

Lab2:Convert decimal to hexadecimal

Algorithm Explanation

1. First, as long as get a number from input, you need to multiply the total obtained before by ten times , then add the number with the total.
2. Divide the total by 16 and take the remainder and the quotient.
3. Convert the obtained four separate decimal numbers to hexadecimal respectively, then output them.

Part of Code

```
;get decimal from input.
GETDEC  AND R2,R2,#0
        ADD R2,R2,#9    ;counter for loop.
        AND R4,R4,#0
        ADD R4,R4,R0
        GETC
        OUT
        ADD R0,R0,R3
        BRN GETHEX ;
MULTTEN  AND R5,R5,#0
        ADD R5,R5,R1
LOOP0    ADD R1,R1,R5
        ADD R2,R2,#-1
        BRZ LOOP1
        BR LOOP0
LOOP1    AND R2,R2,#0
        ADD R2,R2,#10
LOOP2    ADD R1,R1,R4
        ADD R2,R2,#-1
        BRZ GETDEC
        BR LOOP2
```

```
;convert decimal to hexadecimal
GETHEX  ADD R1,R1,R4
        STI R1,NUM
        LD R5,HEXNUM
        ADD R5,R5,#3    ;point to the last.
```

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AND R6,R6,#0
ADD R6,R6,#4
LD R7,DIV
AND R0,R0,#0
ADD R0,R0,#1
ADD R1,R1,R7
BRZP LOP1
ADD R1,R1,R7
AND R0,R0,#0
LOP1  AND R2,R2,#0
      ADD R2,R2,#-16
      AND R3,R3,#0;quotient
      AND R4,R4,#0;remainder
LOP2  ADD R1,R1,R2;R1=R1-8
      BRN STORE1
      ADD R3,R3,#1
      BR LOP2
STORE1 ADD R4,R4,R1;R4=R1
      AND R2,R2,#0
      ADD R2,R2,#15
      ADD R2,R2,#1
      ADD R4,R4,R2      ;
      STR R4,R5,#0      ;
      AND R1,R1,#0
      ADD R1,R1,R3      ;
      ADD R5,R5,#-1
      ADD R6,R6,#-1
      BRZ OUTPUT2
      BR LOP1

```

Q&A

Q:What's the main idea about your program?

A: (what I talked above)