```
##UP#########SO
RRY#NO#BONUS###Y
OU#NEED#MORE#CAR
ROTS#########SEE#
YOU#LATER#######
##THE#CUTTING###
####ROOM#FLOOR##
#LATER#####SCORE
#PUSH#BUTTON####
###SOUND#MODE#NO
######TIME#IS#UP
```

The Cutting Room Floor

The term cutting room floor is used in the film industry as a figure of speech referring to unused footage not included in the finished film. Outside of the film industry, it may refer to any creative work unused in the final product.

-wikipedia

tcrf.net

- A wiki of video game content that was cut before the game was released

- Sometimes still accessible through glitches or cheat devices (Game Genie/Action Replay)

- Sometimes dumping and editing the game ROM is necessary to view hidden content

- Also documents secret button sequences, etc

Focus

- Typically older games, because their simplicity and small size makes them easier to analyze

- Some newish games are present on TCRF but are generally lacking the level of detail seen on the pages for older games

Game Genie/Action Replay

- A "cheat" device that lets players temporarily overwrite a few bytes of a game ROM with new data

- Used for cheating, altering or completely breaking games

- Modifying a single byte can have profound effects
https://www.youtube.com/watch?v=I7lSbZazuPo

Game Genie/Action Replay

- Can find docs online describing code format
- Many secrets are accessible only via editing the game ROM or by using a cheat device
- TCRF pages commonly refer to codes that unlock otherwise inaccessible content
- Older devices only allow 3-5 codes at a time

Secrets in the Game Genie itself!

CODE   SCREEN

© CODEMASTERS 1992

'BREEZY':–

FRESH AIR FROM
THE ALPS!

COMES IN AN
EASY-TO-USE
AEROSOL CAN!

THIS DEVICE WILL
EXPLODE IN 0
SECONDS!

...PFFFT...

RATS. FORGOT THE
DYNAMITE!

CODE   SCREEN

© CODEMASTERS 1992

When 3-5 bytes isn't enough

- A ROM dumper is used to grab the game data off of a cartridge, typically for use in emulators or flash carts

- Can build a dumper yourself with an arduino!

- With newer games on CD/DVD, dumping is easy with a PC

Game ROMs

- Typically ROMs are associated with emulation and piracy

- But: they are essential for any detailed analysis of a game and are legal to dump/use if you own the game

IPS patches

- Since distributing ROMs is generally illegal, if large modifications to the game are needed to access hidden content, an IPS file is typically provided on TCRF

- Basically like GNU patch but for binaries

Methods of analyzing ROMs

- Basic tools: /usr/bin/strings, hex editors, emulators with debuggers

- Advanced: disassemblers

- Web resources: romhacking.net, zophar.net

- TCRF guides
  https://tcrf.net/Help:Contents/Finding_Content

Side note: TCRF's game descriptions

- "Super Mario 64 is the best 3D plumbing simulator available on your system."

- "It's a bird... It's a plain... It's Ocarina of Time!"

- "Donkey Kong Country combines monkeys, bananas, and barrels into one package for the first time in human history."

Types of hidden content

Unused features

New super mario bros

https://www.youtube.com/watch?v=W49db26l0x4

Hidden messages from the dev

- Amiga CD32 bootloader:

  Thus spoke the Master Ninjei: "If your application does not run correctly, do not blame the operating system!"

  This space for sale

Found in 3DO bootloader

This WHOLLY ODD collection of code brought to you by:

Dale "You mean my house burned down last month and I never noticed?" Luck
-=RJ=- "Hey, I never approved those messages!" Mical
Joe "You were asleep at the time" Pillow
Dave "Strictly corect" Platt
Bryce "Angel of death" "Nesbitl" Nesbitt
Stephen "Not Stephan" Landrum
Andy "I miss my Cats" Finkel
Chris "Whaddya mean you took it out?" McFall
Drew "Don't touch my toys" Shell
Mr. Pockets
Nerf(tm) brand weapons
Phil "I can't hear you" Burk
Stan "I thought you were done" Shepard
Steve "That !@%$#& drive" Hayes
Bill Long
Barry Solomon

And all those who were not in the building at 2am when the cops
showed up

Hot Wheels: Velocity X

Weird NSFW story about monkeys...

I LIKE MONKEYS. I like monkeys. The pet store was selling them for five cents a piece. I thought that odd since they were normally a couple thousand each. I decided not to look a gift horse in the mouth. I bought 200. I like monkeys. I took my 200 monkeys home. I have a big car. I let one drive. His name was Sigmund. He was retarded. In fact, none of them were really bright. They kept punching themselves in their genitals. I laughed. Then they punched my genitals. I stopped laughing. I herded them into my room. They didn't adapt very well to their new environment. They would screech, hurl themselves off of the couch at high speeds and slam into the wall. Although humorous at first, the spectacle lost its novelty halfway into its third hour. Two hours later I found out why all the monkeys were so inexpensive: they all died. No apparent reason. They all just sorta' dropped dead. Kinda' like when you buy a goldfish and it dies five hours later. Damn cheap monkeys...I didn't know what to do. There were 200 dead monkeys lying all over my room, on the bed, in the dresser, hanging from my bookcase. It looked like I had 200 throw rugs. I tried to flush one down the toilet. It didn't work. It got stuck. Then I had one dead, wet monkey and 199 dead, dry monkeys. I tried pretending that they were just stuffed animals. That worked for a while, that is until they began to decompose. It started to smell real bad...I had to pee but there was a dead monkey in the toilet and I didn't want to call the plumber. I was embarrassed...I tried to slow down the decomposition by freezing them. Unfortunately there was only enough room for two monkeys at a time so I had to change them every 30 seconds. I also had to eat all the food in the freezer so it didn't all go bad...I tried burning them. Little did I know my bed was flammable. I had to extinguish the fire. Then I had one dead, wet monkey in my toilet, two dead, frozen monkeys in my freezer, and 197 dead, charred monkeys in a pile on my bed. The odor wasn't improving. I became agitated at my inability to dispose of my monkeys and to use the bathroom. I severely beat one of my monkeys. I felt better. I tried throwing them way but the garbage man said that the city wasn't allowed to dispose of charred primates. I told him that I had a wet one. He couldn't take that one either. I didn't bother asking about the frozen ones. I finally arrived at a solution. I gave them out as Christmas gifts. My friends didn't know quite what to say. They pretended that they like them but I could tell they were lying. Ingrates. So I punched them in the genitals. I like monkeys.

Desert Strike: Return to the Gulf

- This Game Is Desined to be Unhackerble because There is no need to hack it. If you whant to pirate it Just drag the workbentch icon to another disk drive, and copy

The Incredible Hulk (SMS)

```
LOOSE_COLIZ_TYPE
;loose_mother makes mother forget
;about this or any other child
;so watch it!
;if this was hulks coliz then make hulk
;sitting duck
        LD  HL,(NEXT_SPRITE)
        INC L
        INC L
        INC L
        INC L
        BIT PLAYER_BIT,(HL)
        JR
```

Bakushou!! Jinsei Gekijou 2

- "At the title screen, press Up, Down, Up, Down, A, B, Right, Left, Right, Left, Select, Select, A, B, Select, Select, Up, Right, Down, Left"
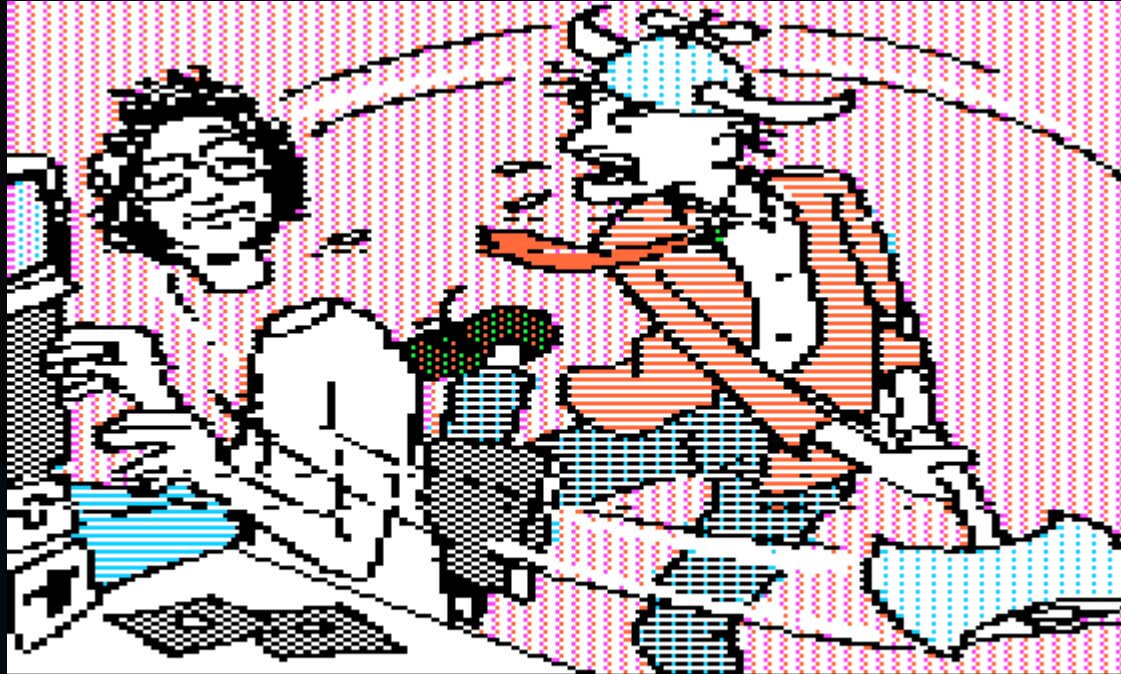
Crazy Foota

- HELLO HACKER, THIS WAS AN EASY ONE, JUST SO YOU CAN READ THESE MESSAGES.
- HAVE YOU JOINED THE NATIONAL DRAGON USERS GROUP YET? CONTACT PAUL GRADE,
- 6 NAVARINO ROAD, WORTHING, SUSSEX FOR DETAILS. A NEW VERSION OF
- CRAZY FOOTA WILL BE OUT BY CHRISTMAS 1987, CONTACT COMPUTAPE FOR DETAILS.
- PS, THIS GAME IS AVAILABLE FROM COMPUTAPE ON DRAGON DOS DISC.
- IF YOU WANTED DELTA DOS, ASK AND I WILL SEE WHAT CAN BE DONE.
- HAPPY HACKING...GRAHAM SMITH

Miami Chase (Amiga)

- IF YOU MANAGED TO GET TO THIS POINT, YOURE VERY PROBABLY A HACKER.

- BEWARE!!!! IF YOURE EVEN THINKING OF COPYING THIS GAME WELL GET

- YOU A DARK STORMY NIGHT, FRIE YOUR BRAIN IN BOILING OIL,

- WEREAFTER WELL TAKE YOU TO COURT!!! SIGNED: TEAM 7

Hidden image in Borrowed Time

NBA Hangtime (SNES)

Harry Potter and the Sorcerer's Stone

```
// *********************************************************
// Set the Opacity.  This totally fucking sucks from a serious programming standpoint,
//      because I should be able to use the "constant" InvisibleValue like this:
//            Opacity = InvisibleValue;
//      but that doesn't work because UnrealScript sucks ass
```

//warning following line is massive kludge and may cause cancer gk 9/3/01

Credit: Tim

LEGO Star Wars

735 "Press FART"

746 "Press the FART button"

Credit: Tim

Karateka (Apple II)

https://www.youtube.com/watch?v=LVqSHLjiJCA

End

Go forth and explore!

tcrf.net