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Recursion 2

Question 1:

Implement the following recursive algorithm on array:

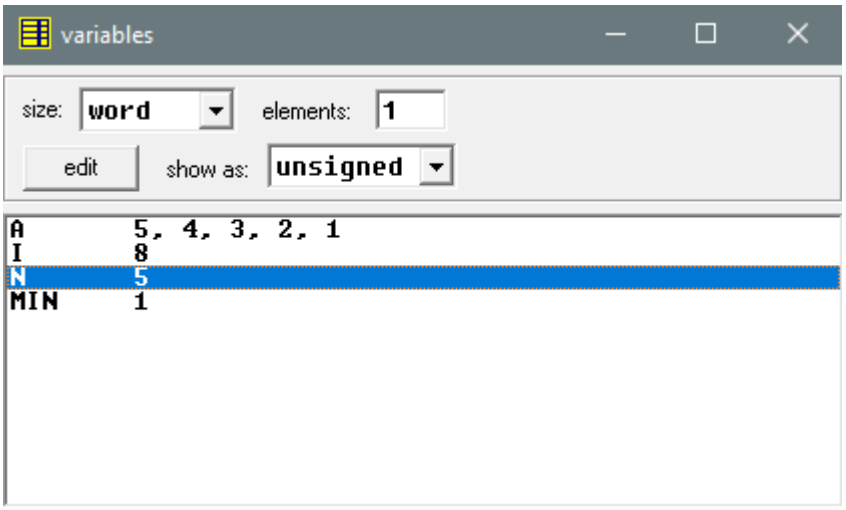
```
A       DW    78, 24, 45, 87
N       DW    5                    (Size of Array)
i       DW    0                    (Local Counter)

Minimum = FindMin (i) {                          // means that the functions
        if (i == N-1) {                             returns answer in minimum.
                return A[i]
        }
        else {
                Minimum = FindMin (i+1)
                Return (MIN (Minimum, A[i]) ) )  // return which ever is minimum of
        }                                           the two parameters.
}
```

Answer:

```
    ORG 100h

    .DATA

        A       DW  5, 4, 3, 2, 1        ; (Global) Array that holds terms
        I       DW  0                   ; (Local)  Array's index
        N       DW  5                   ; (Global) Number of terms remaining
        MIN     DW  0                   ; (Global) Holds minimum value

    .CODE

    MAIN PROC
```

```
    LEA SI, A
    PUSH 0
    CALL FINDMIN

RET
MAIN ENDP


FINDMIN PROC

    MOV BP, SP

    MOV BX, [BP+2]
    MOV DX, N
    ADD DX, N
    SUB DX, 2
    CMP BX, DX
    JNE AGAIN

    MOV BX, [BP+2]
    MOV DX, [SI+BX]
    MOV MIN, DX
    JMP EXIT

    AGAIN:  ADD I, 2
            PUSH I
            CALL FINDMIN

            MOV BP, SP
            MOV BX, [BP+2]
            MOV AX, [SI+BX]
            CMP MIN, AX
            JLE EXIT
            MOV MIN, AX


EXIT:
RET 2

FINDMIN ENDP
```

Output:


variables
size:
word
elements:
1
edit
show as:
unsigned
A 5, 4, 3, 2, 1
I 8
N 5
MIN 1