

PICO-8 Cheat Sheet

PICO-8  
v0.2.7

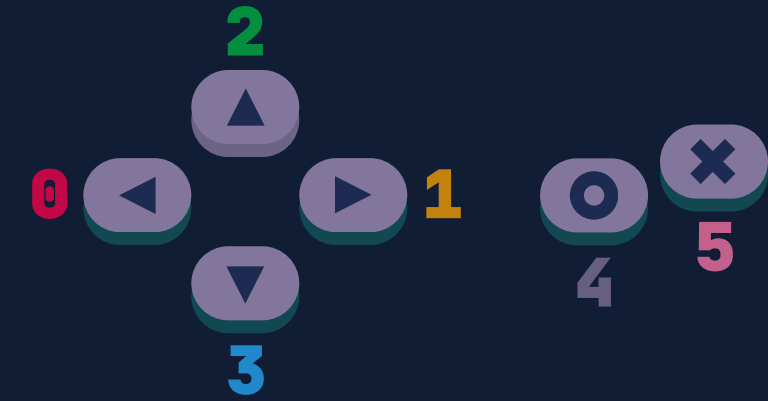
PICO-8 Resources: <https://www.lexaloffle.com/pico-8.php?page=resources>

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

SPECIFICATIONS

Display: 128x128,16-colors  
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:SFED 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 ]]  
O=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)  
DELI(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

REPEAT  
-- REPEAT BLOCK  
UNTIL <CONDITION>  
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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:  
○○○○○○○

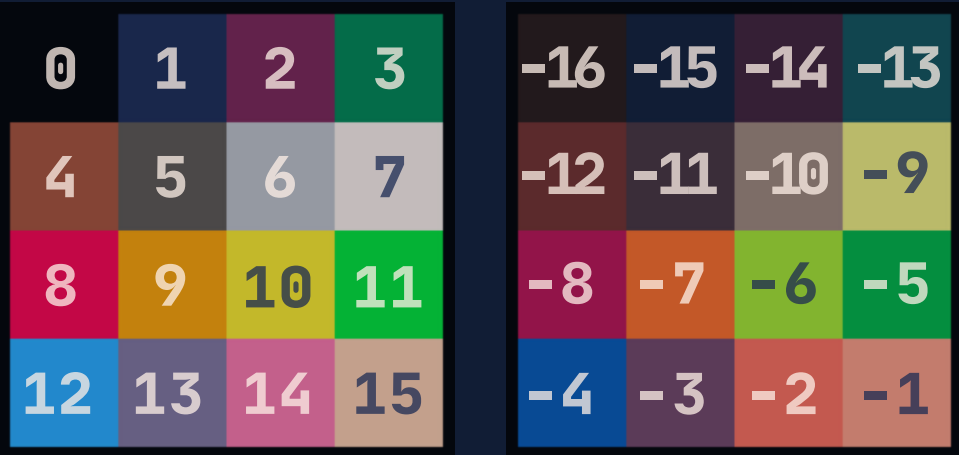
CTRL+J Hiragana  
CTRL+K Katakana  
CTRL+P Puny Font  
CTRL+TAB Next Tab  
" +SHIFT Prev Tab

-- 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

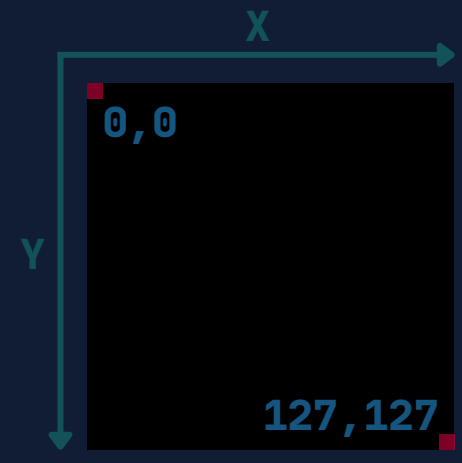
COL PALETTES



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

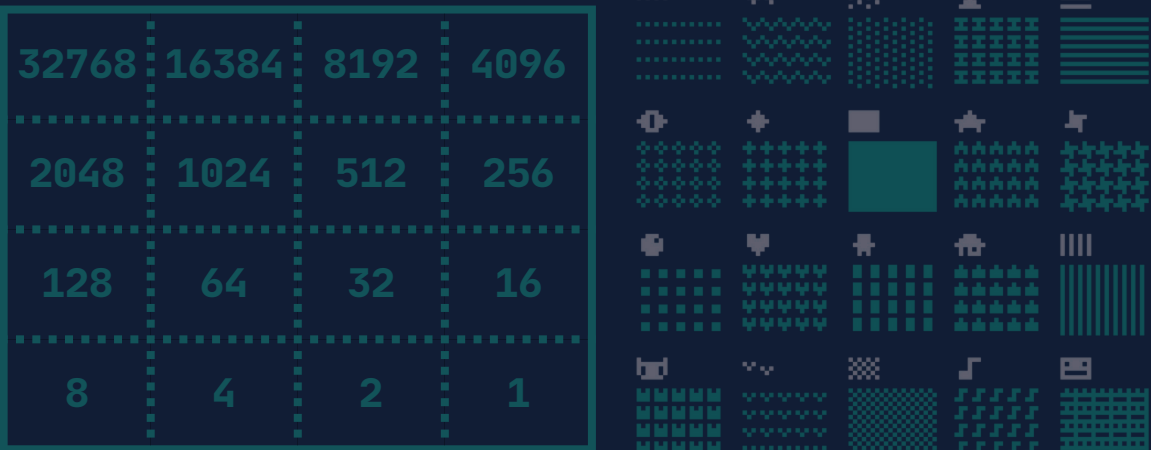
SCREEN

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)

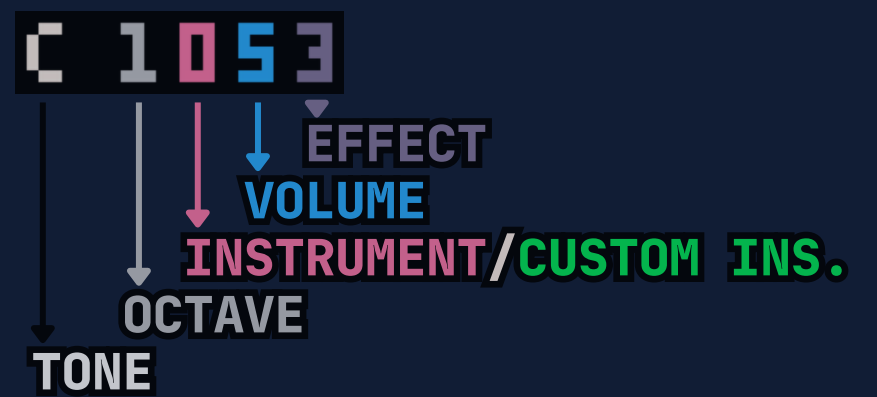
MAP

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

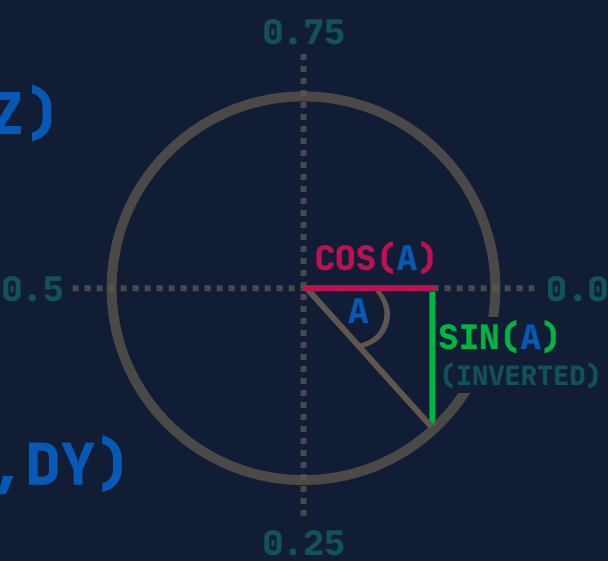
-- NUMERIC RANGE  
-32768.0 .. 32767.99

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

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

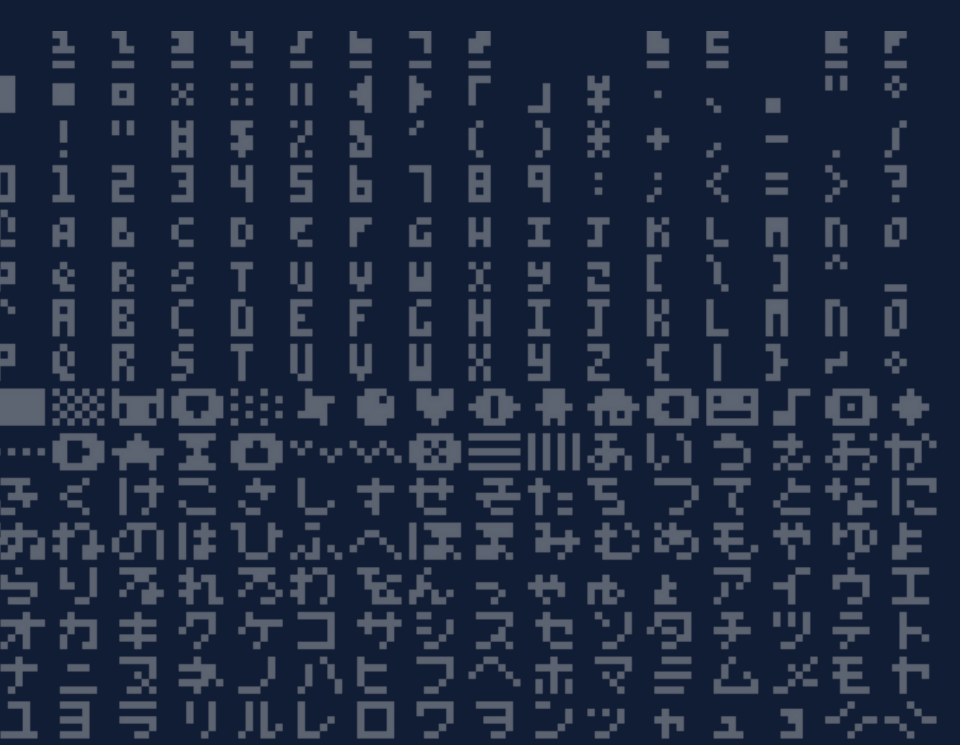
SQRT(X)  
ABS(X)  
RND(X) -- 0 <= N < X  
SRAND(X) -- SET RND SEED  
SGN(X) -- -1 OR 1

-- 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