

Project.....Zeda's Hex Opcode Compilation  
Program.....N/A  
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Size.....N/A  
Language.....English  
Programming.....Assembly :P  
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## Intro

Once upon a time, I was a BASIC programmer. Yep. The end. As a BASIC programmer, I liked to make games and math programs, naturally, but I soon came across an amazing thing... assembly opcodes. Pretty quickly, I realised something horrible. hex opcodes barely exist! Well after two and a half years, I finally learned assembly, but there is a catch. I learned the hex, not the actual assembly like most people. So what does that mean? That means for me to make all of my assembly programs--and you can check some samples on TICalc.org-- I need to make the opcode, so naturally I almost always include it and if I do not include it, I have it on my computer.

So here is what it really boils down to. My goal is to make a compilation of almost all of my opcodes that I have used or have come up with. So I guess here goes. Oh, and if you do not know how to input an opcode, check [this](#) video over on TIBD.

## Easy Assembly Opcodes

### Run Indicator Off

**EF0745C9**

This turns the run indicator off

### Run Indicator On

**EF6D45C9**

This turns the run indicator on

### Run Indicator Stop

**21028A3E01AE77C9**

This pauses the runindicator (stops it from moving).

### Clear Screen

**EF4045C9**

Clears the screen currently displayed. This only clears the LCD, not the screen buffer. In other words, if you run this from the homescreen, pressing [2nd][Mode] will restore the screen.

### Calc Off

**3E01D303C9**

Turns off the calc, but it doesn't exit the program. Too bad you have to press on to return.

### Screen On

**3E03D310C9**

Turns the screen on.

### Screen Off

**3E02D310C9**

Turns the screen off.

### Alpha Press Off

**21028A3E0FA677C9**

Cancels alpha if it has been pressed or simulated.

### Alpha Press On

**21028A3E50B677C9**

Simulates the alpha key being pressed once.

### Alpha Press Lock

**21028A3ED0B677C9**

Locks the alpha key. Use [2nd][Mode] to escape. In a program, if you want only capital letters used in an input, use this and then command 5 after the command (if you want).

### Lowercase Press On

**21028A3E30B677C9**

Simulates the alpha key being pressed twice. Lowercase does not need to be active to use this.

### Lowercase Press Lock

**21028A3EB0B677C9**

Locks lowercase key. Use [2nd][Mode] to escape. Lowercase does not need to be active to use this.

### Indicator Start/Stop

**21028A3E01AE77C9**

This does not remove the indicator, but it does stop it.

### Lowercase Off

**FDCB249EC9**

This deactivates lowercase typing.

## Lowercase On

**FDCB24DEC9**

This activates lowercase typing. Press Alpha twice.

## Lowercase (De)Activate

**21148A3E08AE77C9**

This will enable or disable lowercase access.

## Inverse Text Toggle

**21F5893E08AE77C9**

This turns inverse text on or off.

## Inverse Text On

**FDCB05DEC9**

Turns inverse text on.

## Inverse Text Off

**FDCB059EC9**

Turns inverse text off.

## Screen On/Off

**DB10CB6F3E0220013CD310C9**

Turns the screen on or off.

## Arch/Unarch (Program Rights)

**21F8893E02AE77C9**

There are some things that a program can't do, like archiving and unarchiving programs, that can be done on the homescreen. Likewise, there are things, like using a For( loop, that can be done in a program, but not on the home screen. This command tricks the calculator into thinking a program is the home screen and the home screen is a program. This command should be used to reset the rights, otherwise, you'll get an error. In other words, if you use it in a program, you need to use it again to tell the calc you are in a program!

## QuickKey 1

**3A3F84EF8C47EFBF4AC9**

This is kind of like getKey, except all of the keys will repeat without a delay.

Key is stored to Ans.

## QuickKey 2

**3A4584EF8C47EFBF4AC9**

Here, the last key press is returned, so even if you aren't pressing a key, a key press is returned. Useful for Pac-Man esque games :P

Key is stored to Ans.

### QuickKey 3

**3A4584EF8C473A3F84324584EFBF4AC9**

This first version detects the current key press and the second version detects the last key press. This version detects a key if it has been pressed between loops. This means that if you tap a key, even if the program isn't using a getkey yet, it will still register.

Key is stored in Ans.

### Smart Battery Check

**EF6F4C3D280A78FE1E**

**EF21521808**

**EFB3503E042001AF**

**EF8C47EFBF4AC9**

This is my BSA (Battery Status All) program. If you are running an 83+, a value of either 0 or 4 is stored in Ans. If you are using an 84+, a value from 0 to 4 is stored to Ans. 0 is the worst and 4 is the best. To be clear, 2 (meaning your batteries are okay) is a possible output if you are using an 84+.

### Free Ram

**EFE542EF9247EF5641EFBF4AC9**

The total free ram (minus the size of this program) is stored to Ans.

### Shift screen right

**2140930E40060CB7CB1E2310FB0D20F5C9**

This will shift the screen 1 pixel right.

### Shift screen left

**213F960E40060CB7CB162B10FB0D20F5C9**

This will shift the screen 1 pixel left.

### Shift screen up

**214C9311409301F402EDB0EB010C00EF304CC9**

This will shift the screen 1 pixel up.

### Shift screen down

**213396113F9601F402EDB823010C00EF304CC9**

This will shift the screen 1 pixel down.

### Increase Contrast

**2147847EC6D9D834D310C9**

This will increase the contrast slightly (unless it is at maximum).

### Decrease Contrast

**2147847E06D780B8D835D310C9**

This will decrease the contrast slightly (unless it is at minimum).

### Sleep Mode

**3E02D310EF72493E03D310C9**

This will turn the screen off, wait for a key press, and then turn the screen back on.

### Clear Home Screen

**EF4645C9**

This will leave the cursor in the same position, but the home screen will be cleared.

### Clear Disp

**EF5845C9**

This will move the cursor back to the start position.

### Graph→Screen

**214093063EEF7048C9**

This neat routine will put the graph screen image on the current screen.

### Screen→Graph

**214093EF7B4CC9**

This will put the current screen image on the graph screen.

### ClearHome

**2108853E2077110985018000EDB0C9**

This will clear the homescreen without actually displaying the home screen. Useful if you are using the graph screen for graphics or whatnot and you need to clear the home screen "behind the scenes."

### ClearGraph

**214093AF77114193010003EDB0EF6A48C9**

This will clear the screen (even of the axes and graph image) without telling the calc to update the screen (like ClrDraw). This also displays the graph screen.

### Disable "Done"

**FDCB00AEC9**

This removes the "Done" message when the program is finished.

### DispASCII

**EFD74AEFEF4AEF0445C9**

This will display an ASCII letter corresponding to the value in Ans.

## DispASCIIList

**EFD74A3DC0EB462323C5EF7A41E5EFEF4AEF0445E1C110F1C9**

This will output a string of ASCII chars using a list. For example:

```
:65+{7,4,11,11,14
```

```
:Asm(prgmDISP
```

That will display "HELLO" on the homescreen. If you change the 65 to 97, it will display "hello" on the homescreen.

# Complex Opcodes

These are opcodes that are longer and more involved than the previous opcodes.

## ListToVars1

;This uses a list to store to multiple variables. If the input is:

; :{0,4,3,12,8,24

; :Asm(prgmL2R

;Then the result will be:

; :A is 0

; :B is 4

; :C is 3

; :D is 12

; :E is 8

; :F is 24

;\*Bonus points to anybody who sees the pattern in that sequence

**EFD74AFE01C0**

**1AFE1B38023E1B**

**EB232347**

**3E41**

**C5F5E5F5**

**EFC541F1**

**327984**

**D73003EF0F43**

**E1010900EDB0**

**F13CC110E4**

**C9**

## ListToVars2

;Uses Str1 to name the vars, Ans for the list. If you do:

; : "ADCZQGB→Str1

; : {0,1,1,2,3,5,8

; : Asm(prgmL2V2

;Then result will be:

; :A is 0

; :D is 1

; :C is 1

; :Z is 2

; :Q is 3

; :G is 5

; :B is 8

**EFC5413EAA327984**

**D7300F**

**3E40061B21EC86**

**3C772310FB**

**11EA861313D5**

**EFD74AFE01C0**

**1AFE1B38023E1B**

**EB232347**

**D11A13D5**

**C5E5F5**

**EFC541F1**

**327984**

**D73003EF0F43**

**E1010900EDB0**

**C110E3**

**D1C9**



## ExecCode

```
;Deletes prgmU, then copies Ans to prgmU
;For example:
;      :Input "Code:"Str1
;      :Str1
;      :Asm(prgmEXECCODE
;This will automatically execute prgmU, whether the code is BASIC or assembly
EFD74A
FE04C0
215500          ;55 is the token for "U"
22EC86227984
21F086
EB4E234623
ED43EE86
EDB0
3E05327884
EFF142
3803EFC64F
3E0521EC86
EF3C4C
C9
```

## RepeatyKeys

```
;This lets all keys repeat...
;Super fast...
;Not really practical ;D
;Run the code again to deactivate
180A
83473A4584323F8478C9
2100807EFE83
2006AF77323F84C9
11979DEB018000EDB0
DB06210080EF664FC9
```

## FastKeys

```
;Keys that normally repeat repeat super fast...
1809
83473E0132428478C9
2100807EFE83
2006AF77323F84C9
11979DEB018000EDB0
DB06210080EF664FC9
```

## NumToString

;This will convert the integer part of a real number to a string in Ans. So if you convert -366.17 it will output "-366"

EFD74A

217984

11EC86

7EE60F

470448

2D7E07

3005

0C3EB0121C

2C

2CCDD19D052805CDD19D10F4

C5EF524BD7EFC64F

E1E5EF2743

C11313

21EC86

EDB0

C9

3E30ED6F121CC9

## MultiKeys2

;Returns a unique value for any one or two key presses. For example, [mode]+[del] at the same time will return 3191.

017F07210000545C

CB0179D301E5E1DB012FB720083E08856F10ED180E

C506082C0F30025C6510F8C110DD

7CB720016F

6C62

7BB7280A

444D2909290929292919

EF9247

EF5641

EFBF4A

C9

# Programs

If you don't have a cable to download programs, here are a few assembly programs that I have made. You can always check TICalc.org for more programs because I generally include the full opcode with the programs (I've only got about 50 asm programs on there :D) As it is, you will need to check TICalc for full documentation of the programs

## CopyProg

This will let you copy variables from RAM or archive to other variables using Ans and Str1 for names. You can even copy things like Pic1 to an Appvar or a program to a picture or whatever. It will even let you delete vars.

**EFD74AFE04C013131AFE712837**

**3EAA327984D7D878B7C0**

**EB4E234623C5**

**7EE61F77**

**117884**

**EDB0**

**AF12**

**EFF14278C1D8**

**EBD306**

**B728050901090009**

**4E234623**

**F5E5C5**

**3E07D306**

**EFD74AFE04**

**EB4E234623**

**7E**

**FE71F52003237E0D**

**E61F77**

**117884EDB0AF12**

**EFF1423803EFC64F**

**F1C8**

**E1E53A7884**

**EF704E1313**

**C1E1F1**

**EF5480**

**C9**

## **GetName**

This program returns the name of a var as well as the size and archive status. This is useful if you want to create a BASIC memory menu or something and especially useful when used with CopyProg.

**EFD74AB72006**  
**210500E51814**  
**1313EBE7E5**  
**EFEF4A**  
**EB29113D9E19**  
**5E2356**  
**E1D5E7**  
**EFEF4A424B**  
**3EFF327A84**  
**E122788403**  
**C5EF444AC1**  
**300A21FA00228E842E011805**  
**0B78B120EA**  
**EF524BD7**  
**EFC94F**  
**118E84210000**  
**1AC64012**  
**23131AB720FA**  
**EF2743**  
**EB4E234623**  
**118E84**  
**DB06F5C5**  
**EBEDB0**  
**EF3E41**  
**EFF142**  
**78C13008**  
**210000F601F51811**  
**EBD306**  
**B7F528050901090009**  
**5E235623EB**  
**EF9247**  
**F12807**  
**2187843E01B677**  
**F1D306**  
**EF5641**  
**EFC24A**  
**C9**  
**05001500**  
**160004FF**  
**07FF08FF**  
**170002FF**  
**03FF0000**  
**0C0001FF**

## BASIC Sprite

This will let you draw an 8x8 sprite using the speed of assembly. It uses a string in Ans as well as X and Y for coordinates.

**EFDA4AEFEF4A**

**626B**

**19192929E5**

**EFE04AEFEF4A**

**1693CBF3E119E5**

**EFD74AE1FE04C0**

**1313**

**010C08**

**CDCC9DCDCC9D780600094710F3**

**EF6A48**

**C9**

**1AC6C03002D607ED6F13C9**

## MultiPics

Lets you manage pictures (including hacked ones) such as storing, recalling (even from archive), archiving and unarchiving. This is directly from the uploaded file. I'm not sure if the mnemonics are correct, but I think they are.

```
bcall(_RclAns)      ;3   EFD74A
dec a               ;1   3D
ret nz              ;1   C0
inc de              ;1   13
inc de              ;1   13
ex de,hl            ;1   EB
rMov9toOP1          ;1   E7
push hl             ;1   E5
bcall(_ConvOP1)     ;3   EFEF4A
pop hl              ;1   E1
push af             ;1   F5
rMov9toOP1          ;1   E7
bcall(_ConvOP1)     ;3   EFEF4A
ld h,a              ;1   67
ld l,96             ;2   2E60
ld (OP1+1),hl       ;3   227984
xor a               ;1   AF
ld (OP1+3),a        ;3   327B84
pop af              ;1   F1
;=====
;This section is RecallPicX
;=====
or a                ;1   B7
jr nz,26            ;2   201A
rFindSym            ;1   D7
ret c               ;1   D8
ld a,b              ;1   78
inc de              ;1   13
inc de              ;1   13
ex de,hl            ;1   EB
or a                ;1   B7
jr z,4              ;2   2804
ld de,12            ;3   110C00
add hl,de           ;1   19
ld de,plotSScreen   ;3   114093
ld bc,768           ;3   010003
bcall(8054h)        ;3   EF5480
bcall(_GrBufCpy)    ;3   EF6A48
ret                 ;1   C9
;=====
;This section is StorePicX and DelPicX
;=====
cp 3                ;2   FE03
jr nc,33            ;2   3021
push af             ;1   F5
```

```

rFindSym          ;1    D7
jr c,3            ;2    3803
    bcall(_DelVarArc) ;3    EFC64F
pop af            ;1    F1
cp 2              ;2    FE02
ret z             ;1    C8
bcall(_CreatePict) ;3    EF3343
ex de,hl          ;1    EB
ld (hl),0         ;2    3600
inc hl            ;1    23
ld (hl),3         ;2    3603
inc hl            ;1    23
ex de,hl          ;1    EB
ld hl,12          ;4    210C00
bcall(_InsertMem) ;3    EFF742
ex de,hl          ;1    EB
bcall(_SaveDisp)  ;3    EF7B4C
ret               ;1    C9
;=====
;This section deals with the archive/unarchive commands
;=====
sub 3              ;2    D603
push af           ;1    F5
rFindSym          ;1    D7
jr nc,2           ;2    3002
    pop bc        ;1    C1
    ret           ;1    C9
ld a,b            ;1    78
or a               ;1    B7
jr z,1            ;2    2801
    inc a         ;1    3C
pop bc            ;1    C1
xor b             ;1    A8
ret z             ;1    C8
bcall(_Arc_Unarc) ;3    EFD84F
ret               ;1    C9

```