

# Linux x86\_64 Paging

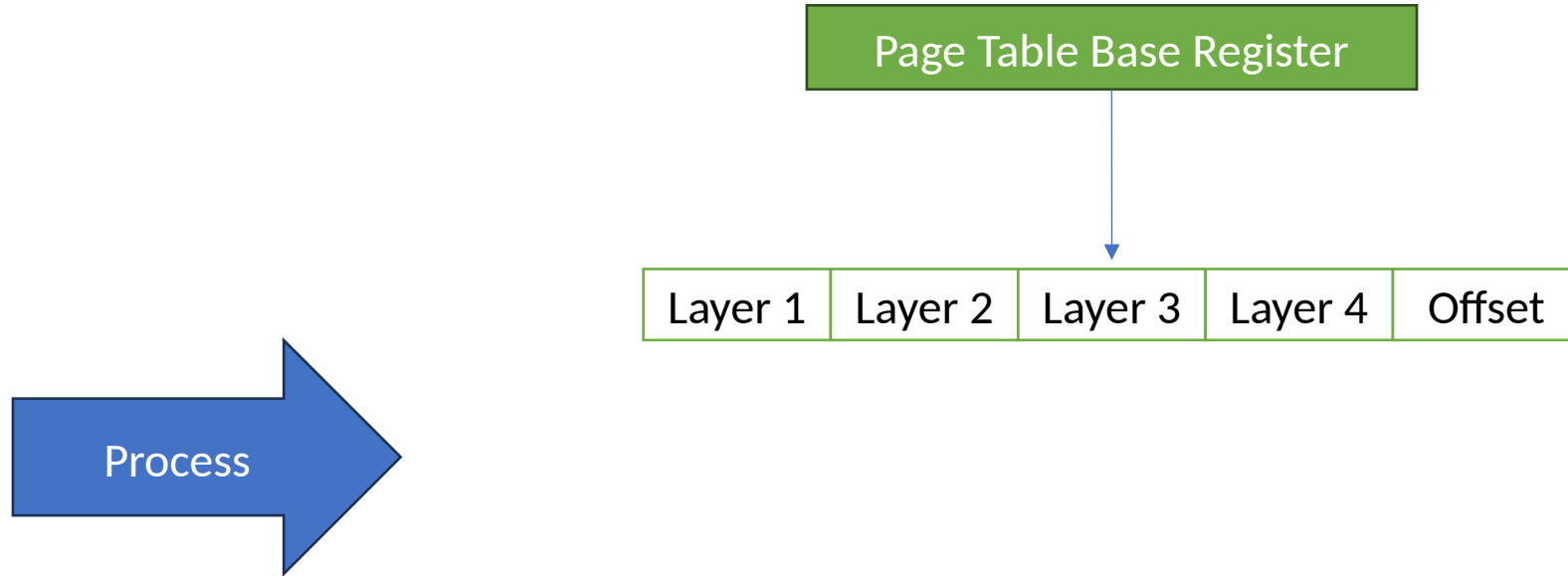
# What are pages?

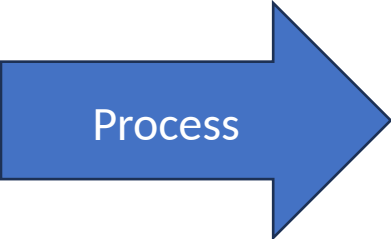
- Chunks of virtual memory assigned a frame (chunk of physical memory of the same size)
- Pages allow noncontiguous memory allocation
- Page/frame size between 512 bytes and 16 Mbytes
  - x86\_64 Linux kernel uses 4096 bytes per page
  - Each page entry is 512 bytes
    - 8 entries per page

# Linux x86\_64

- 4096 bytes
- 512 Bytes x 8 Entries
- Heirarchical
  - 4 level
    - 40 bit userspace
  - 5 level introduced
    - 56 bit userspace

# How Do Linux x86\_64 Releases Handle Paging?

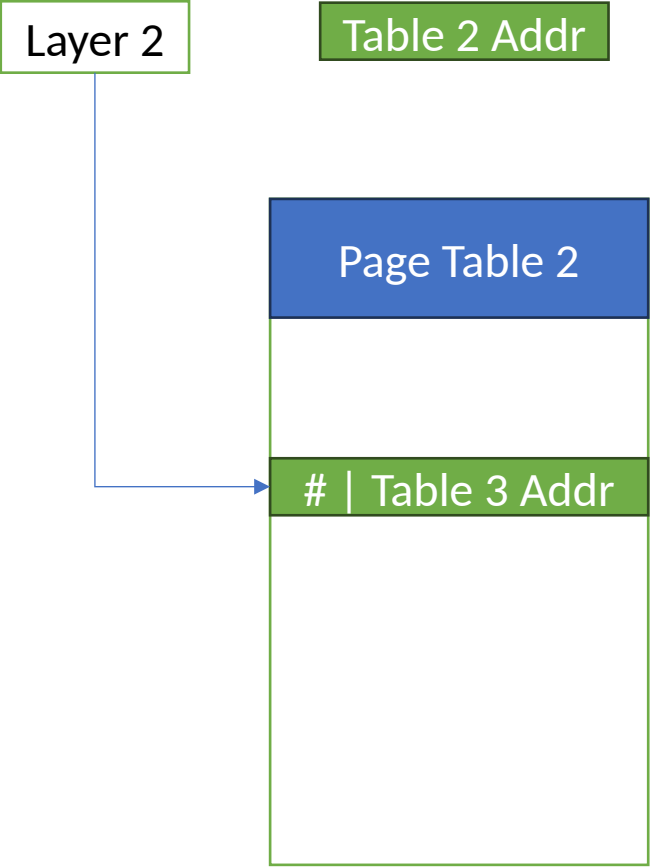
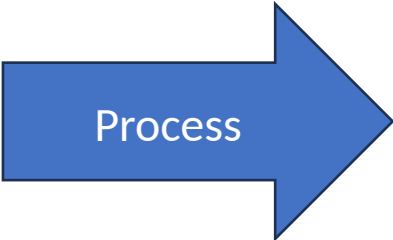


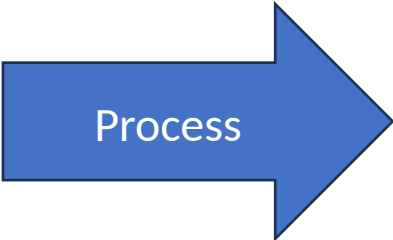


Layer 1

Table 1 Addr

Page Table 1	
#	Table 2 Addr

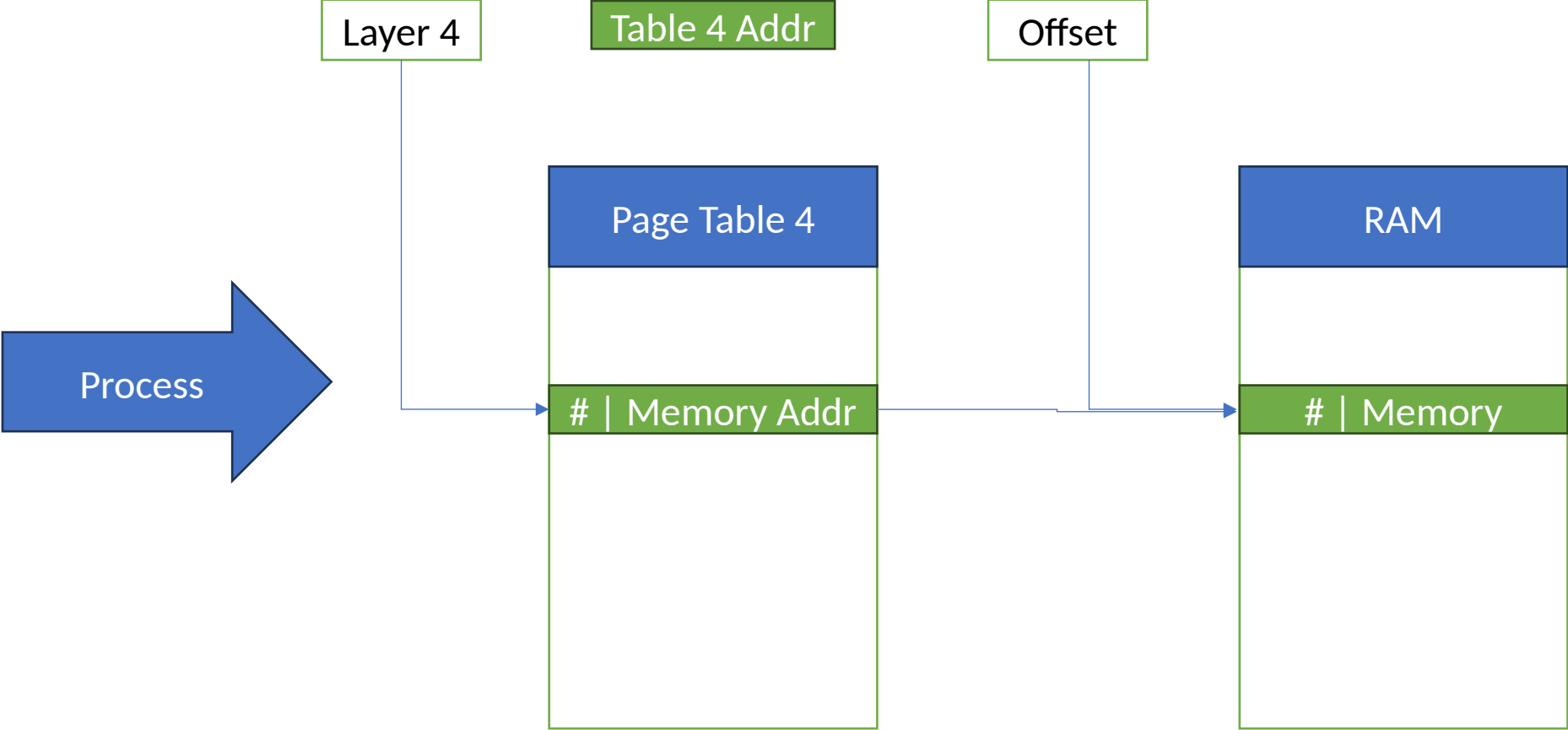




Layer 3

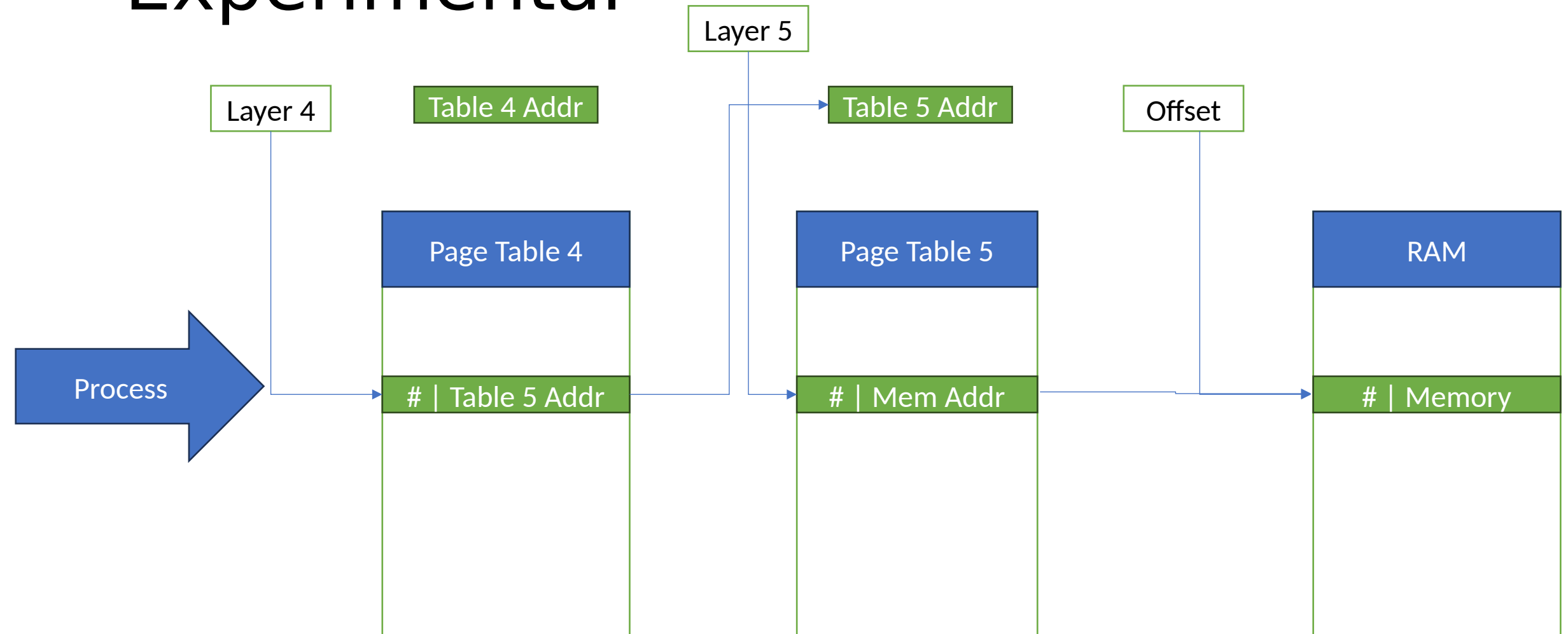
Table 3 Addr

Page Table 3	
#	Table 4 Addr





# Experimental



# How does Linux allocate pages?

- Demand paging
  - Record of free frames
- Global page-replacement
  - Similar to LRU-approximation
- Two lists:
  - active\_list
    - Record of pages in use
    - “accessed” bit
  - Inactive\_list
    - Record of pages not in use
- kswapd

