EXPLORER

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OUTLINE

TIMELINE

finalproject > atoi.asm

```
1   global _atoi
2
3   section .text
4   _atoi:
5       ; RDI = pointer to null-terminated input string
6       ; returns result in RAX register
7
8       xor rax, rax        ; clear register for result
9       xor rcx, rcx        ; clear counter
10
11  .next_char:
12      mov cl, byte [rdi]  ; load current character, one byte, into cl register
13      cmp cl, 10          ; if newline, end of string
14      je .done            ; end of string
15
16      cmp cl, 0           ; if null terminator, end of string
17      je .done            ; end of string
18
19      cmp cl, '0'         ; check if character is below '0'
20      jb .done            ; if below '0', not a digit, done
21
22      cmp cl, '9'         ; check if character is above '9'
23      ja .done            ; if above '9', not a digit, done
24
25
26      sub cl, '0'         ; convert ASCII to integer digit (0-9)
27      imul rax, rax, 10   ; rax = rax * 10
28      add rax, rcx        ; rax = rax + digit (cl is zero-extended in rcx)
29      inc rdi             ; move to next character
30      jmp .next_char      ; repeat loop
31
32  .done:
33      ret                 ; return with result in RAX
34
35
```