

PICO-8 Cheat Sheet

PICO-8
v0.2.7

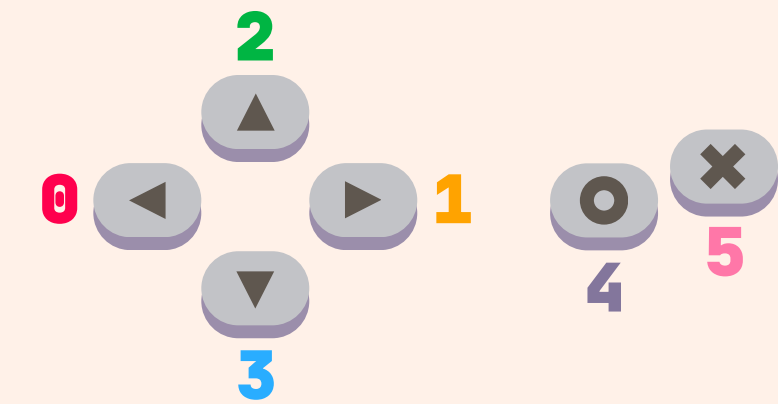
PICO-8 Resources: <https://www.lexaloffle.com/pico-8.php?page=resources>

By @Liquidream - v1.6
Inspired by @LightBWK's

SPECIFICATIONS

Display: 128x128,16-cols
Input: 6-Button controllers
Carts: 32k data enc.PNG files
Sound: 4-channel,64 chip blerps
Code: Lua subset
(Max 8192 code tokens)
CPU: 8MHz,4M lua vm insts/sec
Sprite:1 bank of 128 8x8 SPR's
(+ 128 shared)
Map: 128x32 Tilemap
(+ 128x32 shared)

CONTROLS



P1:◀▶▲▼ Z,X | C,V | N,M
P2:S,F,E,D LSHIFT,A | TAB,Q
PAUSE: P/ENTER
BTN([I],[P])
BTNP([I],[P])

COMMAND LINE

HELP
SAVE <FILENAME>.P8 /.PNG
LOAD <FILENAME>.P8
RUN([PARAM]) IMPORT S.PNG
S/SPLORE EXPORT X.BIN/X.HTML
FOLDER MKDIR <DIR_NAME>
LS([DIR]) CD CLS INFO
SHUTDOWN REBOOT
SAVE/LOAD("@CLIP")
SAVE("@URL") -- P8 EDU URL
EXTCMD(CMD_STR,[P1],[P2])

FUNCTIONS

FUNCTION SUM(A,B) -- DECLARE
RETURN A+B -- RETURN VALUE
END

PROGRAM STRUCTURE

_INIT() -- 1X ON STARTUP
_UPDATE() -- UPDATE @ 30FPS
_UPDATE60() -- UPDATE @ 60FPS
_DRAW() -- 1X/VISIBLE FRAME

#INCLUDE <FILE_NAME>.LUA
#INCLUDE ONETAB.P8:1
#INCLUDE ALLTABS.P8

COMMENTS & TYPES

-- THIS IS A COMMENT
--[THIS IS A MULTI-
LINE COMMENT]]
0=NIL N=23 -- GLOBAL SCOPE
LOCAL S="TEXT"-- LOCAL SCOPE

TABLES

T={1,2,3,4} T={A="X",B=1}
ADD(T,VAL,[I]) DEL(T,VAL)
DEL(T,[I])
PRINT(T[1]) -- 1-BASED
#T/COUNT(T[,VAL])
ALL(T) FOREACH(T,F)
PAIRS(T) IPAIRS(T)
T=PACK(...)
A,B,C=UNPACK(T,[I],[J])

FLOW CONTROL

::LABEL:: -- LABEL
GOTO LABEL -- JUMP
IF (TRUE) CLS() -- INLINE IF
IF <CONDITION> THEN
-- IF BLOCK
ELSEIF <CONDITION> THEN
-- ELSEIF BLOCK
ELSE
-- ELSE BLOCK
END
WHILE <CONDITION> DO
-- WHILE BLOCK
BREAK -- EXIT LOOP EARLY
END
REPEAT
-- REPEAT BLOCK
UNTIL <CONDITION>

FOR I=1,10 DO
-- COUNT UP
-- (DOWN:FOR I=10,0,-1 DO)
END
FOR V IN ALL(T) DO
-- TABLE/ARRAY
END
FOR K,V IN PAIRS(T) DO
-- TABLE: T[K]=V
END

OPERATORS

+ - * / ^ % =
+= -= *= /= ^= %=
< > <= >= == ~= !=
#LIST "A".."B"
AND OR NOT

SHORTCUTS

-- COMMON
ALT+ENTER Fullscreen
CTRL+R Reload/Run
CTRL+S Quick-Save
CTRL+M Mute/Unmute
ENTER/P Pause Menu
ESC Console/Editor
CTRL+6 Save Screenshot
CTRL+7 Save Label Image
CTRL+8 Start GIF/video
CTRL+9 Save GIF/video
CTRL+P Toggle CPU Meter

-- CODE EDITOR
CTRL+X,C,V Cut,Copy,Paste
CTRL+Z,Y Undo,Redo
CTRL+F Search
CTRL+G Next Result
CTRL+H Next Res(all tabs)
CTRL+L Jump to Line No.
CTRL+▲,▼ Jump Start,End
ALT+▲,▼ Prev,Next Func()
CTRL+◀,▶ Jump Word
CTRL+W,E Start,End Line
CTRL+D Duplicate Line
TAB Indent Selection
SHIFT+TAB Un-indent Sel.
CTRL+B Un/Comment Block
CTRL+U HELP for keyword
SHIFT+L,R,U,D,O,X:

CTRL+J Hiragana
CTRL+K Katakana
CTRL+P Puny Font
CTRL+TAB Next Tab
" +SHIFT Prev Tab

-- SPRITE/MAP EDITOR
SPACE Pan view
TAB Fullscreen
Mousewheel Zoom
SHIFT+,. Zoom In/Out
F,V Flip Y,X
R Rotate
▲,▼,◀,▶ Move
S Select

-- DRAW TOOL
CTRL+LMB Replace Col
RMB Grab Col
CTRL+G Toggle Gridlines

-- SFX/MUSIC EDITOR
SPACE Play/Pause
SHIFT+LMB Set all notes
◀,▶ Modify speed
+,- Prev/Next Pattern
a Release Loop

COL PALETTES



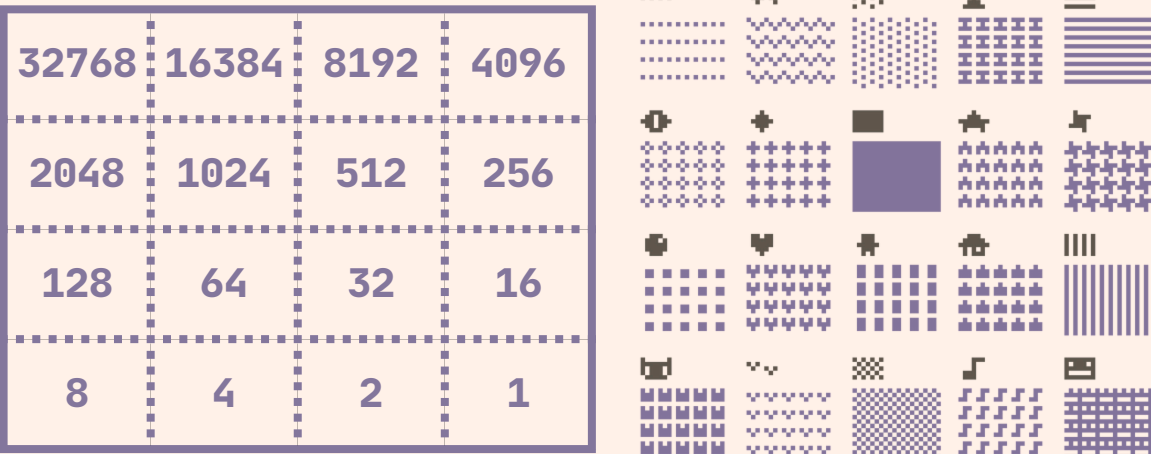
PAL(C0,C1,[P]) --P:0=DRAW
PAL(TABLE,[P]) 1=DISP
PALT(COL,[TRANS?]) 2=2ND PAL

SCREEN

CAMERA([X,Y])
CLS([COL])
COLOR([COL])
PGET(X,Y)
PSET(X,Y,[COL])
FLIP()
CLIP([X,Y,W,H,CLIP_PREV])

SHAPES

CIRC(X,Y,R,[COL])
CIRCFILL(X,Y,R,[COL])
LINE(X0,Y0,X1,Y1,[COL])
OVAL(X0,Y0,X1,Y1,[COL])
OVALFILL(X0,Y0,X1,Y1,[COL])
RECT(X0,Y0,X1,Y1,[COL])
RECTFILL(X0,Y0,X1,Y1,[COL])
RRECT(X,Y,W,H,R,[COL])
RRECTFILL(X,Y,W,H,R,[COL])
FILLP([MASK])



SPRITES

SPR(N,X,Y,[W,H,FLIP_X,FLIP_Y])
SSPR(SX,SY,SW,SH,DX,DY,
[DW,DH,FLIP_X,FLIP_Y])
SGET(X,Y) SSET(X,Y,[COL])
FGET(N,[F]) FSET(N,[F],V)

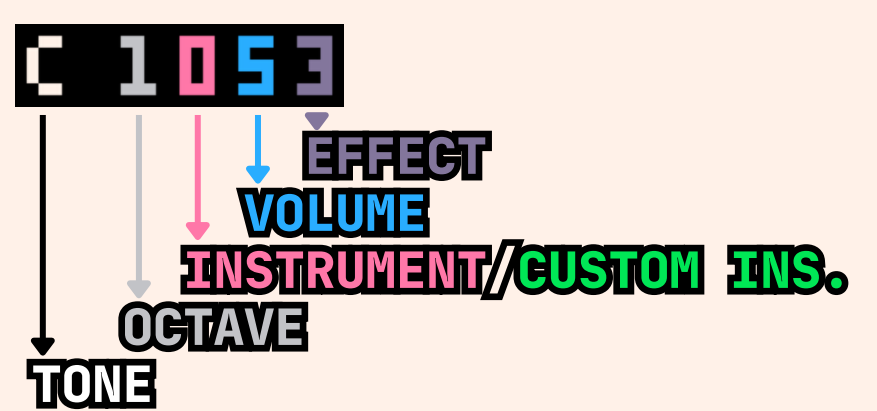
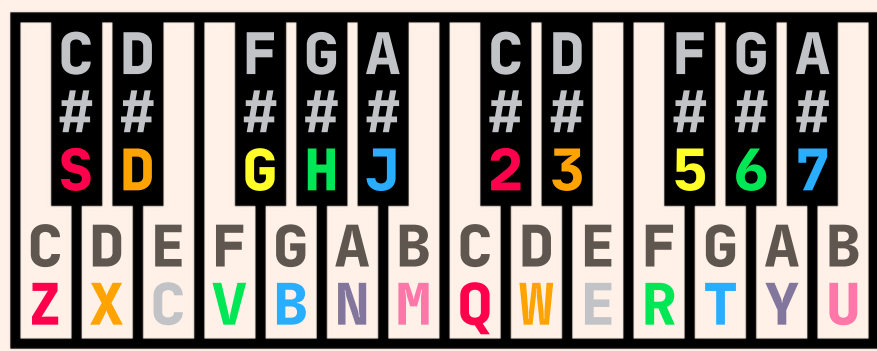
MAP

MAP(TILE_X,TILE_Y,[SX,SY],
[TILE_W,TILE_H],[LAYERS])
MGET(X,Y)
MSET(X,Y,VAL)
TLINE(X0,Y0,X1,Y1,MX,MY,MDX,
[MDY],[LAYERS])

AUDIO

SFX(N,[CH],[OFFSET],[LEN])
MUSIC([N,[FADE,[MASK]]])

TRACKER



--INSTRUMENT --EFFECT
0 Triangle 0 None
1 Tilt.Saw 1 Slide
2 Saw 2 Vibrato
3 Square 3 Drop
4 Pulse 4 Fade In
5 Organ 5 Fade Out
6 Noise 6 Arp Fast
7 Phaser 7 Arp Slow

MATH

-- NUMERIC RANGE
-32768.0 .. 32767.99

MAX(X,Y)
MIN(X,Y)
MID(X,Y,Z)
FLR(X)
CEIL(X)

COS(X)
SIN(X)
ATAN2(DX,DY)

SQRT(X)
ABS(X)
RND(X) -- 0 <= N < X
SRAND(X) -- SET RND SEED
SGN(X) -- -1 OR 1

-- FUNC -- OPERATOR
BAND(X,Y) &
BOR(X,Y) |
BXOR(X,Y) ^^
BNOT(X) ~
SHL(X,N) <<
SHR(X,N) >>
LSHR(X,N) >>>
ROTL(X,N) <<<
ROTR(X,N) >>>

STRINGS & GLYPHS

S="HELLO" S=[[HELLO
MULTILINE]]
PRINT(S,[X,Y,COL])
?S,[X,Y,COL] -- SHORTHAND
#S -- LENGTH
"STR"..S -- CONCAT
CHR(VAL0,VAL1,...)
ORD(STR,[POS],[LEN])
SPLIT(STR,[SEP],[TO_NUM])
SUB(STR,POS0,[POS1])
TOSTR(VAL,[FLAGS])
TONUM(VAL,[FLAGS])
TYPE(VAL)



A ■ = 0.5 N ♪ = -25792.5
B ☒ = 23130.5 O ☐ = 4
C ☒ = 20767.5 P ♣ = -20032.5
D ☐ = 3 Q ⋯ = -2560.5
E ☐ = 32125.5 R ☐ = 1
F ♣ = -18402.5 S ♠ = -20128.5
G ☐ = -1632.5 T ⚙ = 6943.5
H ♣ = 20927.5 U ☐ = 2
I ☐ = -19008.5 V ♡ = -2624.5
J ♠ = -26208.5 W ♡ = 31455.5
K ♠ = -20192.5 X ☒ = 5
L ☐ = 0 Y ≡ = 3855.5
M ☒ = -24351.5 Z |||| = 21845.5

CARTRIDGE DATA

-- GAME SAVES
CARTDATA("ID")
DGET(I) -- 0..63
DSET(I,VAL)

SYSTEM FLAGS

POKE(0x5F2D,FLAGS)
-- DEVKIT MODE FLAGS:
0x1 Enable
0x2 Mouse buttons>btn()
0x4 Pointer lock
POKE(0x5F5C,D)--BTNP 1X DELAY
POKE(0x5F5D,D)-- REPEAT DELAY
POKE(0x5F34,1)--INT.FILLP
POKE(0x5F34,0x2)--INVERT DRAW
POKE(0x5F36,0x8)--DRAW SPR 0

RAM MEMORY LAYOUT

0X0 GFX
0X1000 GFX2/Map2 (Shared)
0X2000 Map
0X3000 GFX Flags
0X3100 Song
0X3200 SFX
0X4300 User Data
0X5600 Custom Font (If def.)
0X5E00 Persistent Cart Data
0X5F00 Draw State
0X5F40 Hardware State
0X5F80 GPIO Pins (128 Bytes)
0X6000 Screen Data (8K)
0x8000 User Data

MEMORY FUNCTIONS

CSTORE(DEST,SRC,LEN,[FILENAME])
MEMCPY(DEST_ADDR,SRC_ADDR,LEN)
MEMSET(DEST_ADDR,VAL,LEN)
RELOAD(DEST,SRC,LEN,[FILENAME])
POKE(ADDR,VAL1[,VAL2,...])
PEEK(ADDR,[N]) -- @ADDR
PEEK2(ADDR) -- %ADDR
POKE2(ADDR,VAL)
PEEK4(ADDR) -- \$ADDR
POKE4(ADDR,VAL)
SERIAL(CH,ADDR,LEN)

COROUTINES

C=COCREATE(FUNC)
CORESUME(C,[...]) COSTATUS(C)
YIELD()

SYSTEM & DEBUG

TIME()/T()
MENUITEM(INDEX,[LABEL],[FUNC])
ASSERT(CONDITION,[MESSAGE])
PRINTH(STR,[FILE],[O/W],[DESK])
STOP([MESSAGE])
RESUME() -- "."=Frame-by-Frame
TRACE([C],[MESSAGE],[SKIP])
STAT(X) -- Status of X:
0 Mem Usage 1 CPU Used
4 Clipboard 6 Param str
7 Curr fps 30 Keypress
31 Key char 32,33 Mouse X,Y
34 Mouse btns 36 Mouse Wheel
38,39 Rel.X,Y move (Req. 0x4)
46..49 Curr SFX (CH 0..3)
50..53 Curr Note (CH 0..3)
54 Patt.Idx 55 Patt.Played
56 Patt.Ticks 57 Music Playing
80..85 UTC Time (Y,M,D,H,M,S)
90..95 Local Time
100 Breadcrumb Label
110 Frame-by-Frame Mode