

# \*Uncovering the Forgotten Bits\*

Perspektiven von Emulation und  
Retrocomputing für die DH

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26.02-27.02.2024 | DHd2024





Atari-Fenster: <http://toastytech.com/guis/tos.html> (26.01.24).  
Atari Icons: [https://forums.atariage.com/topic/321928-atari-st-tosgen-  
icons/?do=findComment&comment=4846029](https://forums.atariage.com/topic/321928-atari-st-tosgen-icons/?do=findComment&comment=4846029) (26.01.24).



**Yannik W.  
Herbst**



**Johannes  
Leitgeb**



**Madlin  
Marenec**



**Tomash  
Shtohrym**

A : <

**Dr. Phil.  
Torsten  
Roeder**



Katalogisierung von  
Diskettenmagazinen:  
<https://www.diskmags.de>

**The Diskmags Catalog**

Welcome to the Online Catalog of Disk Magazines!

- What is a 'disk magazine'?
- Who is involved in this project?

**Browse**

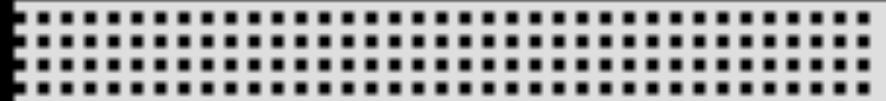
- in ■ alphabetical order
- by a category:
  - 🖥 computer system
  - 💬 content language
  - 🌐 country of origin
  - 📚 publishers
  - 🎙 scene related groups
  - ❤ data source
- in a curated subcollection:
  - 🇩🇪 German-language diskmags
  - 🖼 Gallery of selected diskmags
- or enter a 🔎 search term

**News**

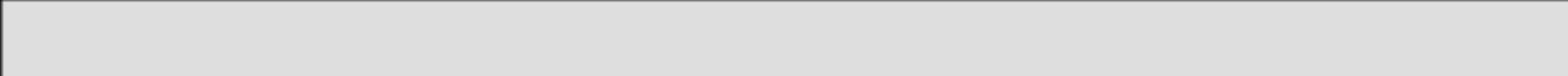
- talk at 37C3: Das Diskmags-Projekt (28 Dec 2023)
- added an Italian Diskmag: RUN (21 Dec 2023)
- added a Serbian Diskmag: Amiga Front (14 Dec 2023)
- conference paper published: [Diskettenmagazine als Früh](#)
- updated the complete catalog (20 Oct 2023)

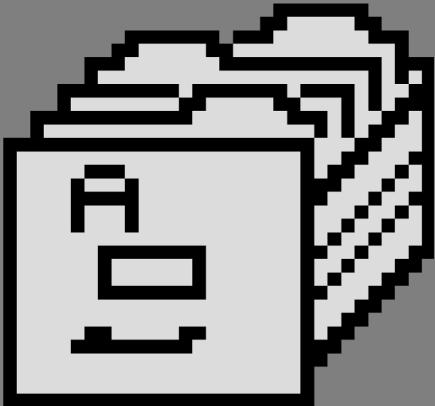
see also ■ 📚 Publications and Presentations





=> *Ausblick: Aufbau  
eines Retro Computing  
Lab in Würzburg*





**ZEITPLAN**





A:\



Mo . 26-02-24

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14:00 | Begrüßung  
14:30 | Theorie 1: Definition  
15:30 | Kaffeepause  
16:00 | Hands-On 1: C64

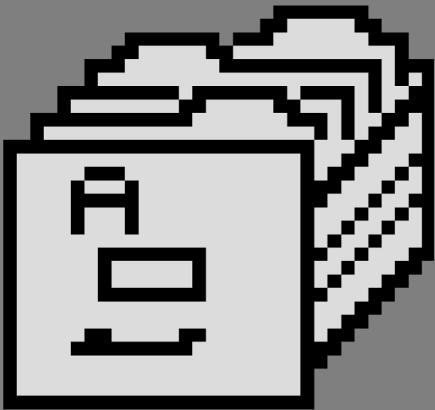
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Di . 27-02-24

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09:00 | Theorie 2: Kritik an und Potenzial von  
Emulation  
10:00 | Hands-On 2: Kleingruppen  
12:00 | Abschlussdiskussion

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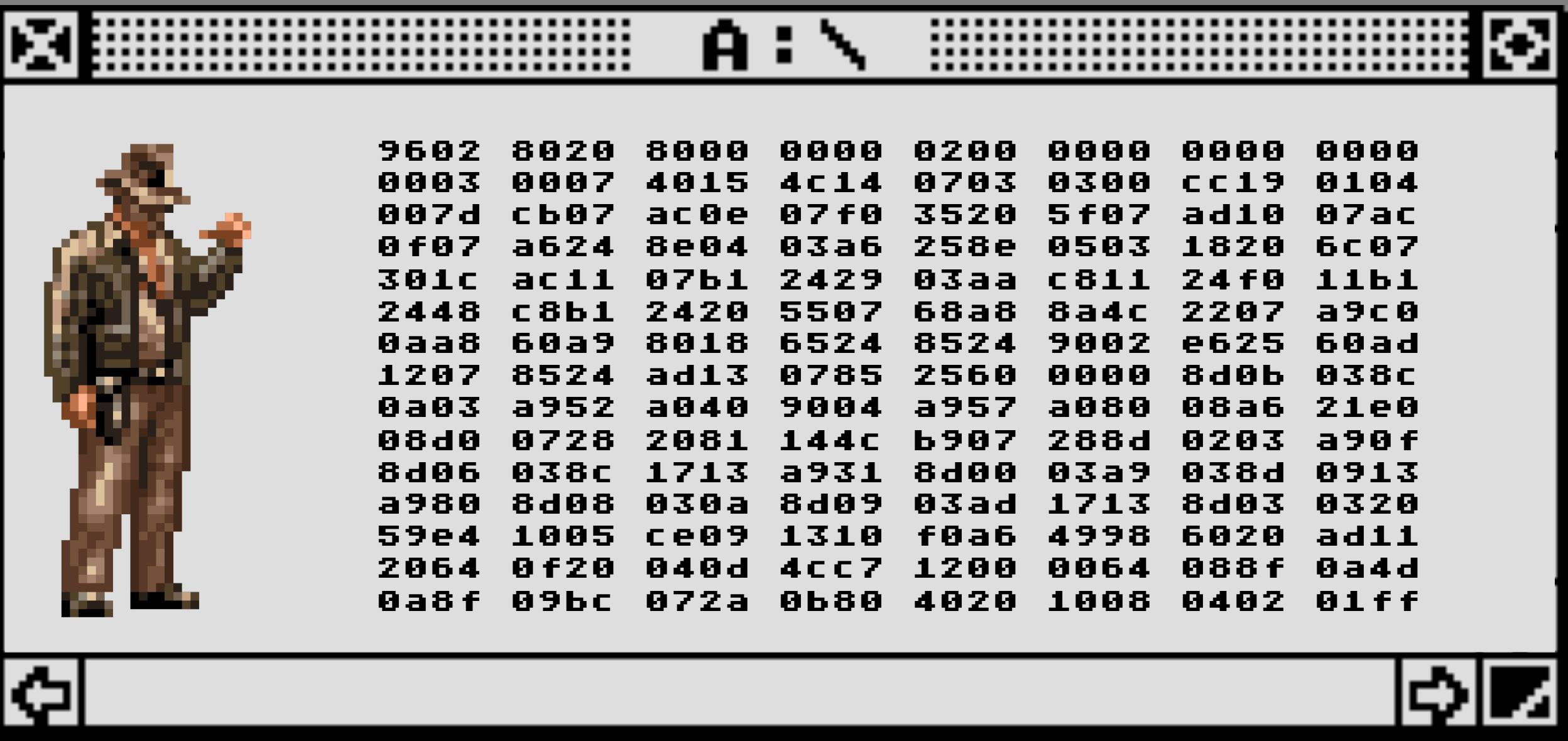


**THEORIE 1**



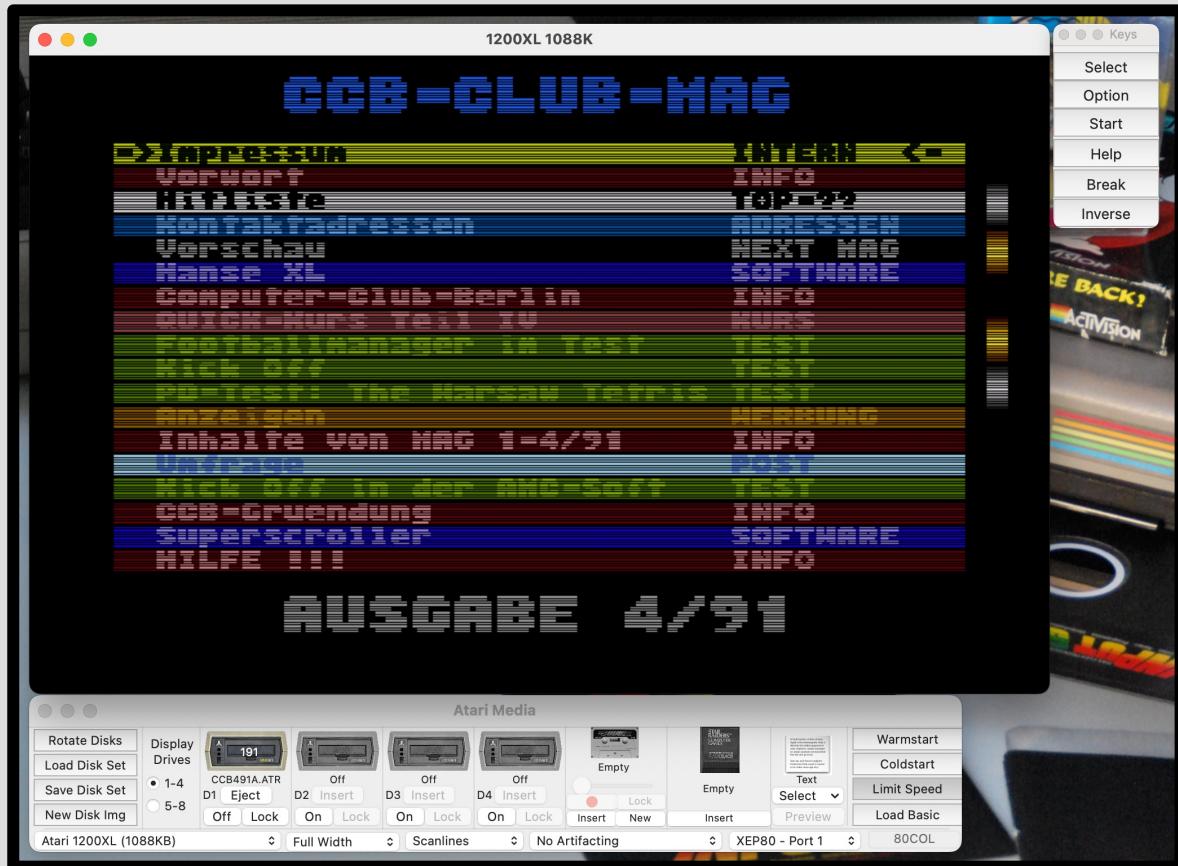
# • Ein Fallbeispiel





# 11 Ein Fallbeispiel





»An emulator is an application that tries to mimic another system in order to run applications the way they were run on their original system.«

Dor (2013): »Emulation«, S. 25.



- **high-level** Emulation: Simulation der Funktionalität anstelle von Virtualisierung der Hardware
- **low-level** Emulation: Große Nähe der Emulation zur ursprünglichen Hardware

...grundsätzlich gilt: Gleiche Eingaben sollten zu gleichen Ausgaben führen!



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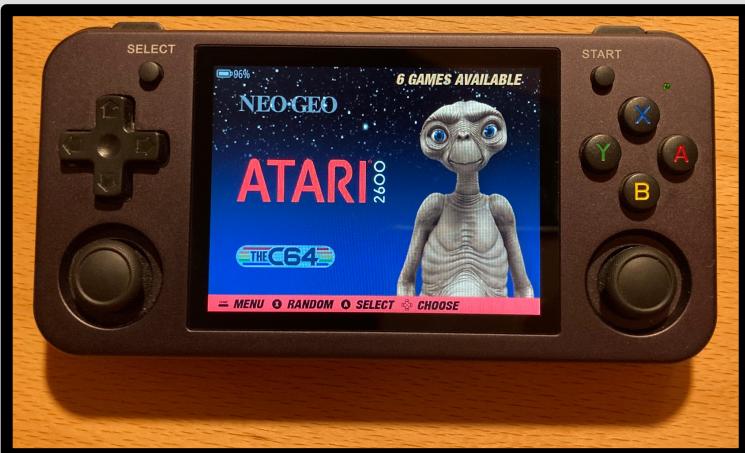
## Unterstützte Systeme im Emulations-Framework *Emulationstation:*

3do  
Amiga  
Amstrad CPC  
Apple II  
Atari 2600  
Atari 5200, 8-Bit Series  
Atari 7800  
Atari Jaguar  
Atari Lynx  
Atari ST, STE, TT, Falcon  
CoCo  
Colecovision  
Commodore 64, VIC-20, PET  
Daphne  
Dragon 32  
Dreamcast  
Famicom Disk System  
FinalBurn Neo  
GameCube  
Game & Watch  
Game Gear  
Game Boy

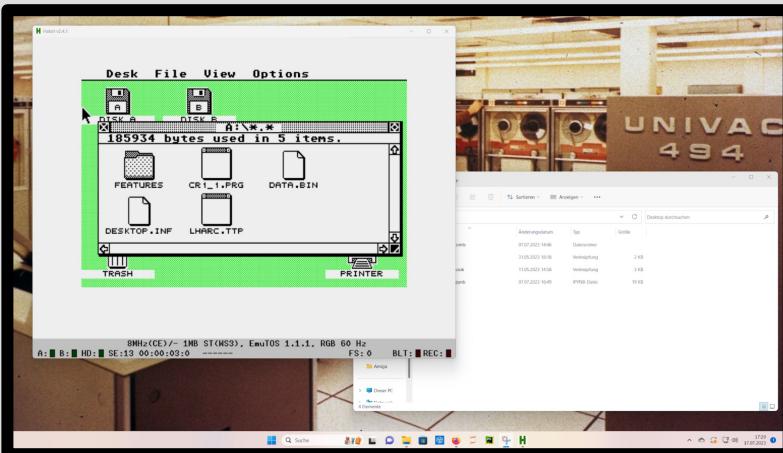
Game Boy Color  
Game Boy Advance  
Intellivision  
Macintosh  
MAME  
Master System  
Mega-CD / Sega CD  
Mega Drive / Genesis  
MESS  
MSX  
Neo Geo  
Neo Geo Pocket  
Neo Geo Pocket Color  
Nintendo 64  
Nintendo DS  
Nintendo Entertainment System  
Oric/Atmos  
PC  
PC-8800  
PC-9800  
PC Engine / TurboGrafx-16  
PC Engine 2 / SuperGrafx

PlayStation 1  
PlayStation 2  
Pokemon Mini  
PSP  
SAM Coupé  
Saturn  
ScummVM  
Sega 32X  
Sega SG-1000  
Sharp X1  
Sharp X68000  
Super Nintendo Entertainment System  
TI-99/4A  
TRS-80  
Vectrex  
Videopac / Odyssey2  
Virtual Boy  
Wii  
WonderSwan  
WonderSwan Color  
ZX-81  
ZX Spectrum





**Handheld Emulator  
(Anbernic RG353M)**



**Emulation auf  
einem Desktop-PC  
(Atari für Atari  
ST auf Windows)**



**Emulation als  
Medienstation  
(Computerspiele-  
museum Berlin)**

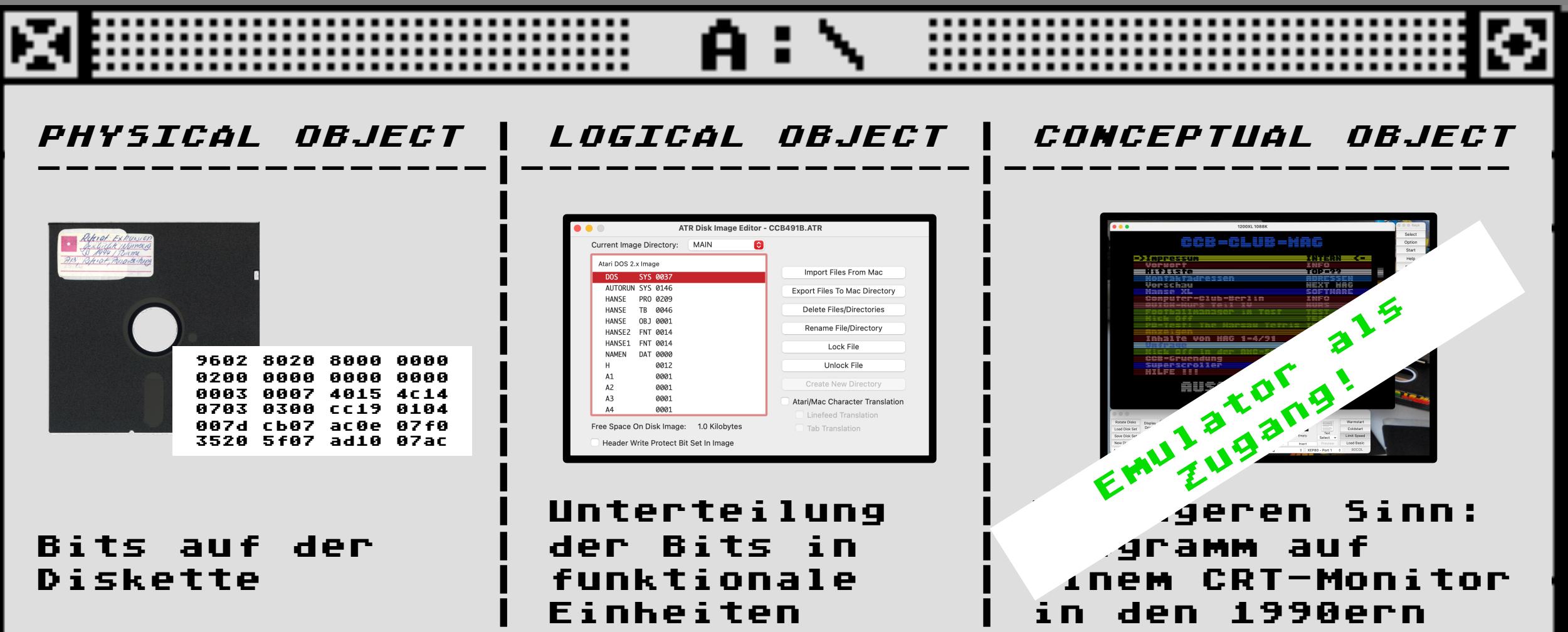
[https://www.computerspielmuseum.de/M  
ediabase/img/cache/1135\\_1200x1080.jpg](https://www.computerspielmuseum.de/Mediabase/img/cache/1135_1200x1080.jpg)

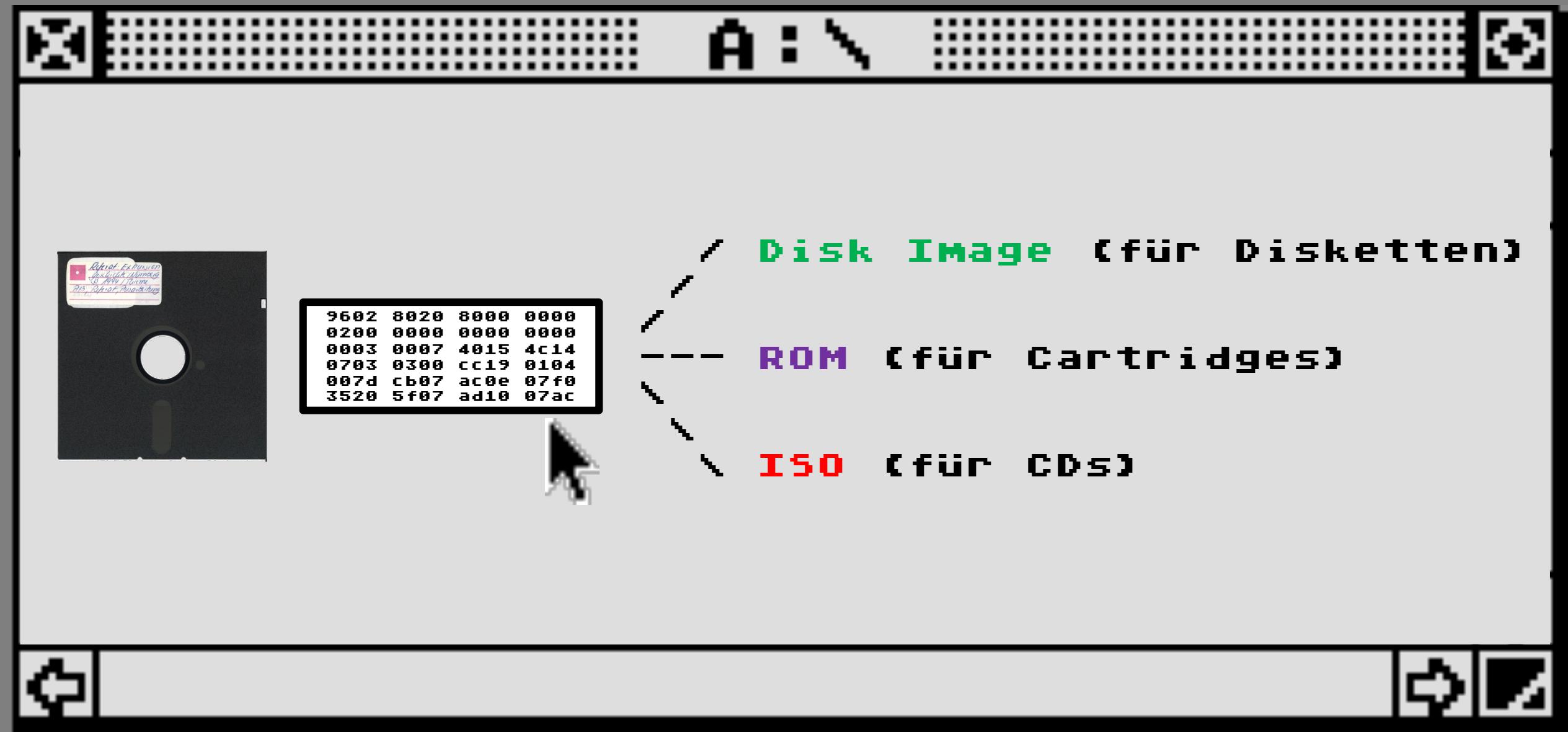


»A *physical* object is simply an inscription of signs on some physical medium. A *logical* object is an object that is recognized and processed by software. The *conceptual* object is the object as it is recognized and understood by a person [...].«

Thibodeau (2002): »Overview of Technological Approaches to Digital Preservation«, S. 6.









## Zur Mitigation des Zeichenwechsels:

- **Skeumorphismen**: graphische Übernahme von Elementen des Originalsystems ohne Zweck und mit schmückendem Charakter



Carta, Giovanni (2017): »Metadata and video games emulation: an effective bond to achieve authentic preservation?«, in: *Records Management Journal* (2/27), S. 192-204.

Dor, Simon (2013): »Emulation«, in: Mark J. P. Wolf; Bernard Perron (Hgg.): *The Routledge Companion to Video Game Studies*, New York: Routledge, S. 25-31.

Galloway, Alexander R. (2006): *Gamic Action, Four Moments*, in: Ders.: *Gaming. Essays on Algorithmic Culture*, Minneapolis, London: University of Minneapolis Press, S. 1-38.

Guins, Raiford (2014): *Game After. A Cultural Study of Video Game Afterlife*, Cambridge: MIT Press.

Höltgen, Stefan (2022): *OPEN HISTORY. Archäologie der frühen Mikrocomputer und ihrer Programmierung*. Berlin: Kadmos.

Kaltman et al. (2021): »From the Presupposition of Doom to the Manifestation of Code: Using Emulated Citation in the Study of Games and Cultural Software«, in: *DHQ* 15 (1), unter:  
<http://www.digitalhumanities.org/dhq/vol/15/1/000501/000501.html#> (26.02.24).

Kittler, Friedrich (1993): »Es gibt keine Software«. In: Ders.: *Draculas Vermächtnis. Technische Schriften*, Leipzig: Reclam, S. 225-242.

Link, David (2016): *Archaeology of Algorithmic Artefacts*, Minneapolis: Univocal Publishing.

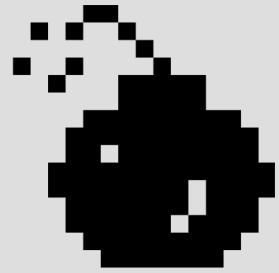
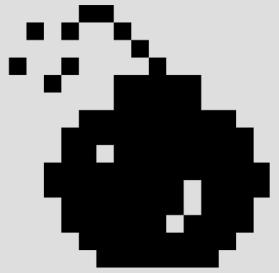
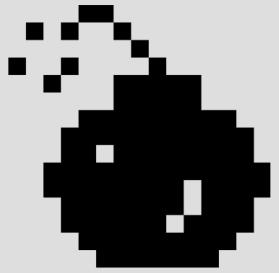
Loebel, Jens-Martin (2014): *Lost in Translation. Leistungsfähigkeit, Einsatz und Grenzen von Emulatoren bei der Langzeitbewahrung digitaler multimedialer Objekte am Beispiel von Computerspielen*, online unter:

<https://skriptorium.org/de/publikationen/translation-gap/lost-in-translation-ihv/> (26.02.24).

Pias, Claus (2017): »Medienphilologie und ihre Grenzen«. In: *Medienphilologie. Konturen eines Paradigmas*, hrsg. von Friedrich Balke und Rupert Gaderer. Göttingen: Wallstein, S. 365-385.

Thibodeau, Kenneth (2002): »Overview of Technological Approaches to Digital Preservation«, in: *The State of Digital Preservation. An International Perspective*, S. 4-31, online unter:  
<https://www.clir.org/pubs/reports/pub107/thibodeau/> (26.02.24).





**F E E D B A C K**

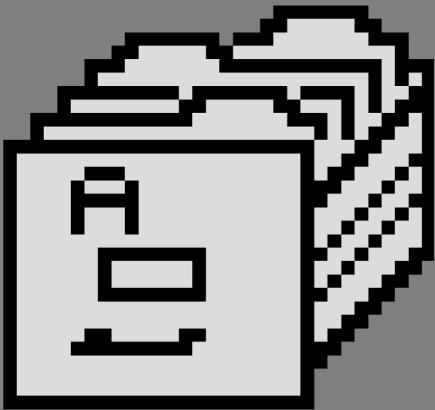
# Hands-On-Emulation

## VICE-Emulator für Commodore 64

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*Vortragender: Tomash Shtohryn*

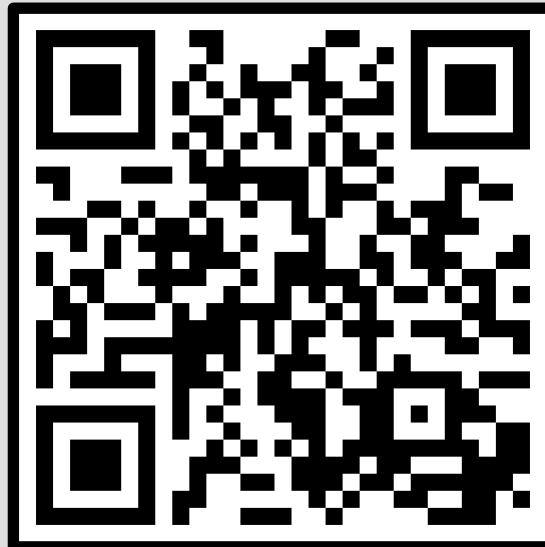




## EMULATIONSPRAXIS 1. Erste Schritte



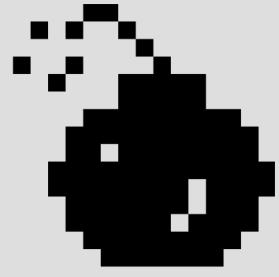
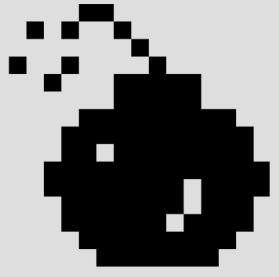
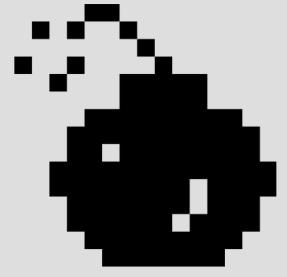
**AUFGABE: VICE-Emulator herunterladen**



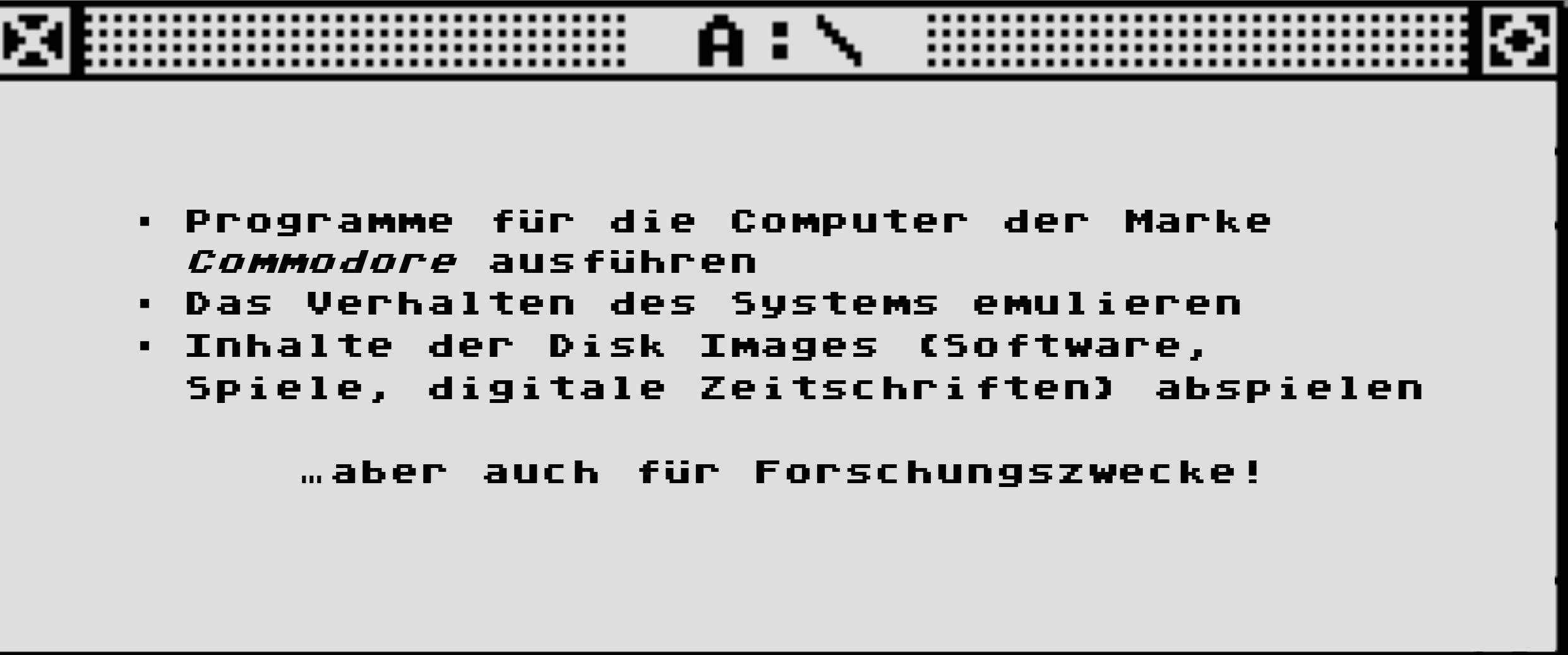
<https://vice-emu.sourceforge.io/index.html#download>





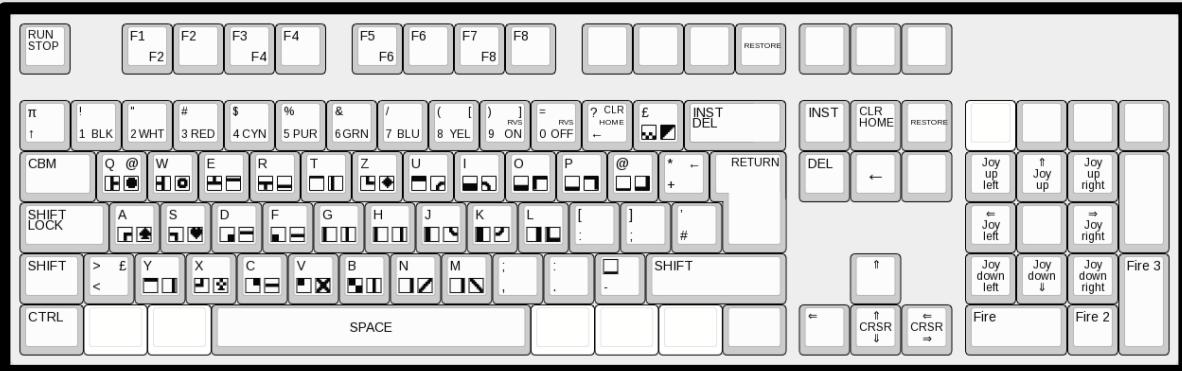


**KAFFEEPAUSE**

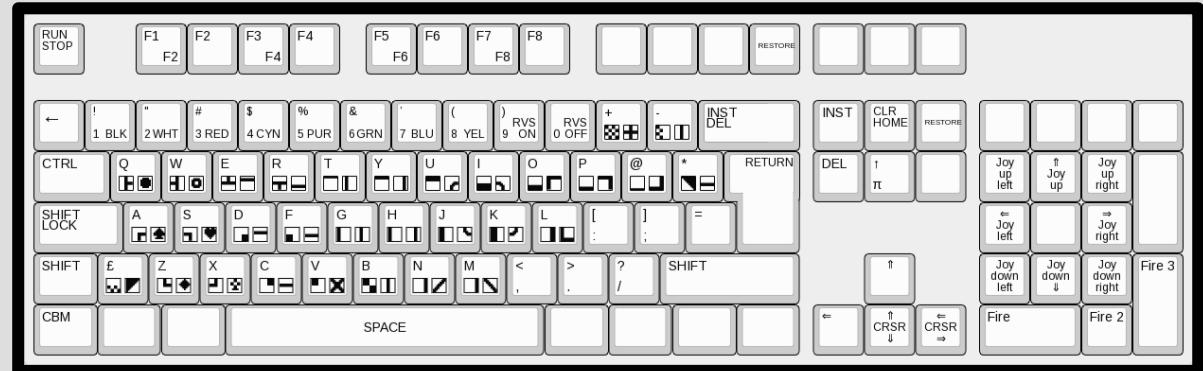
- 
- Programme für die Computer der Marke *Commodore* ausführen
  - Das Verhalten des Systems emulieren
  - Inhalte der Disk Images (Software, Spiele, digitale Zeitschriften) abspielen
- ...aber auch für Forschungszwecke!

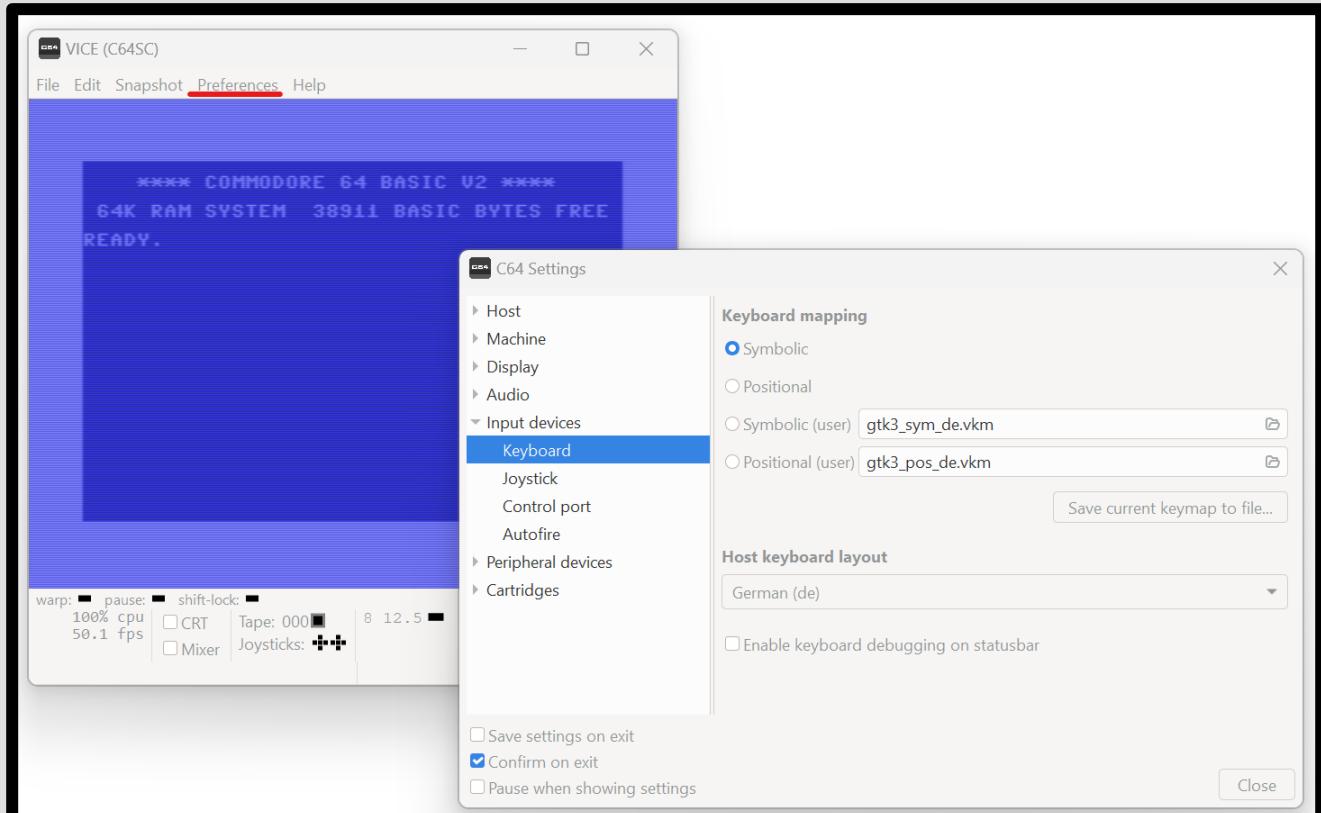


## 1. Symbolisch:



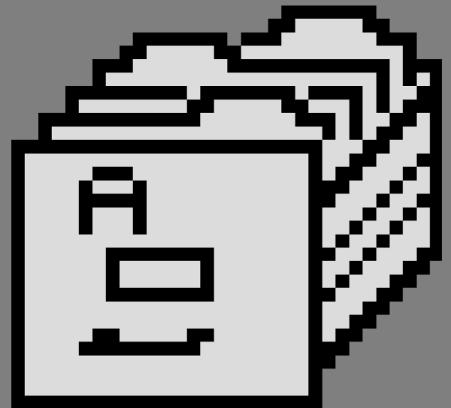
## 2. Positionell:







- Auswahl der Tastaturlayouts
- Komforttasten
- Bildschirmaufzeichnung, Screenshots
- Aktuellen Stand des Rechners speichern



## EMULATIONSPRAXIS 2. Kleine Einführung in BASIC V2



-----  
Zum Abtippen!

```
A : \
```

```
PRINT "HELLO WORLD"  
10 PRINT "HELLO WORLD"
```

I Unterschied? I

Die Zeilennummern! Hier muss  
zum Ausführen des Programms  
**RUN** eingegeben werden



```
10 FOR I = 1 TO 10
20 PRINT "TEST NR.";I
30 NEXT I
```

```
**** COMMODORE 64 BASIC V2 ****
64K RAM SYSTEM 38911 BASIC BYTES FREE
READY.
10 FOR I = 1 TO 10
20 PRINT "TEST NR.";I
30 NEXT I
RUN
TEST NR. 1
TEST NR. 2
TEST NR. 3
TEST NR. 4
TEST NR. 5
TEST NR. 6
TEST NR. 7
TEST NR. 8
TEST NR. 9
TEST NR. 10
READY.
```



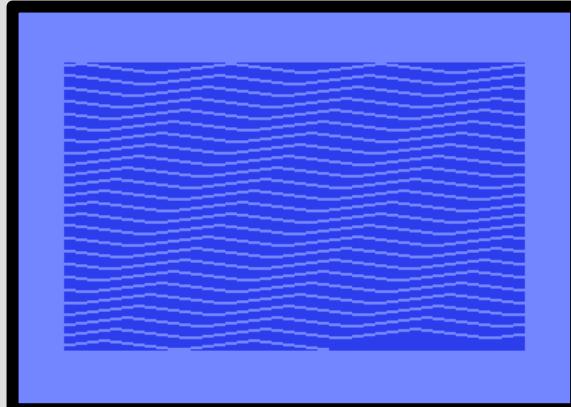
A : ↴



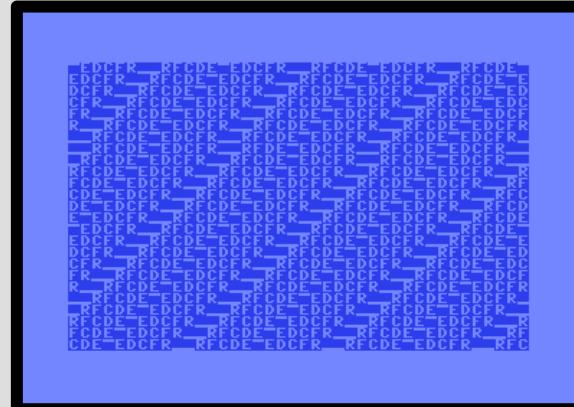
```
10 PRINT CHR$ (205+INT (RND (1)*2)) ;
20 GOTO 10
```



```
10 PRINT "[CBM-P] [Shift-RFCDE] [CBM-Y] [Shift-EDCFR] [CBM-  
P]" ;: GOTO 10
```

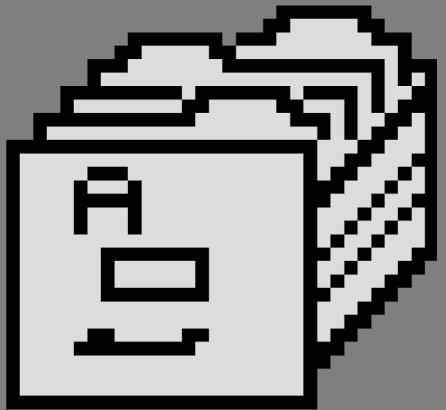


Was passiert, wenn man auf [Shift-Tab] drückt?



1. Leeres Abbild erzeugen und einführen
2. Beliebiges Programm schreiben
3. Dann: **SAVE "[PROGRAM\_NAME]",8,0**
4. Das Abbild entfernen und neu laden
5. Programm laden und ausführen: **LOAD  
"[PROGRAM\_NAME]",8,0**





## EMULATIONSPRAXIS 3. Arbeiten mit virtuellen Datenträgern



**AUFGABE:** Digital Talk 113 herunterladen



<https://digitaletalk.at/?DigitalTalk=113>



- Ein nicht-kommerzielles Community-Magazin auf Diskette
- Erste Ausgabe: 1993
- Aktuelle Ausgabe: 26. Dezember 2023
- Inhalte: Artikel, Spiele, Demos und Kleinanzeigen



**AUFGABE:** Artikel zum Diskmags-Projekt  
finden!



**AUFGABE:** Lode Runner herunterladen

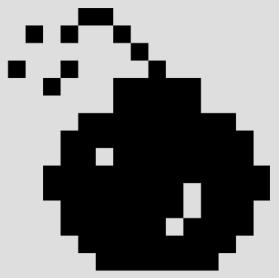
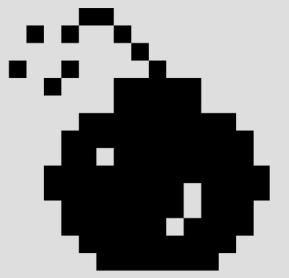
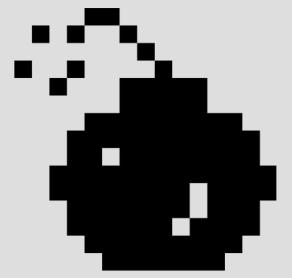


<https://www.c64games.de/phpseiten/spieldetail.php?filnummer=279>



- Tastatur-Steuerung aktivieren: STRG-K
- Bewegung: I , K , J , L 
- Graben: U (links), O (rechts)
- Spielgeschwindigkeit: +/-





**A B S C H L U S S R U N D E**