```
mov rax, 4
                            (right (pair 1 (pair 2 (pair 3 false))))
                                                                                     The heap:
mov [rsp + -8], rax
mov rax, 8
                                          Registers:
                                                                        2000
mov [rsp + -16], rax
mov rax, 12
                                    rax
                                                                        2008
mov [rsp + -24], rax
mov rax, 31
                                                                        2016
                                    r8
mov r8, [rsp + -24]
                                                                       2024
mov [rdi + 0], r8
mov [rdi + 8], rax
                                    rdi 0
                                                                        2032
mov rax, rdi
or rax, 2
                                                                        2040
                                    Tasks:
add rdi, 16
                                    (1) Run through the assembly at the
                                                                        2048
mov r8, [rsp + -16]
                                      left, updating registers, heap,
mov [rdi + 0], r8
                                                                        2056
                                      and stack as needed.
mov [rdi + 8], rax
                                    (2) Assuming mark-and-sweep GC
mov rax, rdi
                                                                                    The stack:
                                      begins right after the last
or rax, 2
                                      instruction at the left, what will
add rdi, 16
                                                                    rsp - 24
                                      be the roots of GC?
mov r8, [rsp + -8]
mov [rdi + 0], r8
                                                                    rsp - 16
mov [rdi + 8], rax
                                                                    rsp - 8
mov rax, rdi
                                    (3) Now execute GC manually.
or rax, 2
                                      What memory will be marked?
                                                                            <return address>
                                                                       rsp
                                      In the sweep, what memory will
add rdi, 16
                                      be freed? (Mark on diagram.)
mov rax, [rax + 6]
```