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# Recursion in Assembly

# Question 1:

# Write a code to calculate the terms of fibanocci sequence by recursion. From main, pass the required terms to the recursive procedure and assume:

# f(0) = 0

# f(1) = 1

# Take the terms as word variables.

# Answer:

|  |
| --- |
| ORG 100h |
|  |
| .DATA |
|  |
| SERIES  *DW*  0, 1, 8 DUP(0)      ; (Global) Array that holds terms of the series |
| TERM1   *DW*  0                   ; (Local)  N-2 term |
| TERM2   *DW*  0                   ; (Local)  N-1 term |
| N       *DW*  0                   ; (Local)  Number of terms remaining. |
| SIZE    *DW*  8                   ; (Global) Number of terms to be added in array. |
|  |
| .CODE |
|  |
| MAIN PROC |
|  |
| LEA SI, SERIES |
| ADD SI, 4 |
|  |
| PUSH SIZE                       ; 1. Passed Parameters from MAIN. |
| PUSH 0 |
| PUSH 1 |
|  |
| CALL FIBO                       ; 2. Called PROC. |
|  |
| RET |
| MAIN ENDP |
|  |
|  |
| FIBO PROC |
|  |
| MOV BP, SP |
|  |
| MOV AX, [BP+6]                  ; 3. Loaded First Parameter in PROC. |
| MOV N, AX |
| CMP N, 0                        ; 4. Checked Base Criteria. |
| JNE AGAIN |
|  |
| MOV AX, [BP+2] |
| MOV [SI], AX |
| JMP EXIT                        ; 5. RET if Fulfilled. |
|  |
| AGAIN:  DEC N |
| MOV BP, SP |
|  |
| MOV AX, [BP+2]          ; 8. Loaded Previously called Parameters. |
| MOV TERM2, AX |
| MOV BX, AX |
| MOV AX, [BP+4] |
| MOV TERM1, AX |
|  |
| MOV AX, TERM1 |
| ADD AX, TERM2 |
|  |
| MOV TERM1, BX |
| MOV TERM2, AX |
|  |
| MOV [SI], AX |
| ADD SI, 2 |
|  |
| PUSH N                  ; 6. Prepared Parameters for next Call. |
| PUSH TERM1 |
| PUSH TERM2 |
| CALL FIBO               ; 7. Called Again. |
|  |
| EXIT:                               ; 9. Processed and Exit. |
| RET 6 |
|  |
| FIBO ENDP |

# Output:

