1 Introduction

This report documents the raw findings from an exhaustive (and exhausting) analysis of a large corpus of Atari 2600 games to find printable strings. While similar efforts have been conducted before [3], this is the most extensive survey so far, to the best of our knowledge. We intend to analyze these results from a higher-level viewpoint later, but this report serves as a permanent record of the data and the methods we used to acquire it.

2 Printable Strings

The results reported here are based on a corpus of 1816 Atari 2600 ROM cartridge images. Duplicate images were removed – the initial corpus, as acquired, had 1840 images – but some game images have one or more prototype images too. We have not removed these, because sometimes the strings are different between these versions.

Finding printable strings was done in a manner consistent with the Unix strings program, where sequences of consecutive printable ASCII characters at least four characters in length were selected. In practice, because this process produces a lot of “noise”, i.e., sequences that appear to be printable strings but in fact are not:

```
XXXXXXX
66420BD66420FB66420D
3##~ #3
```

we filtered the output to make legitimate printable strings more prominent [2]. Images with legitimate-looking strings were then analyzed manually to find any additional fragments, and adjacent pieces with an apparent logical connection have been reconstructed into single lines.

The filenames in the corpus were very descriptive, and they are used to label the results below.

<table>
<thead>
<tr>
<th>Aquaventure (CCE).bin</th>
<th>Aquaventure (Sea Sentinel) (08-12-1983) (Atari, Tod Frye, Gary Shannon) (Prototype) ~.bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>looney</td>
<td></td>
</tr>
</tbody>
</table>
| BMX Air Master (1989) (TNT Games, Adam Clayton) (26192) (PAL).bin | COPYRIGHT 1989 TNT GAMES  
DEVELOPED BY SCULPTURED SOFTWARE  
WRITTEN BY ADAM CLAYTON  
GDAY |
BMX Air Master (1989) (TNT Games, Adam Clayton) (26192) .bin
BMX Air Master (1990) (Atari) (CX26190) (PAL).bin
BMX Air Master (1990) (Atari) (CX26190).bin

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Big Bird's Egg Catch (Grover's Egg Catch) (Kid's Controller) (Children's Computer Workshop ) (1983) (Atari, Christopher H. Omarzu) (CX26104) (PAL).bin

CHRISTOPHER H. OMARZU

Big Bird's Egg Catch (Grover's Egg Catch) (Kid's Controller) (Children's Computer Workshop ) (1983) (Atari, Christopher H. Omarzu) (CX26104) .bin

CHRISTOPHER H. OMARZU

C.H.OMARZU

Blank lines have been inserted here and in later results to show where the fragments were separated.

Blueprint (1983) (CBS Electronics, Tom DiDomenico) (4L 2486 5000) (Prototype).bin
Blueprint (1983) (CBS Electronics, Tom DiDomenico) (4L 2486 5000) .bin
Blueprint (1983) (CBS Electronics, Tom DiDomenico) (4L2477, 4L2482, 4L2485, 4L4171) (PAL).bin

T.DIDOMENICO

Bump 'n' Jump (1983) (M Network, David Akers, Joe 'Ferreira' King, Patricia Lewis Du Long, Jeff Ratcliff - INTV) (MT7045) .bin
Bump 'n' Jump (1989) (Telegames) (7045 A015) (PAL).bin

Copyright 1983 Mattel Dave Akers Jeff Ratcliff Pat Dulong

Space Tunnel - O Tunel Espacial (1983) (CCE) (C-807).bin

LINK 1.6
INIT /
A
OP
TPLLEN K
XMIN
YMIN
YMAX
XMAX
START
CENT
CC09
CC06
CC07
CC08

The strings A and OP are immediately preceded by characters with their high bits set, and if those are taken into account then those strings are AA and TOP. The last title's image is missing the K after TPLEN.
Die Ratte und die Karotten (AKA Gopher) (1983) (Quelle) (687.463 0) (PAL).bin
Farmer Dan (AKA Gopher) (Zellers).bin
Gopher (208 in 1) (Unknown) (PAL).bin
Gopher (Unknown) (PAL).bin
Mighty Mouse (AKA Gopher) (Funvision - Fund. International Co.).bin

COPYRIGHT 1982 US GAMES CORP.

Elk Attack (1987) (Atari, Mark R. Hahn) (Prototype) .bin

ELK ATTACK (c) 1987 Mark R. Hahn

Fatal Run (Ultimate Driving) (1989) (Atari - Sculptured Software, Steve Aguirre) (CX26162) (PAL) .bin

CONGRATULATIONS ARE IN ORDER FOR A JOB WELL DONE YOU HAVE SAVED THE WORLD- YOU WORKED HARD AND HONORABLY -YOU DESERVE THAT VACATION YOU ASKED FOR. ROCKET CODE ACCEPTED.- IGNITION ACTIVATED-
FATAL RUN- PROGRAMMED BY STEVE AGUIRRE
YOUR MISSION IS TO DRIVE TO EACH CITY DELIVERING THE MUCH NEEDED MEDICATION TO SAVE THE PEOPLE- THEN LAUNCH THE ROCKET TO SAVE THE WORLD- FANTASTIC TIME YOUR SPEED HAS SAVED MOST OF US- NEXT TIME YOU WILL NEED TO PUSH HARDER- THE RADIATION IS SPREADING- YOU MUST TRY HARDER- YOU MUST HAVE HAD TROUBLES- MANY HAVE DIED- THIS IS A SMALL TOKEN OF OUR APPRECIATION- WE HOPE THAT THIS HELPS- GOOD LUCK- WE HOPE THIS REWARD HELPS YOU ON YOUR WAY- YOU MUST DRIVE QUICKLY- YOU ARE OUR ONLY HOPE- YOUR CARS ARMOR IS IN BAD SHAPE- FIX IT- YOUR TIRES ARE SHOT- YOU SHOULD UPGRADE THEM- YOUR CARS ENGINE NEEDS A SERIOUS TUNE-UP REPAIR WHAT YOU CAN- ALL OF YOUR CAR NEEDS HELP- YOUR CAR IS STILL IN PRETTY GOOD SHAPE-
-NO CODE-
CODE- T
CODE- TC
CODE- TC1
CODE- TC1L
CODE- TC1LE
CODE- TC1LE9
CODE- TC1LE9H


;SET JOYSITCK 1,2 TO

The typo is correct.

James Bond 007 (James Bond Agent 007) (1983) (Parker Brothers, Joe Gaucher, Louis Marbel) (PB5110) .bin

PJOE GAUCHER LOUIS MARBEL

It’s unclear if the P is intentional or coincidental.

E,$7E,$24,$3C
9540 BLKSUIT .BYTE 0,0,0,0,0,0,0,0,0
9550 .BYTE 0,0,0,0,0,0
9560 SUIT1 .BYTE $00,$3C,$3C,$3C,$3C,$3C,$18
9570 .BYTE $00,$00,$00,$00,$00,$00,$00
9580 SUIT2 .BYTE $00,$18,$18,$18,$18,$18,$00
9590 .BYTE $00,$00,$00,$00,$00,$00,$00
9600 SUIT3 .BYTE $00,$18,$18,$3C,$24,$66,$42
9610 .BYTE $24,$24,$24,$24,$24,$24,$24
9670 L
9860 =$77FD
9880 ENDSRN JMP SCRNEND
9890


LSR A
LSR A
STA SNDTYPE1
LDA
LDA #$255
STA INTL
A #$60
BCS CONTINUE
TAX

.SYTE 0,0,0,0,0,0
SUIT1 .BYTE
SUIT3 .BYTE $00,$18,$18,$3C,$24,$66,$42
.SYTE $00,$00,$00,$00,$00,$00,$00
SUIT4 .BYTE $00,$
BRIEF .BYTE $00,$00,$00,$00,$00,$00,$00
.SYTE $3C,$7E,$7E,$00,$00,$00,$00
SOCKS .BYTE $00,$44,$CC,$66

MagiCard (Keyboard Controller) (1981) (Computer Magic - CommaVid, John Bronstein) (CM-001) .bin

ILLADCANDASLBCCBSBEEQBITBMIENEBPLBVSCMPACPXCPYDECEORINC3MPJ5RLDALDLWDYLSRORAROL RORSBCTASTXSTYASLBRCCLCDLCILCVDXDEYINXINYLRSNOPPHAPHPPLAPLPROLRORRTITSHSCESSED SEITXAXAYSTXAXSTYAXX) X) RZ ZXY)Y() A X Y

This is one long line, but it needed to be broken apart here for formatting purposes.
McDonald's - Golden Arches Adventure (Big Mac) (06-06-1983) (Parker Brothers, Dave Engman, Isabel Garret) (Prototype).bin
Tutankham (1983) (Parker Brothers, Dave Engman, Dawn Stockbridge) (931509) (PAL).bin
Tutankham (1983) (Parker Brothers, Dave Engman, Dawn Stockbridge) (PB5340).bin

@PARKERBROS 83DAVEENGMAN


DESIGNED AND PROGRAMMED BY GLENN AXWORTHY. COPYRIGHT ATARI 1984.


DAVE STAUGAS LOVES BEATRICE HABLIG

Skydive (AKA Parachute) (Suntek) (SS-030) (PAL).bin
Vom Himmel durch die Hoelle (AKA Parachute) (1983) (Quelle) (719.941 7) (PAL).bin

OPEN
APPEND
RENAME
CATALOG
MON
NOMON
PR#
IN#
MAXFILES
FP
INT
BSAVE
BLOAD
BR

O AVAILABLE
RANGE ERROR
WRITE PROTECTED
END OF DATA
FILE NOT FOUND
VOLUME MISMATCH
I/O ERROR
DISK FULL
FILE LOCKED
SYNTAX ERROR
NO BUFFERS

These are strings from Apple II DOS 3.3 or 3.2 (although almost certainly 3.3 due to the game’s date): the string BR is a truncated BRUN, followed by a (corrupted) LANGUAGE NOT AVAILABLE, and the final message is part of NO BUFFERS AVAILABLE. Except for the truncated strings, the last character of each had the high bit set and thus did not show up with the normal printable ASCII.
Polaris (1983) (Tigervision, Robert H. O'Neil) (7-007) .bin

>0POSV
P1PTR
PDIR
GAMFLG
VCNT
M1PIX
M2PIX
SCOFF
TTEMP
ZTEMP
GOCTR
P2EXCTR
SUBR
SKLVL
COLIDX
EXPLTAB
OBJPTR
P2COLOR
P1SCR
ROWCTR
PTCNT
S DPI TR
P1POSV
P1DIR
DBMI
MOVCTR
P1POSVB
DBCTL
P1RDIR
STATSV
TNDR
TPNTR
STATSV1
RAMEND
COLOR1
COLOR2
COLOR3
COLOR4
COLOR5
COLOR6
SCRLTIMR
SCRLIDX
SCRLTIM1
#RLIDX
BANKSTRT
@BANKST1
@BANK1
BANK2
BANK3
DBV
DBH
LLIMIT
RLIMIT
ULIMIT  1
Pompeii (Labyrinth, Lavarinth) (1983) (Apollo) (AP-2011) (Prototype) "bin

SCRLP1 STA STRTLINE
NOP
NOP
STA WORK
LDA (DNROCK1),Y
STA BULLETR
LDA MNT1,Y
STA HIRESL

TA COLORR
LDY #6
"VOLCANO LOOP 2"

STA HIRESL
LDA VOLC2,Y
STA LOWRES3
LDA LAVA2,Y

PLCANO LOOP 3

STA SHIFTCLR
LDA #$E0
STA LOWRES3
LDY #8
LDA #$30
ST

OLCAN
IRESR
STA WORK
NOP
NOP
NOP
NOP
NOP
LDA (DNROCK3),Y
STA BULLETR
STX HICNTLL
JSR DELAY12
LDA #0
STA HICNTLL
DEY
BNE SCRLP3
"BACKGROUND COLOR"
BACKGROUND COLOR TABLE

Popeye (1983) (Parker Brothers, Joe Gaucher) (931519) (PAL).bin
Popeye (1983) (Parker Brothers, Joe Gaucher) (PB5370) ~.bin

Parker Bros. Joe Gaucher

Radar Lock (Dog Fight) (1989) (Atari, Douglas Neubauer) (CX26176) ~.bin

N GUOD

In case it's not obvious, read it backwards (cf. Solaris).

Rampage! (1989) (Activision, Robert C. Polaro) (AK-049-04) ~.bin

PEORIA JOLIET CHICAGO KALAMAZOO DETROIT CLEVELAND PITTSBURGH BALTIMORE.
P0LAD1234ANEWARK MANHATTAN BOSTON BANGOR QUEBEC MONTREAL OTTAWA TORONTO.
MACKINAW GREEN@BAY MILWAUKEE LACROSSE ST PAUL DULUTH BISMARCK CUSTER BILLINGS
BOISE SPOKANE SEATTLE PORTLAND.
SACRAMENTO FRESNO BURBANK SAN@DIEGO LAS@VEGAS PHOENIX A56789RQUEAMARILLO LUBBOCK.
DALLAS HOUSTON BA !#ROUGEN1%(LEANSMOBILE.TAMPA@BAY MIAMI DAYTONA SAVANNAH.
CHARLOTTE RALEIGH RICHMOND CHARLESTON KNOXVILLE C) ++ANOOGAATLANTA.
TUSCALOOSA MEMPHIS NASHVILLE LOUISVILLE LEXINGTON CINCINNATI - ANAPOSST LOUIS L/T
LE@ROCKTULSA WICHITA KANSAS [] TYDES@MOINESOMAHA LINCOLN BOULDER DENVER.
CHEYENNE SALT@LAKE RENO SAN@JOSE "ANGELESHONOLULU MAUI ANCHORAGE NOME.
FAIRBANKS HOMEWOOD AURORA PLANO@ILL.

Rush Hour (1983) (Commavid, Ben Burch) (CM-010) (Prototype) [a1].bin

A. $0284
IFEQ DBG
CT 'MASKS
CMTB 'EQU 'j
NULADR 'EQU 'j
NU 'EQU 'j

8
Rush Hour (1983) (Commavid, Ben Burch) (CM-010) (Prototype) [a2].bin
Rush Hour (1983) (Commavid, Ben Burch) (CM-010) (Prototype) .bin

A,50284
IFEQ DBG

Solar Fox (1983) (CBS Electronics, Bob Curtiss) (4L1845, 4L1852, 4L1853, 4L1854) (PAL).bin

(SENRCOM)


DOUG N


+$296
TIME1024+$296

Spike's Peak (1983) (Xonox - K-Tel Software - Beck-Tech) (6210, 7210, 06003. 99001) .bin

EQ BASE+$295


.OR $F1
ADDRAML .BS 1 ;SHARED RAM BEGINNING ADDRESS
ADDRAH .BS 1
ADDR800L .BS 1 ;ATARI 800 RAM BEGINNING ADDRESS
ADDR800H .BS 1
BYTECNTL .BS 1 ;BYTE COUNT TO TRANSFER
BYTECNTH .BS 1
UNUSED .BS 1
WORKRAML .BS 1
WORKRAMH .BS 1
WORK800L .BS 1
WORK800H .BS 1
WORKCNTL .BS 1
WORKCNTH .BS 1
HOLD .BS 1
PORTA .EQ $D300 ;PORT A DATA
PORTB .EQ $D301 ;PORT B DATA
PACTL .EQ $D302 ;PORT A DIRECTION
PBCTL .EQ $D303 ;PORT B DIRECTION
.OR $600
LDA $F4
BNE START
LDA #$30
STA $F4
LDA #$10
STA $F6
START LDX #5
INITLOOP LDA ADDRRAML,X
STA WORKRAML,X
DEX
BPL INITLOOP
LDA PACTL
AND #$FB
STA PACTL ;SET PORT A FOR DIRECTION REGISTER
LDA PBCTL
AND #$FB
STA PBCTL ;SET PORT B FOR DIRECTION REGISTER
STX PORTA ;SET

RAMLO

BNE RAMLOPA
DEC WORKCNTH
BNE RAMLOPA
LDX #$FF
STX PORTB

Star Strike (1983) (M Network, David Akers, Patricia Lewis Du Long - INTV) (MT4313) ¯.bin
Star Strike (1989) (Telegames) (PAL).bin

MATTEL MATTEL MATTEL MATTEL MATTEL

D.AKERS

Star Wars - Return of the Jedi - Ewok Adventure (Revenge of the Jedi - Game I) (1983) (Parker Brothers, Larry Gelberg, Gary Goltz) (PB5065) (Prototype) (PAL).bin
Star Wars - Return of the Jedi - Ewok Adventure (Revenge of the Jedi - Game I) (1983) (Parker Brothers, Larry Gelberg, Gary Goltz) (PB5065) (Prototype) ¯.bin

COPR 1983 PARKER BROTHERS -L. GELBERG

Star Wars - The Arcade Game (04-05-1984) (Parker Brothers, Wilfredo 'Willy' Aguilar, Michael Becker, Neil McKenzie, Bob Smith, Brad Stewart) (PB5540) (Prototype) (8K).bin
Star Wars - The Arcade Game (1984) (Parker Brothers, Wilfredo 'Willy' Aguilar, Michael Becker, Neil McKenzie, Bob Smith, Brad Stewart) (PB5540) ¯.bin

BobSmithWAguilarMBeckerNMcKenzie
(C)84LucasfilmLtd.andATARI


onetwoplayerHcI@QYXS@@imagic
@@@minesscoreZ

Superman (1979) (Atari, John Dunn - Sears) (CX2631 - 49-75152) [fixed] ¯.bin

JOHN DUNN

3 Obfuscated Printable Strings

We extended the search to look for interesting strings that were hidden in more exotic ways. PAL images were excluded from this part of the search to keep this work tractable, leaving a still-substantial corpus of 1026 images.

\[
\begin{align*}
\text{b} \quad \& \quad i & \quad \forall i \in [1, 255] \quad \text{Exclusive or} \\
b + i & \quad \forall i \in [1, 255] \quad \text{Addition, also handles subtraction} \\
\text{rol}(b, i) & \quad \forall i \in [1, 7] \quad \text{Rotate byte left} \ i \ \text{bits, also handles rotate right} \\
(b \quad \& \quad 255) + 1 & \quad \text{Two's complement negation}
\end{align*}
\]

Figure 1: Deobfuscations applied to game images. b is the value of the byte being deobfuscated, and all computed values are taken modulo 256.

Applying an obfuscation engine from some of our other research work, we applied the transformations in Figure 1 to each game image and repeated the search for printable strings on the result. The filtered output was then scanned by a neuro-optical processor with multiple decades of training for recognition of English and computer code.\(^1\)

3.1 \(b \quad ^{64}\)

Strings revealed as ASCII by exclusive ORing with 64 would have been encoded with A=1, B=2, C=3, and so on. Interpreting @ symbols as spaces in the strings in this section is likely a safe bet (these would have been the value 0 in the image).

\begin{align*}
\text{Dragonstomper (Excalibur) (1982) (Starpath Corporation, Stephen Harland Landrum) (6) (AR-4400) \quad .bin} \\
\text{Excalibur (Dragonstomper Beta) (1982) (Arcadia Corporation, Stephen Harland Landrum) (6) (AR-4400) (Prototype) [a].bin} \\
\end{align*}

\(^{1}\)To wit, the author.
STICK
STR
TO@MOVE
USE
STATUS
DEX
MORE
COPYRIGHT@gaNO@EFFECT
UNITS@DAMAGESTILL@STUCK
BY@SHL
DRAGON
STARPATH
OH@NO
NOBODY@HERE
FOR
@UNITS
@IN
DONATE@a__DONATE@
PRAY
DO@THAT
INVENTORY
STOPS@YOU
GET@SICKOPEN@CHEST
OPEN@DOOR
TREE
IS@LOCKED
WANTS
PAY
CASTLE
CHURCH
HUT
ESCAPE
LAKE
@STOMPERSWAMP
WERE@HITGRASS
KILLED
TRAP
ARE@DEADTEMPLE
@GOLD
PIT
GAIN
BRIDGE
@STRENGTH
DEMON
CANNOT
BUG
MISSED
WARRIOR
SCORPION
TAKE@SPIDER
GHOUsc1
ID
MANIAC
SLIME
BEETLE
GUARD
SNAKE
GOLEM
MONKEY
POTION
PAPER
SHIELD
KEY
CROSS
RING
STAFF
CHARM
HANDAXE

@@FIGHT
JUST@HITA@QQQ
THE@
FEELS@WEIRD

DRAGON
@STOMPERCOPYRIGHT@gastarp
STICK
@TO
MOVE
ENLIST@MENUSE
STATUS
A@
HE@SAYS
SAYS@MOVE@ITMORE
BUY
SELL
TRADE
STR
DEX
INVENTORY
PICK@AN@ITEMWHAT@DO
OFFER@FOR
DONE
NO@THANKS
HE@WANTS
CANNOT
DO@THAT@HERE
WANT
NO@EFFECT
@TO@
HE@OFFERS
ACCEPT
REFUSE
THERE@IS
SIGN@ON
THE@GATE
QABANDON@ALLHOPEi@YE@WHOENTER@HERE
AND@IT@WARN@SBeware@OF
THE@DRAGONQ
DO@YOU
FEELS@WEIRD
ENTER
LEAVE
THE@DARKNESSONE@MAN@IS
INTERESTED
DOOR
TRADE@SHOP
MAGIC@SHOP
HOSPITAL
TREE
CAVE
LANTERN
MEDICINE
SAPPHIRE
CHAIN
ROPE
RUBY
VITAMINS
ELIXIR
LONGBOW
SHOPKEEPER
WARRIOR
BLAST
FLASH
STUN
UNLOCK
VISION
PROTECT
ID
CHEST
HANDAXE
SHIELD
KEY
CROSS
RING
STAFF
CHARM
POTION
SPINNER
SERVICE
GOLD
DRAGON
@STOMPERCOPYRIGHT@d
STARPATH@
STICK
@TO
MOVE
USE
STATUS
A@
@MAGICCANCELS@IT
MORE
DESCENDING
HE@REFUSES
DONE
STR
These are all substantially similar in terms of the type of contents found, so only the first title's results are shown; the others have fewer printable strings. One change of note is that the string STARPATH becomes ARCADIA for some of the Excalibur images. Also note the BY@SHL with the game author's initials.

DRAGON
@STOMPERCOPYRIGHT@gaSTARPATH
FIRST@LOAD
EXPLORE@THE
COUNTRY SIDE
FIGHT@EVIL
CREATURES
DISCOVER
MAGIC@ITEMS
SECOND@LOAD
THE@VILLAGE
ENLIST@AIDE
TRADE@SHOP
TRADE@WITH
SHOPKEEPERS
ENTER@THE
CAVE
THIRD@LOADiiFIND@OUT@FORYOURSELF

MegaBoy (Dynacom) ˜.bin
WE WITH A PENCIL ON THE CHAIR EVERY DAY WE FOOD AND HEAT ONE THE FOOD THE GRASS IS GREEN WE TAKE FOOD WITH US ON THE STREET WE DRINK CHOCOLATE AND PEARLS AND APPLES ARE ON THE TABLE.

EVERY DAY WE TAKE A BATH AND WE DO FOOD.

THE HEART IS THE CENTER OF LOVE AND THE HAT IS ON MY HEAD.

DOGS ARE BIG THAN MICE AND THE GRASS IS GREEN.

DOCTORS TAKE OFF US.

I TO EAT PEARLS AND APPLES.

I AM HAPPY.

YOU CAN BE A NICE BOY.

HE IS SAD AND SHE PRETTY.

BOB AND MARY ARE VERY BUSY AND THEY ARE TIRED.

THE HAND HAS FINGERS.

THE CLOWN WORKS AT THE THEATER.

A DECADE HAS YEARS AND A WEEK HAS DAYS.

A HAS HEAD.

A HAS A BIRTHDAY TO CEASE.

THE ROSIE IS A WOMAN.

THE HENS LAY EGGS.

THE EIFFEL TOWER IS IN PARIS.

I LOVE STAR GAMES.

I USE MY FEET TO LIKE.

FISH LIVE IN THE WATER.

THE BOY IS IN THE HOUSE.

WE STUDY SCHOOL.

ONE IS A HEN.

THE BAKERY MAKES FISH.

FISH LIVE IN THE WATER.

THE DOG RUNS THE STREET.

WE DRINK ORANGE.

THE JAM IS BLACK.

THE WIND STRONGLY.

MY RABBIT IS EATING A.

THE TITANIC WAS A BIG ELEPHANT.

THE GIRAFFE IS THE TALLEST.

I USE A TOWEL TO DRY MY FACE.

TEACHERS WORK AT.

WEEKS.

We USE OUR NOSE TO...I BOUGHT A FOR A SHOW.

I LIVE IN A EARTH.

SMOKE IS NOT GOOD.

I DON'T LIKE YOU.

I YOU ME.

I WANT TO EAT.

I AM HUNGRY.

I AM THIRSTY.

I WANT TO CARS.

I HAVE CARS.

EVERY DAY I BRUSH MY HAIR.

I MUST SEE A.

IT IS HOT.

THE WINDOW.

THE WEATHER IS HOT.

THE WEATHER IS COLD.

MY FATHER'S WIFE IS MY AUNT.

MY UNCLE'S WIFE IS MY COUSIN.

WOOD SHIP.

BED.

PIES.

QUEEN.

DRINKS.

POEMS.

GLASS.

CLOCK.

YELLOW.

BLUE.

FLIES.

DARK.

SHINE.

BARK.

WORKS.

HELP.

PLEASE CREAM.

W H I L E.

CLOSE.

PLAY.

OVER.

CLOSETABLE.

ACROSS.

JUICE.

SWEET.

COLOR.

SOUR.

BLOWS.

CARROT.

SHIP.

ANIMAL.

TOWEL.

SCHOOL.

LEAN.

CLOSE.

PRETTYSWAMP.

HONEY.

PLANET.

HATE.

SLEEP.

HUNGRY.

EAT.

FOUR.

HANDS.

READS.

BATH.

MOUTH.

CUT.

NIGHT.

SHOE.

YEARS.

SKY.

DOCTOR.

WINTER.

MOTHER.

AUNT.

Cousin.

WOOD.

SHIP.

BED.

PIES.

QUEEN.

DRINK.

POEMS.

These are very long strings in the game image; they have been broken up here for formatting purposes.

Survival Run (1983) (Data Age) (Prototype) ~.bin

@address

19
A number of (fragments of) strings had the high bit of their characters set, likely a side effect of the development systems used.


```
 ,$FE,$FE,$BF,$7E,$18,$3E,$06,$00
 BEE2
 DFB $6C,$FE,$FE,$BF,$7E,$30,$F8,$40,$00
 *
 ****************************************
 CONTAINS FLDPTR FOR BOTTOM
 *
 ****************************************
 *RAM USED FOR TIMEBAR AND APPLE BANDS
 *RAM RESERVED...$99--$9F...
 *
 TIMEBAR = $99 ;LENGTH OF BONUS TIME ON TIME BAR
 APPLPOS = $9A ;APPLE H POSITION
 APPLMASK = $9B ;MASK TO HIDE APPLE IF NOT NEEDED
 *
 ****************************************
 *RAM RESERVED FOR SPRITE A
 *CABBAGE PATCH GIRL
 *
 *RAM RESERVED.....$A0--$AF.....
 *
 ADAT = $A0 ;INDIRECT POINTER FOR GIRLS DATA
 ACOL = $A2 ;INDIRECT POINTER FOR GIRLS COLOR
 AING = $A4 ;IMAGE POINTER
 AORD = $A5 ;IMAGE DISPLAY DIRECTION
 *
 AHPOS = $A6 ;GIRLS HORIZ POSITION
 AVPOS = $A7 ;GIRLS VERTICAL POSITION
 *
 GIRLSTS = $A8 ;GIRLS STATUS BYTE
 JUMPWORD = $A9 ;JUMP STATUS WORD
 JUMPTIM = $AA ;JUMPTIMER
 *
 ****************************************
 *RAM RESERVED FOR OTHER OBJECT (BOTH BOTTOM AND TOP
 *
 *RAM RESERVED...$B0--$BF...(TOP)
 *
 BDAT = $B0 ;INDIRECT POINTER FOR OBJECT
 BCOL = $B2 ;INDIRECT POINTER FOR COLOR
 BCOUNT = $B4 ;STARTING LINE FOR B OBJECT
 BING = $B5 ;IMAGE POINTER
 BCTL = $B6 ;CONTROL BYTE
```
BHPOS = $B7 ;HORIZ POSITION
BVPOS = $B8 ;VERTICAL POSITION
REPOWRD = $B9 ;FLAG TO TELL IF REPOSIT OF B IN
; MIDDLE

RAM RESERVED...$C0--$CF...(BOTTOM)

B2DAT = $C0 ;INDIRECT POINTER FOR OBJECT
B2COL = $C2 ;INDIRECT POINTER FOR COLOR
B2IMG = $C4 ;IMAGE POINTER
B2CTL = $C5 ;CO

CONT

NOT NEED

p $A5 ;IM

OBJECT

C0 ;INDIRECT POINTER FOR OBJECT
B2COL = $C2 ;INDIRECT POINTER FOR COLOR
B2IMG = $C4 ;IMAGE POINTER
B2CTL = $C5 ;CO


bin

EC FRAME1
LDA #0
STA: ATBORD
NOP

LDY APOINT
BEQ NOA4
DEC APOINT
LDA (ACOL),Y
STA ATACOL
LDA (ADAT),Y
STA ATADAT

LINE5
LDY BPOINT
BEQ NOB5
LDA (BDAT),Y
STA ATBDAT
LDA (BCOL),Y
STA ATBCOL
DEY
LDA (BDAT),Y
TAX
DEY
STY BPOINT

MIDLIN5
INC FRAME1
DEC FRAME1
NOP
LDA DUMMY
*
LDY APOINT
BEQ NOA6
DEC APOINT
LDA (ACOL),Y
STA ATACOL
LDA (ADAT),Y
STA ATADAT
LINE6
STX BDAT
INC FRAME1
DEC FRAME1
INC FRAME1
DEC FRAME1
INC FRAME1
DEC FRAME1
NOP
NOP
NOP
LDX BOTFLD
STX FLDPTR
JMP ENDMID
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STA ATFR0
LDA FR1,Y
STA ATFR1
LDA FR2,Y
STA ATFR2 ;CONTINUE DISPLAYING FIELD
DEC FL

STA ATFR0
LDA FR1,Y
STA ATFR1
LDA FR2,Y
STA ATFR2 ;CONTINUE DISPLAYING FIELD
DEC FL

Dice Puzzle (1983) (Panda) (106).bin

SYMBOL TABLE SORTED BY SYMBOL ADDRESS

PAGE
DICE8.OBJ2 DICE8

Funky Fish (1983) (UA Limited) (Prototype) .bin

END NEXT SOURCE FILE

CHN FUNKYE

Name This Game (1983) (Digitel).bin
Name This Game (Guardians of Treasure, Octopussy) (1982) (U.S. Games Corporation, Roger Booth, Sylvia Day, Ron Dubren, Todd Marshall, Wes Trager, Henry Will IV) (VC1007) .bin
Squeeze Box (1982) (U.S. Games Corporation, Henry Will IV) (VC2002) .bin

COPYRIGHT 1982 US GAMES CORP.

Nightmare (1983) (Sancho - Tang's Electronic Co.) (TEC004).bin
Nightmare (CCE).bin
BALL-NTSC2.2.OBJ4 BALL-NTSC2.2
BALL-NTSC2.2


lives

World End (2600 Screen Search Console) (Jone Yuan Telephonic Enterprise Co).bin

PAGE
ZERO-PAL1.1

3.3 b + 32

Text encoded this way would effectively have had control characters (including newline and tab, amongst others) removed from the ASCII set, making space the value 0.
Bugs (Paddle) (1982) (Data Age) (DA1005) `.bin

ORMAT
ARTRID
PLICATE

These appear to be fragments of “format”, “cartridge”, and “duplicate”.

Encounter at L-5 (Megalon Invasion) (Paddle) (1982) (Data Age) (DA1001) `.bin

UPPLICATE FILE H. WRITE DOS FILES

Tempest (01-05-1984) (Atari, Carla Meninsky) (CX2687) (Prototype) `.bin

COPIED CFE SERVICES HARDIE

3.4 b + 49

CompuMate (1983) (Spectravideo) (SV-010) `.bin

COMPUMATE["'CH2'"'CH3'"

3.5 b + 133

BASIC Programming (Keyboard Controller) (1979) (Atari, Warren Robinett) (CX2620) `.bin

wSTATUS
PROGRAM
STACK
VARIABLES
OUTPUT
GRAPHICS
SYMBOLS
SPEED

These can be matched up with the strings shown onscreen [1].

4 Limitations

It is possible that some strings may have been overlooked, due to limitations of computer filtering or failures of human analysis. Especially unusual string encodings with no mapping to ASCII would not necessarily have been revealed by this survey either.

Acknowledgment

John Szczepaniak asked the question that indirectly led to this work.

References
