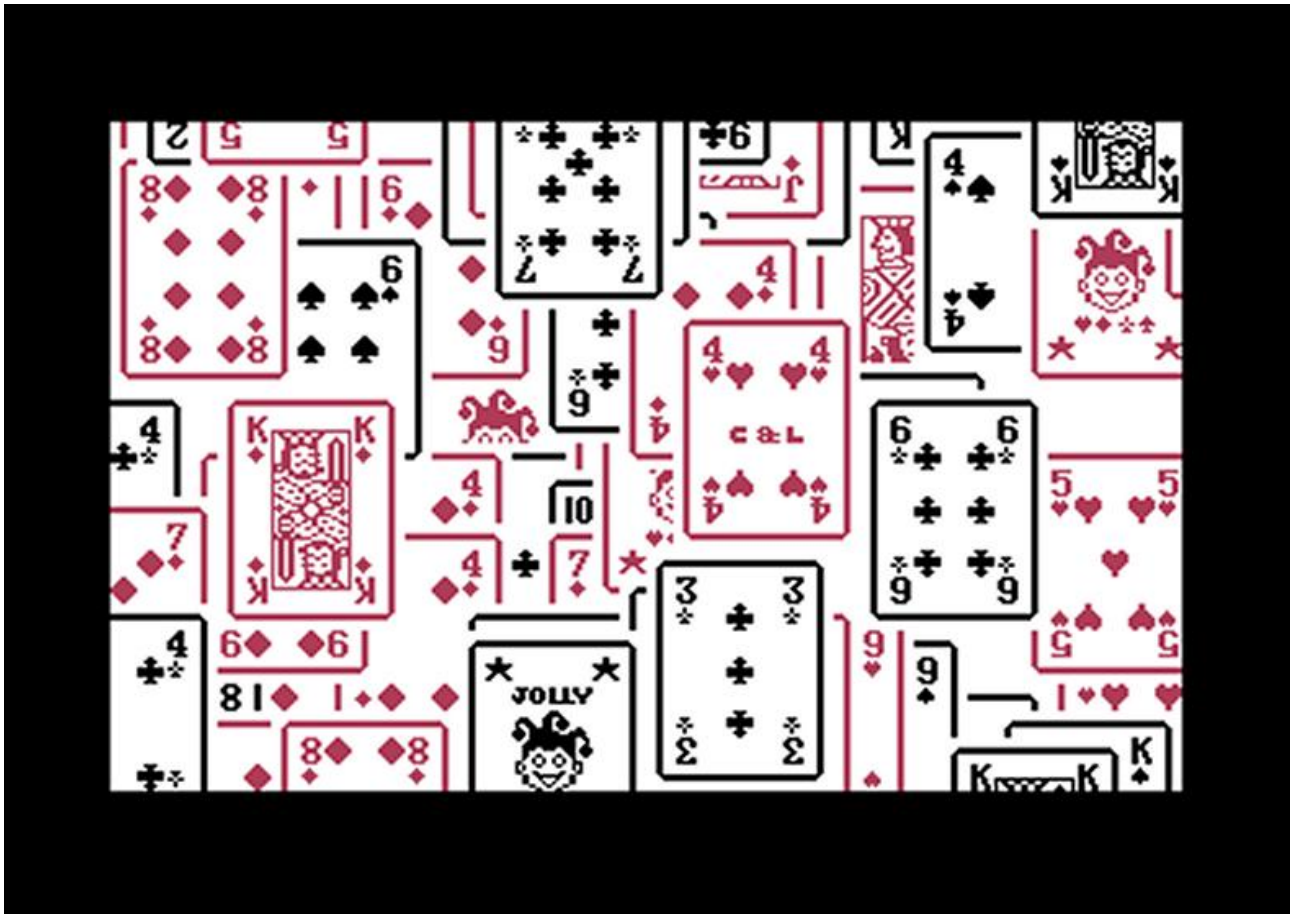
A second version of the CARD ROUTINES is available: **CARD ROUTINES 2**, which extends the **CARD** command to support off-screen coordinates with automatic clipping.
With the original **CARD ROUTINES**, the X position must be between 0 and 33 and Y between 0 and 16, so the card is always fully visible on screen. With **CARD ROUTINES 2**, X can range from **-6 to 39** and Y from **-8 to 24**, allowing cards to be drawn partially off-screen. The portion of the card that falls outside the visible screen area is automatically clipped.
CARD ROUTINES 2 is fully backward-compatible: existing programs that use coordinates within the original range work without any change.
To use **CARD ROUTINES 2** instead of the original, simply load the file **CARD ROUTINES 2** in place of **CARD ROUTINES**:

```
LOAD"CARD ROUTINES 2",8,1
```

The loading sequence and all routines (K1+138, K1+150, K1+169, K1+232, K1+269) work exactly the same way. The only difference is the extended coordinate range for the X and Y parameters.
The program below continuously displays a random card in a random position using the extended range:

```
10 K1=49152
20 PRINTCHR$(147):POKE53280,0:POKE53281,1
30 SYSK1+138:REM ENABLE CARD COMMAND
```

```
40 CARDINT(RND(0)*46)-6,INT(RND(0)*33)-8,RND(0)*14+1,RND(0)*4
50 GOTO40
```



In the image above, 100 random cards drawn with the new extended coordinates. Cards near the screen edges are automatically clipped.

USING THE CARD COMMAND WITH EXPANDED BASIC

If you want to use the **CARD** program with expanded BASIC versions, you should not enable the **CARD** command (**SYSK1+138**) because it only works with BASIC V2. Instead, you should use the routine **K1+232** which essentially replaces that command (see LIST OF **CARD** ROUTINES). As an example, below is the program previously described using the routine **K1+232** instead of the **CARD** command.

```
10 K1=49152
20 PRINTCHR$(147):POKE53280,0:POKE53281,15
30 SYSK1+150:REM ENABLE
40 SYSK1+232,RND(0)*34,RND(0)*17,RND(0)*15+1,RND(0)*4
50 GOTO40
```

RELOCATING THE CARD ROUTINES

The **CARD** routines are allocated in locations between **49152** to **49788**. If you want to move them to another memory area because the normally used area (from **49152** to **49788**) needs to be used by the BASIC expansion or other routines, you can do so using the N command of the ZOOM monitor. For example, if you want your CARD ROUTINES to be loaded into locations **4096** to **4732**, you should proceed as follows:

For disk:

```
.L "CARD ROUTINES" 08 1040
.N 108A 127C 5000 C000 C27C
```

```
.S "@0:CARD ROUTINES" 08 1040 127D
```

For tape:

```
.L "CARD ROUTINES" 01 1040
.N 108A 127C 5000 C000 C27C
.S "CARD ROUTINES" 01 1040 127D
```

This way the **CARD** routines will be loaded into locations **4096** to **4732** instead of **49152** to **49788**. However, to use them, this memory area must be protected from BASIC usage; therefore, before loading the "CARD SYMBOLS" file, you must issue the commands **POKE43,126** and **POKE44,18**. After that, you can load the "CARD SYMBOLS" and "CARD ROUTINES" files and issue the commands **POKE4733,0** and **NEW**. Remember, however, to change the assignment **K1=49152** at the beginning of the program to **K1=4096**.

USING CARD FROM MACHINE LANGUAGE

To use the **CARD** program from Machine Language, you must insert the values of the 4 parameters in locations **K1+132** to **K1+135** and call the routine **K1+269**. Before calling this routine, however, make sure that decimal mode is disabled, otherwise disable it with the **CLD** instruction.

REPLACING THE CARD COMMAND

It is possible to replace the **CARD** command with any other command (e.g., **CARTA**) as long as it is no longer than 8 characters. This command is stored in locations **K1+120** to **K1+127** in ASCII code form. The last character of the command (e.g., the D in **CARD**) is marked by having the most significant bit (MSB) set to 1. Below is the listing of a BASIC subroutine that, when called, replaces the **CARD** command with the command present in the variable **A$**.

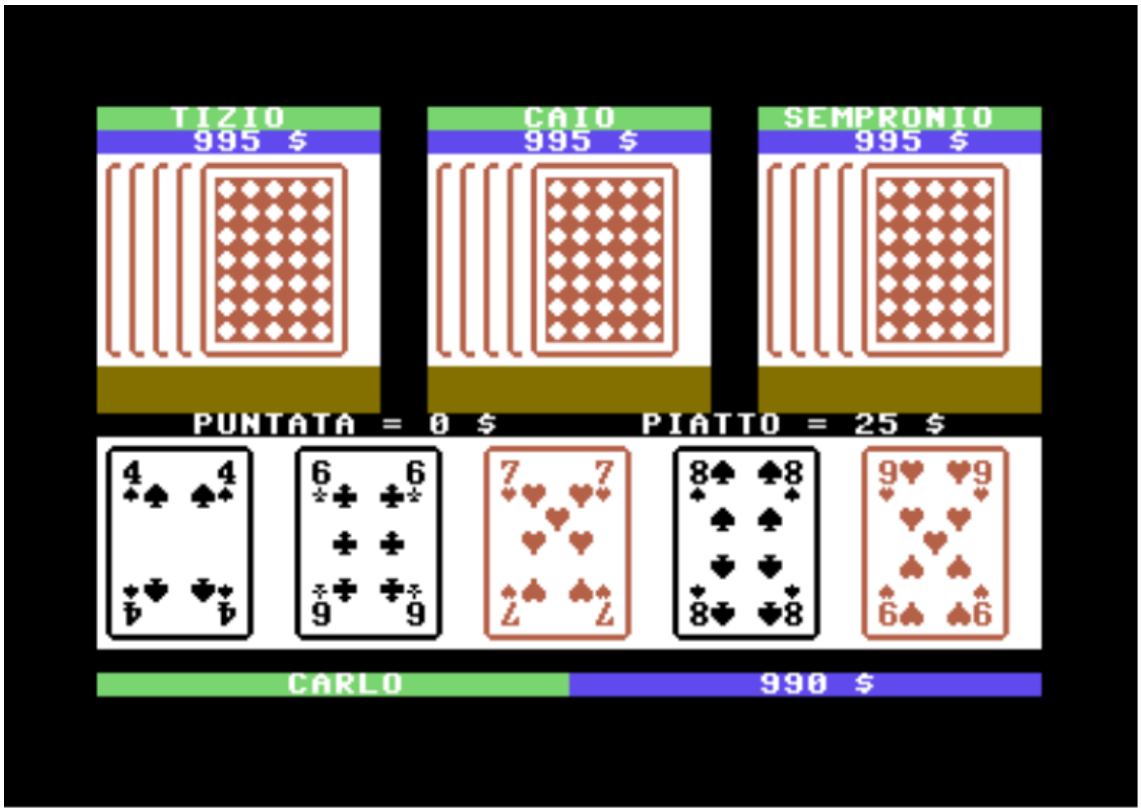
```
10000 IFLEN(A$)=0ORLEN(A$)>8THENSTOP
10010 FORA=1TOLEN(A$)
10020 POKEK1+119+A,ASC(MID$(A$,A,1))OR-128*(A=LEN(A$))
10030 NEXT
10040 RETURN
```

For example, if you want to change the **CARD** command to the **CARTA** command, just assign the string "CARTA" to **A$** (**A$="CARTA"**) and call the subroutine with **GOSUB10000**. After that, to display cards use the **CARTA** command instead of **CARD**. Below is the listing previously described using the **CARTA** command instead of the **CARD** command.

```
10 K1=49152
20 A$="CARTA":GOSUB10000:A$="":A=0
30 PRINTCHR$(147):POKE53280,0:POKE53281,15
40 SYSK1+138:REM ENABLE CARTA COMMAND
50 CARTARND(0)*34,RND(0)*17,RND(0)*15+1,RND(0)*4
60 GOTO50
10000 IFLEN(A$)=0ORLEN(A$)>8THENSTOP
10010 FORA=1TOLEN(A$)
10020 POKEK1+119+A,ASC(MID$(A$,A,1))OR-128*(A=LEN(A$))
10030 NEXT
10040 RETURN
```

One final warning: the new command (e.g., **CARTA**) must not contain BASIC commands, otherwise this new command cannot be used (e.g., if the **CARD** command is replaced with **PRINTCAR**, it

cannot be used because the computer will interpret this command as a **PRINT CAR**, i.e., as a "print the contents of variable CAR").

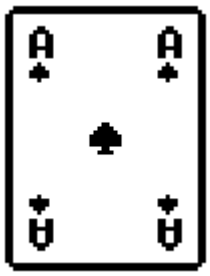
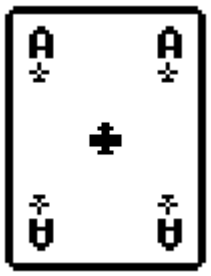
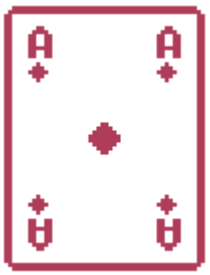
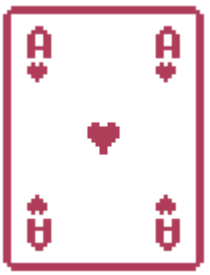
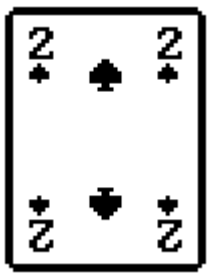
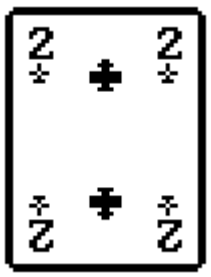
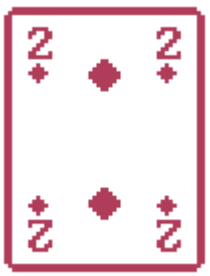
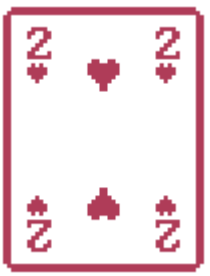
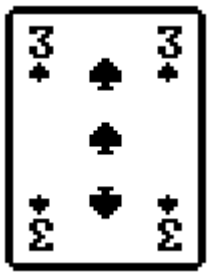
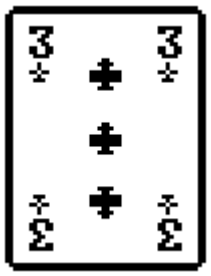
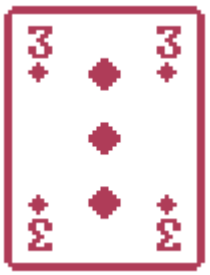
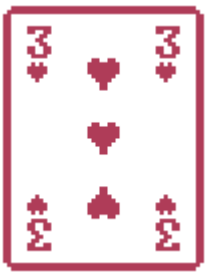
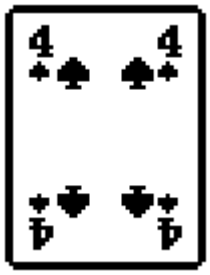
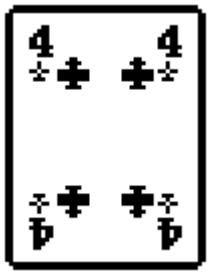
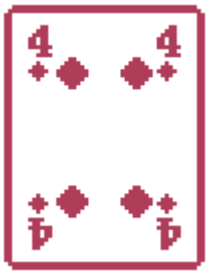
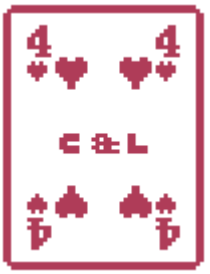
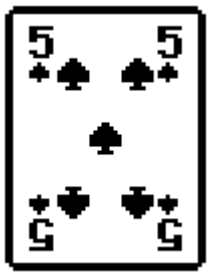
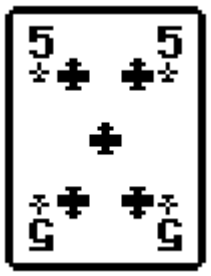
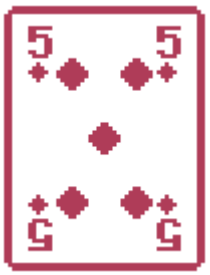
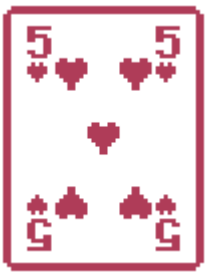


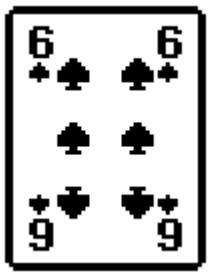
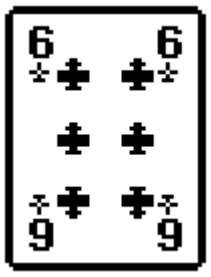
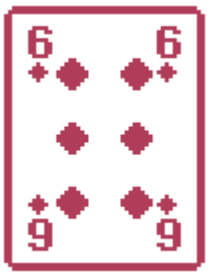
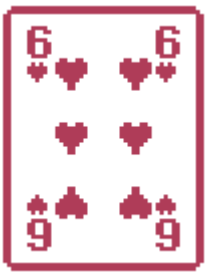
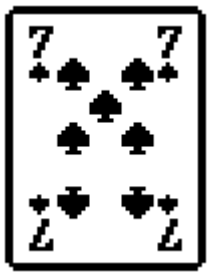
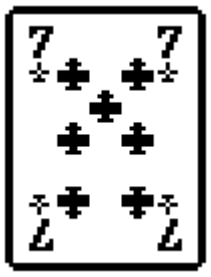
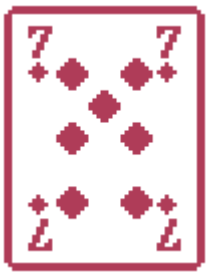
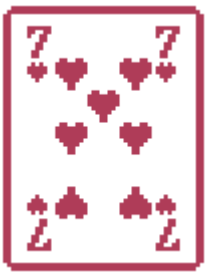
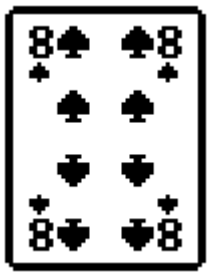
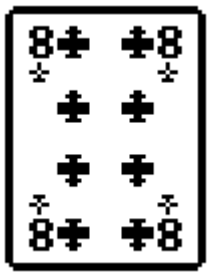
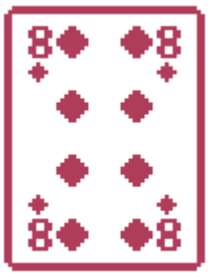
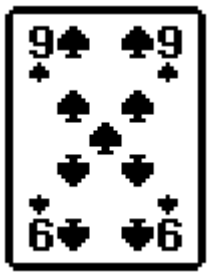
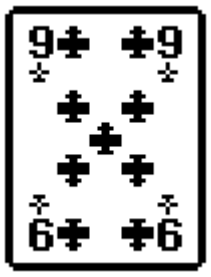
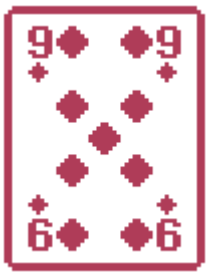
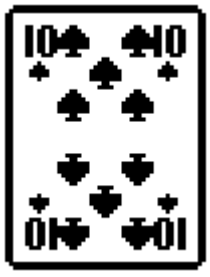
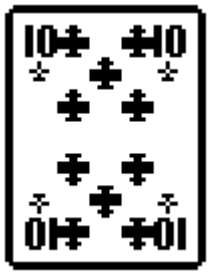
In the image above, the "desktop" of the game Poker 4

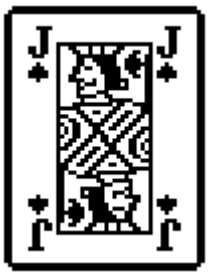
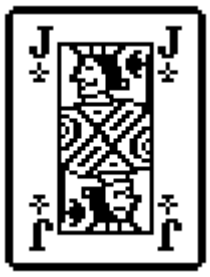
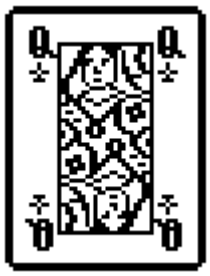
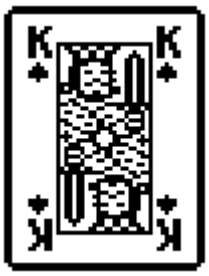
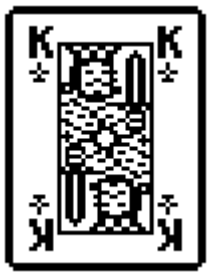
COMPLETE CARD SET

All cards rendered by the CARD library on a Commodore 64.

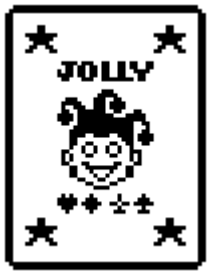
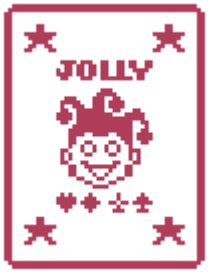
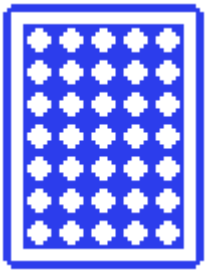
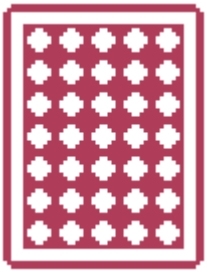
Standard Cards

Valore	Picche ♠	Fiori ♧	Quadri ♦	Cuori ♥
A				
2				
3				
4				
5				

6				
7				
8				
9				
10				

J				
Q				
K				

Special Cards

Jolly nero	Jolly rosso	Dorso blu	Dorso rosso
			

APPENDIX: TABLE OF CARD GRAPHIC SYMBOLS

POKE Code	Displayed Symbol
0 to 63	standard Commodore 64
64	A for ace
65 to 73	2 to 10
74	J for jack
75	Q for queen
76	K for king
77	joker star
78	upper left corner
79	upper right corner
80	upside-down A for ace
81 to 84	upside-down 2 to 5
85	horizontal line
86	upside-down 7
87	lower left corner
88	lower right corner
89	upside-down 10
90 to 92	upside-down J, Q and K
93 to 95	c&l symbols
96	large spade
97	large club
98	large diamond
99	large heart
100	upside-down large spade
101	upside-down large club
102	face-down card symbol
103	upside-down large heart

104 to 107	small suit symbols
108 to 111	upside-down small suit symbols
112 to 126	joker symbols
127	vertical line
128 to 191	standard Commodore 64
192 to 212	jack symbols
213 to 233	queen symbols
234 to 254	king symbols
255	€ - euro symbol

Note how the standard non-graphic symbols of the Commodore 64 (letters, numbers, and others like !“#$%&') are kept unchanged in this new character set so that in addition to cards, messages and numbers can also be displayed as usual.

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