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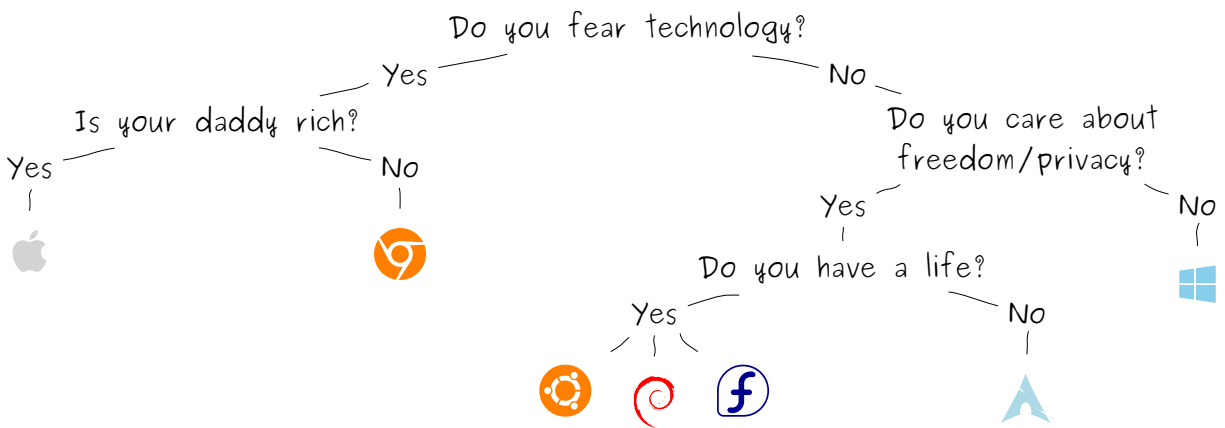


Fig. 1: Choosing an OS

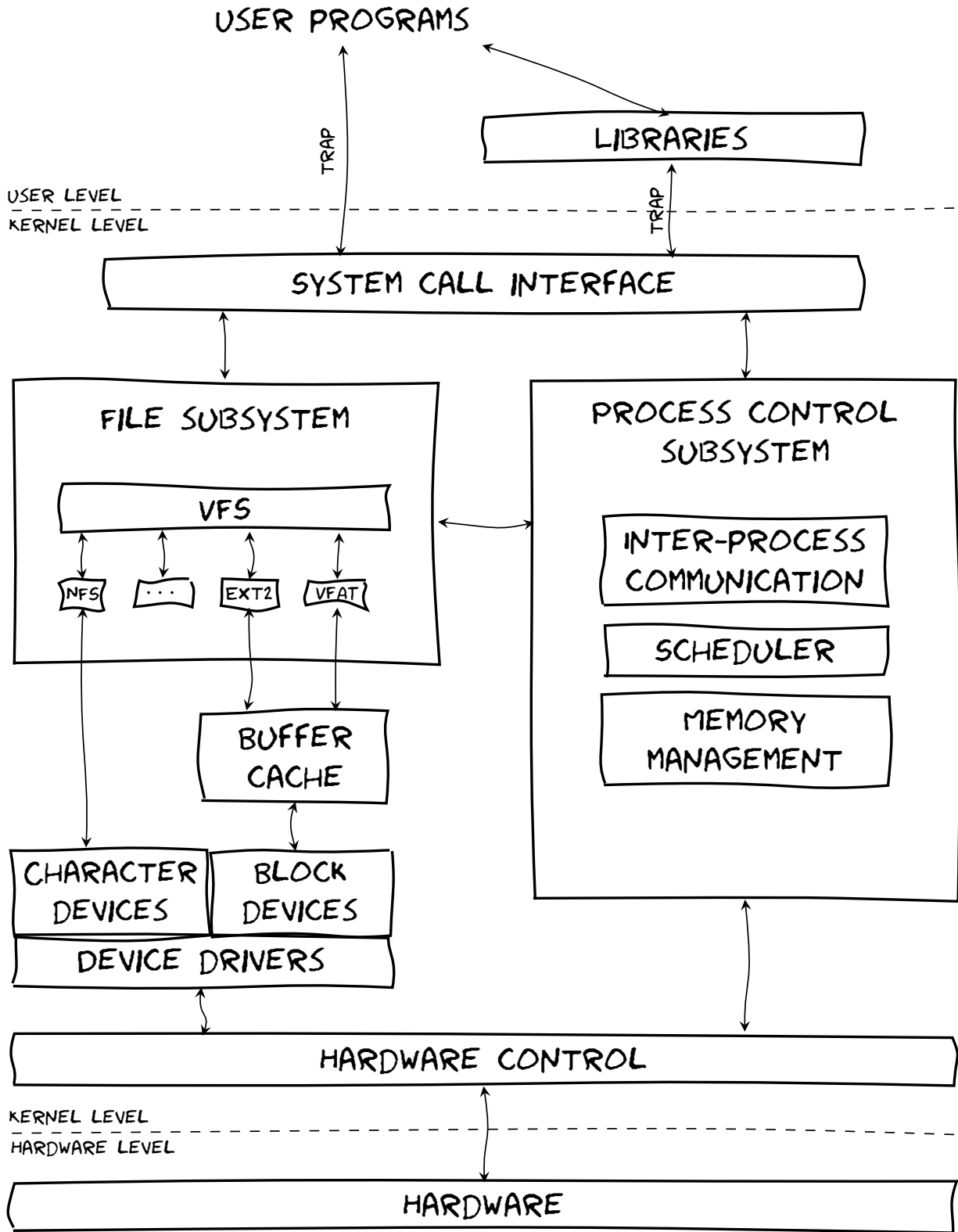


Fig. 2: OS overview

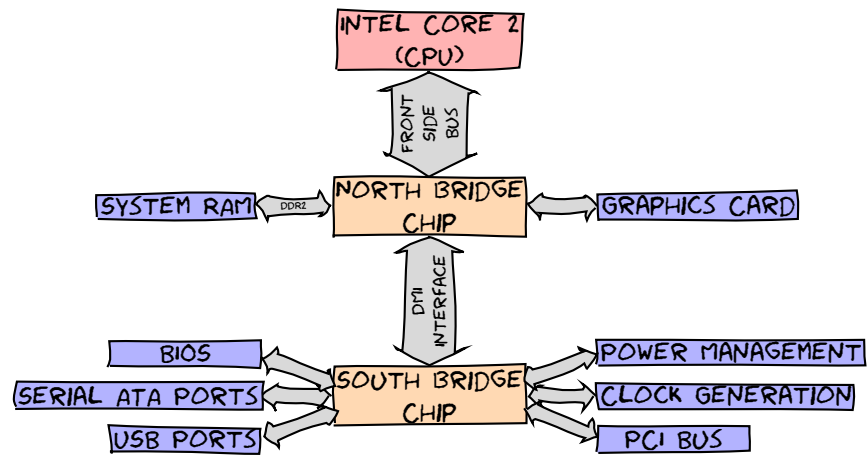


Fig. 3: Motherboard chipsets

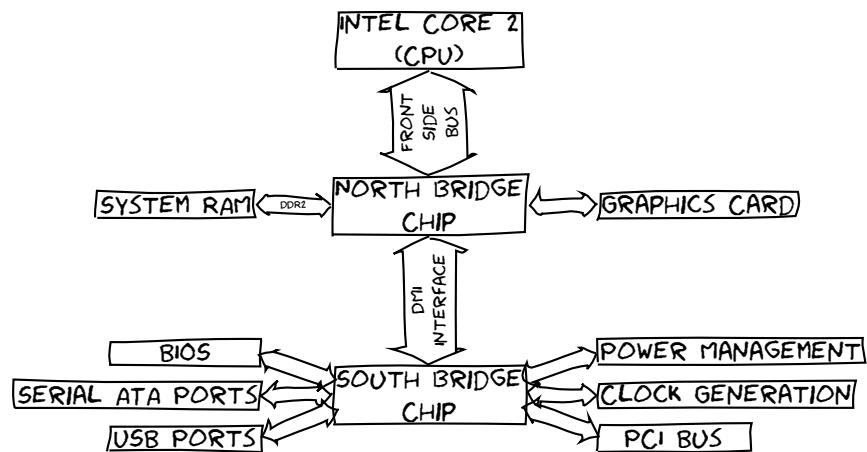


Fig. 4: Motherboard chipsets (bw version)

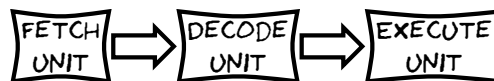


Fig. 5: CPU's working cycle

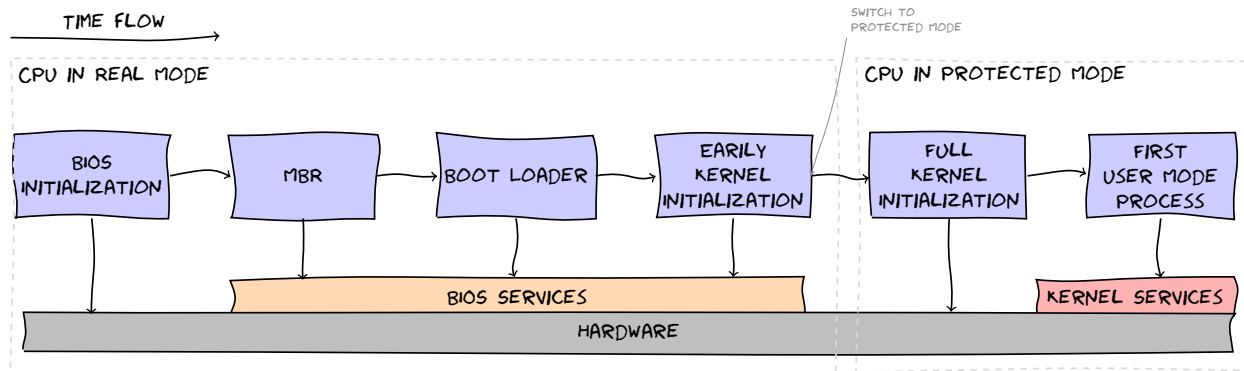


Fig. 6: Bootstrapping

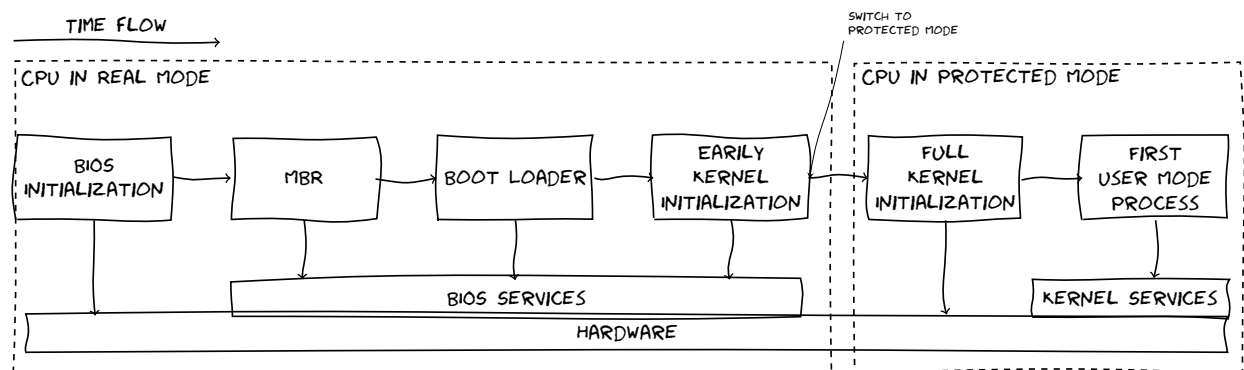


Fig. 7: Bootstrapping (bw version)

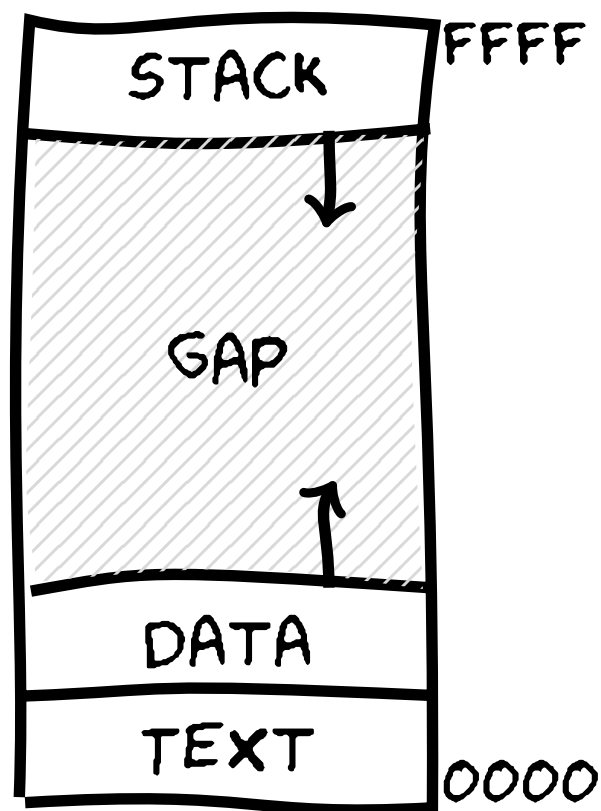
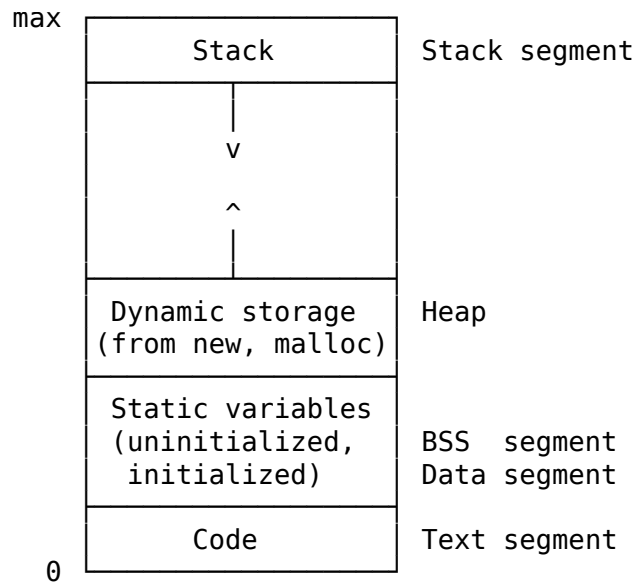


Fig. 8: Process' virtual address space



THE SIZE OF A PROCESS  
(TEXT + DATA + BSS) IS  
ESTABLISHED AT COMPILE TIME

Fig. 9: UNIX view of a process

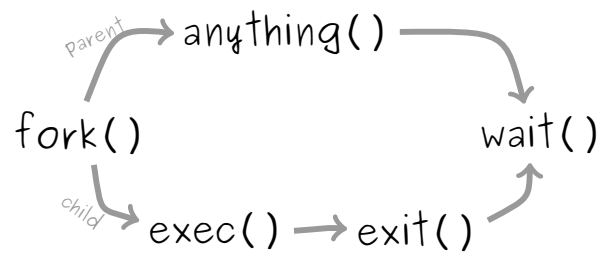


Fig. 10: Process creation

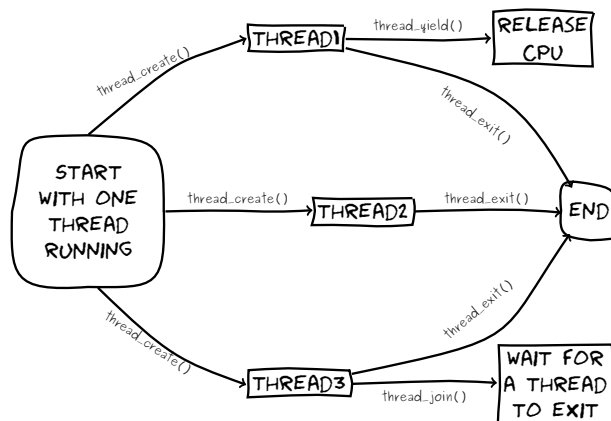


Fig. 11: Thread operations



<pre> typedef int semaphore;     semaphore resource_1;     semaphore resource_2;      void process_A(void) {         down(&amp;resource_1);         down(&amp;resource_2);         use_both_resources( );         up(&amp;resource_2);         up(&amp;resource_1);     }      void process_B(void) {         down(&amp;resource_1);         down(&amp;resource_2);         use_both_resources( );         up(&amp;resource_2);         up(&amp;resource_1);     } </pre>	<pre> semaphore resource_1; semaphore resource_2;  void process_A(void) {     down(&amp;resource_1);     down(&amp;resource_2);     use_both_resources( );     up(&amp;resource_2);     up(&amp;resource_1); }  void process_B(void) {     down(&amp;resource_2);     down(&amp;resource_1);     use_both_resources( );     up(&amp;resource_1);     up(&amp;resource_2); } </pre>
(a)	(b)

Fig. 12: Deadlock — Resource issues

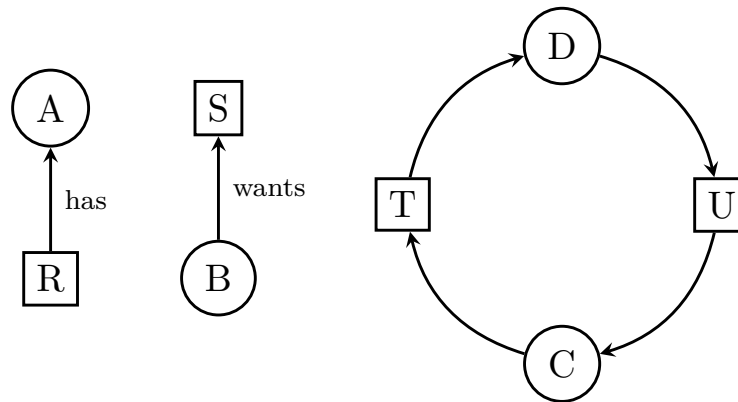


Fig. 13: Deadlock notions

Has Max		
A	0	6
B	0	5
C	0	4
D	0	7

Free: 10

(a)

Has Max		
A	1	6
B	1	5
C	2	4
D	4	7

Free: 2

(b)

Has Max		
A	1	6
B	2	5
C	2	4
D	4	7

Free: 1

(c)

Fig. 14: Deadlock — Banker algorithm

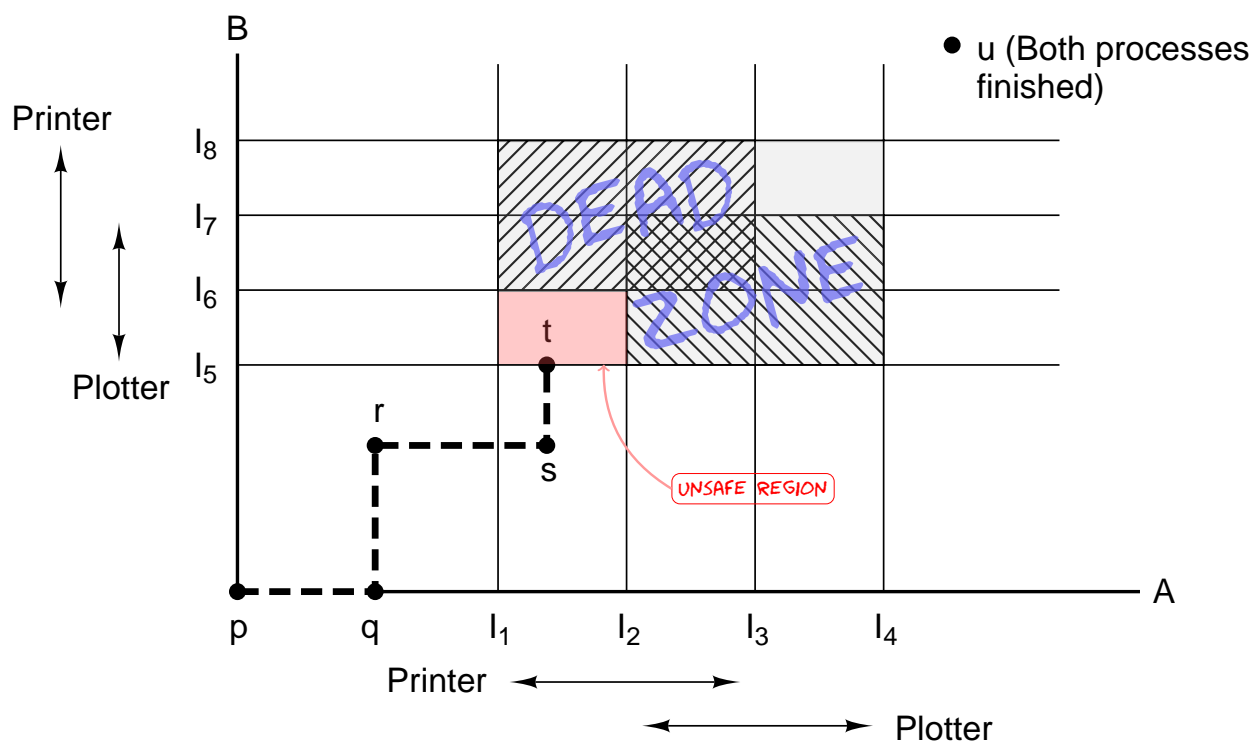


Fig. 15: Deadlock avoidance

Has Max		
A	3	9
B	2	4
C	2	7

Free: 3  
(a)

Has Max		
A	4	9
B	2	4
C	2	7

Free: 2  
(b)

Has Max		
A	4	9
B	4	4
C	2	7

Free: 0  
(c)

Has Max		
A	4	9
B	—	—
C	2	7

Free: 4  
(d)

Fig. 16: Deadlock avoidance

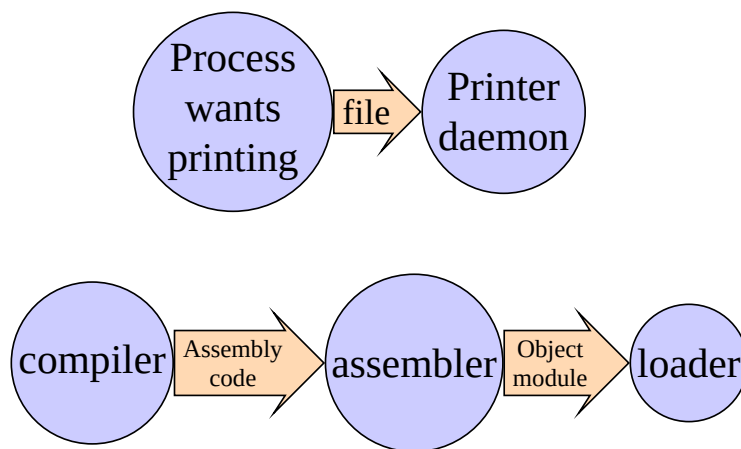


Fig. 17: Producers and consumers

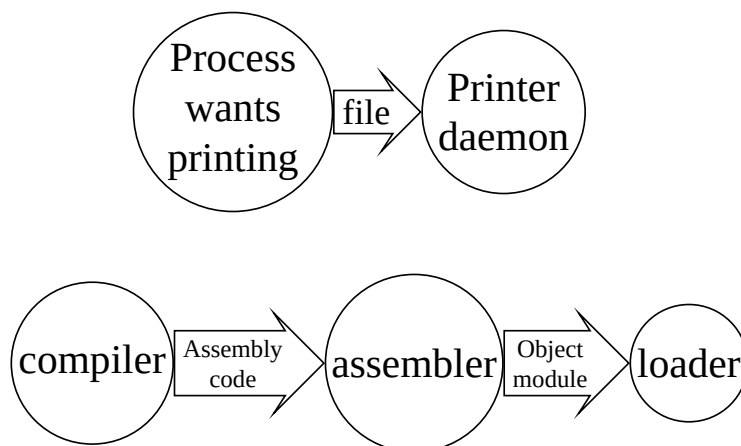


Fig. 18: Producers and consumers (bw version)

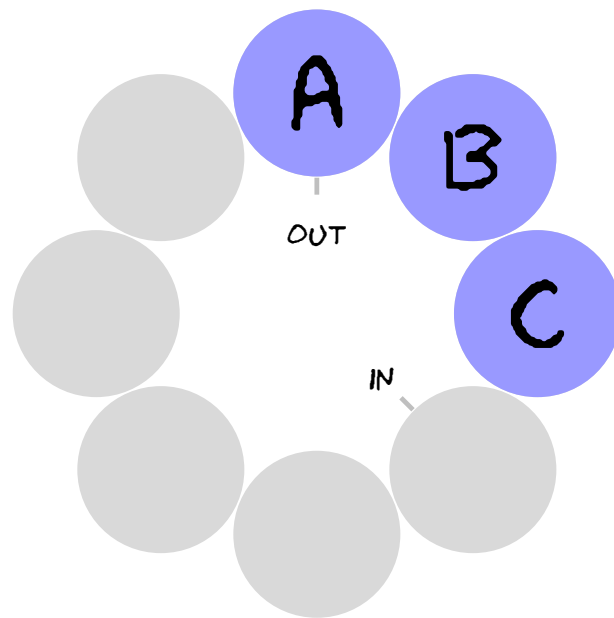


Fig. 19: A circular array

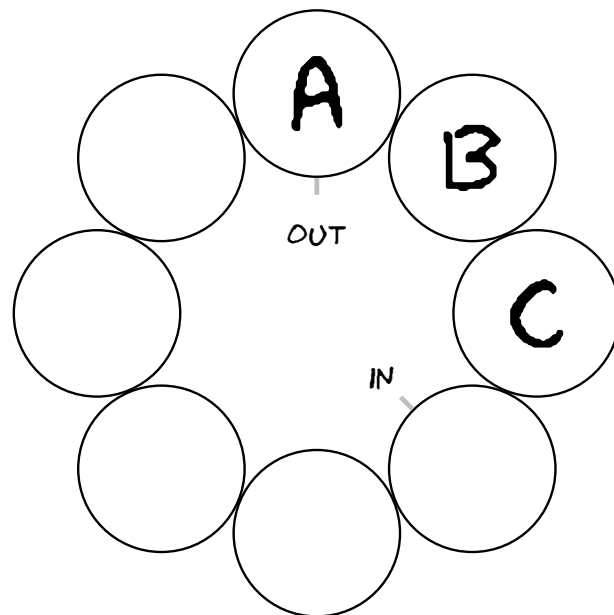


Fig. 20: A circular array (bw version)

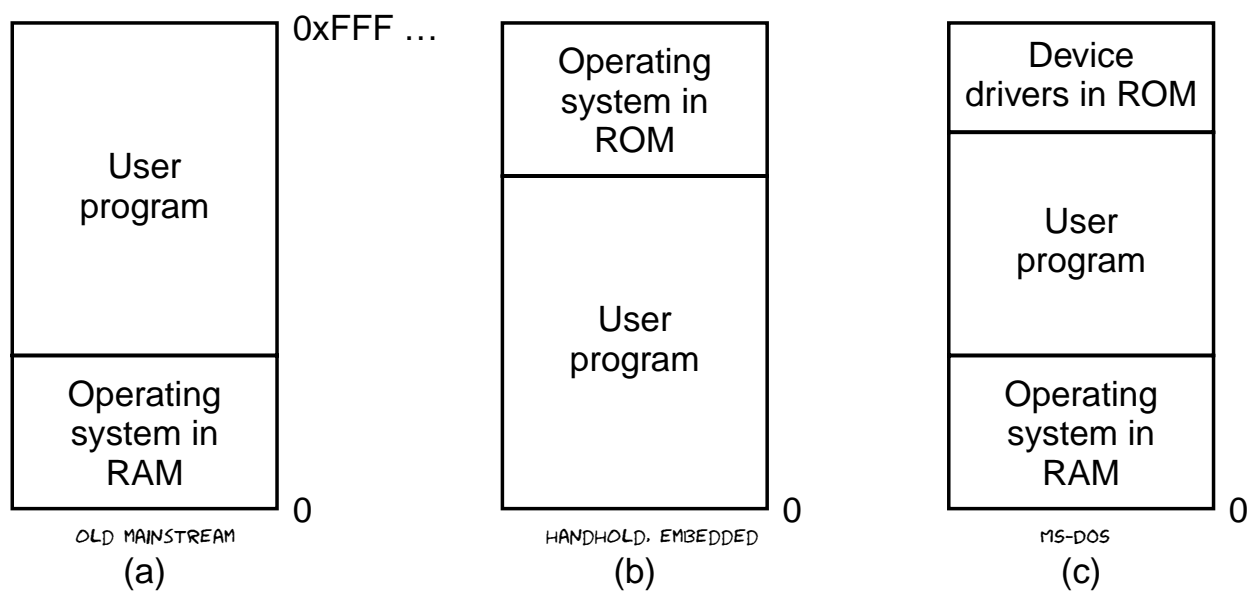


Fig. 21: Real mode memory layouts

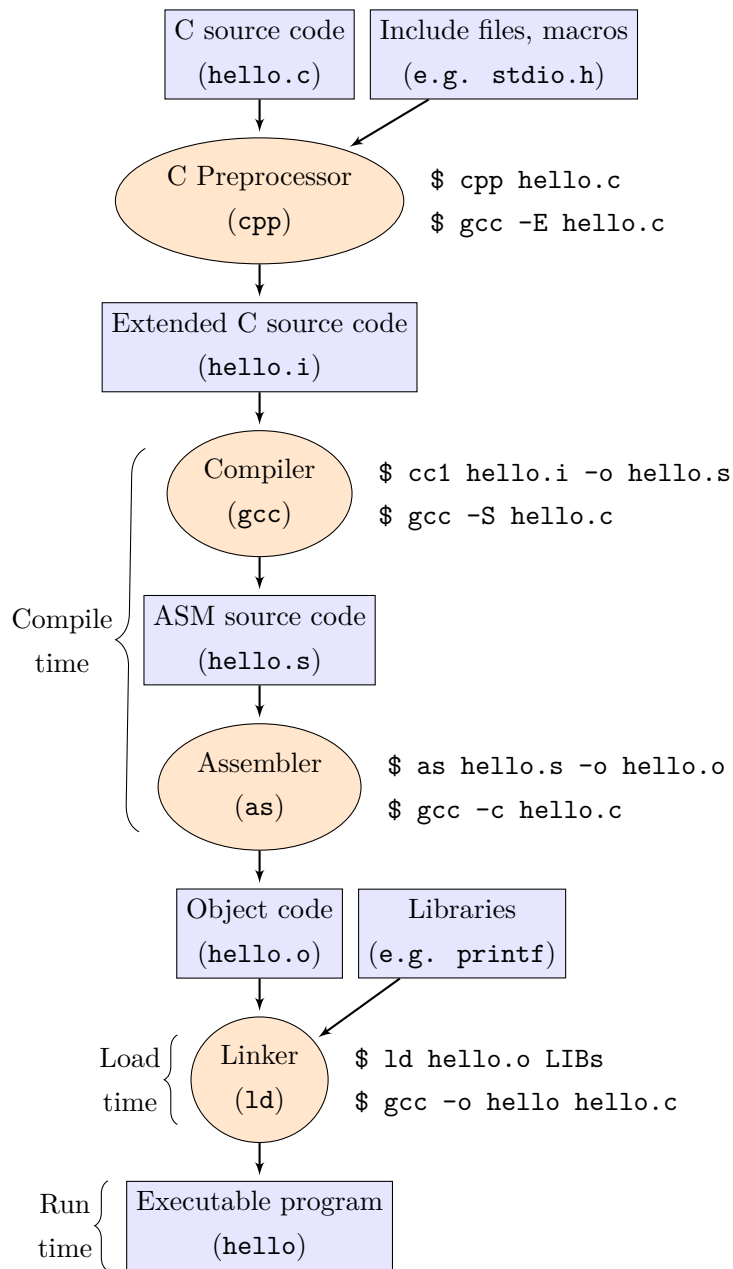


Fig. 22: Tool chain

# EXPOSING PHYSICAL MEMORY TO PROCESSES IS NOT A GOOD IDEA

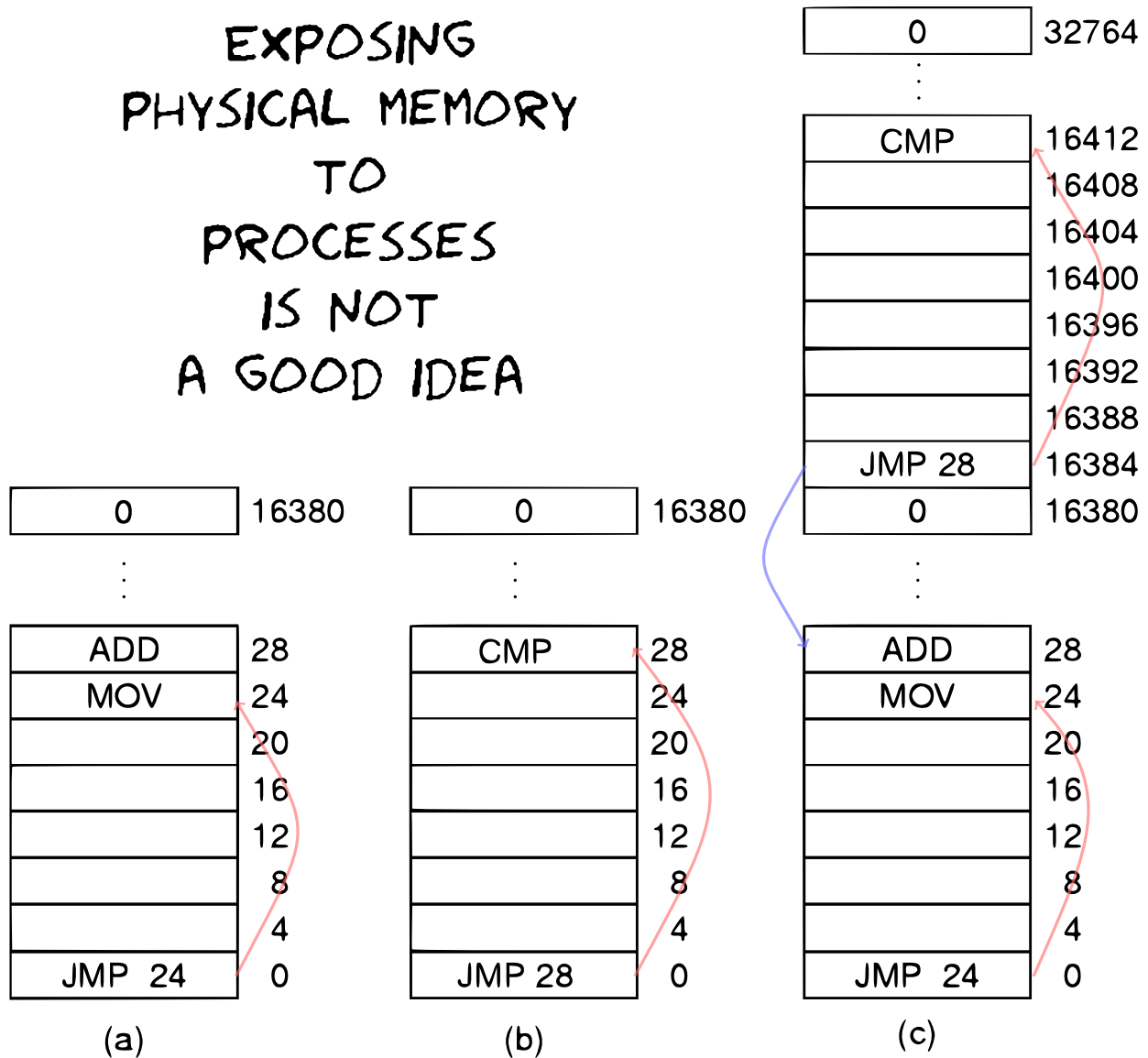


Fig. 23: Relocation

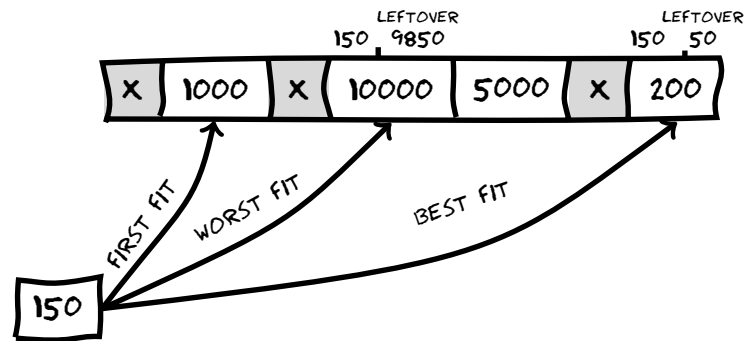


Fig. 24: First fit, best fit, worst fit

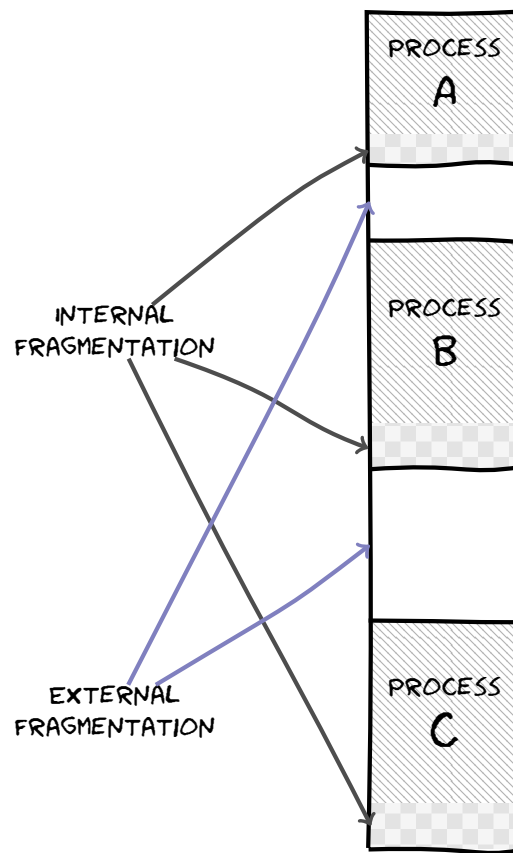


Fig. 25: Memory fragmentation





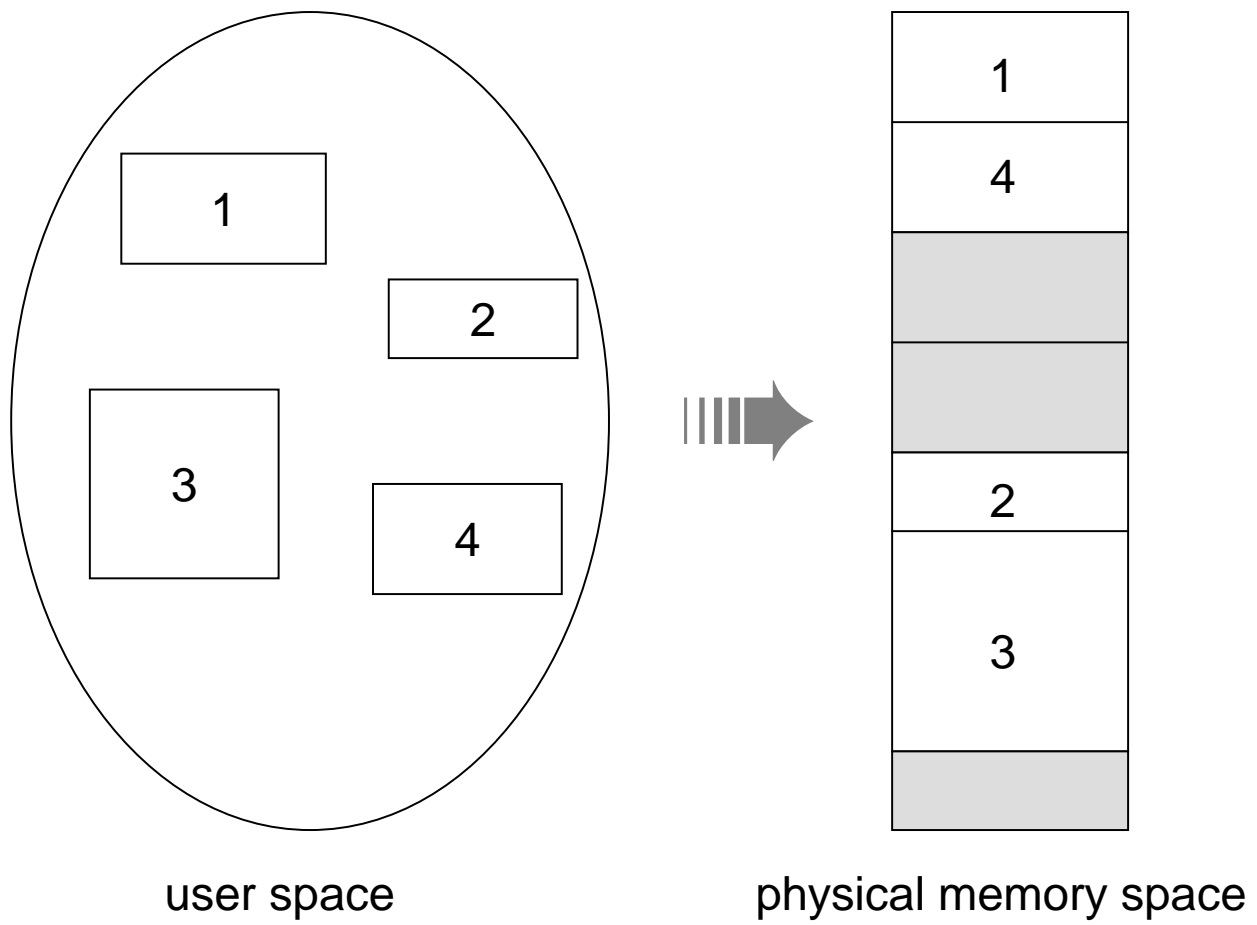


Fig. 27: Memory segmentation

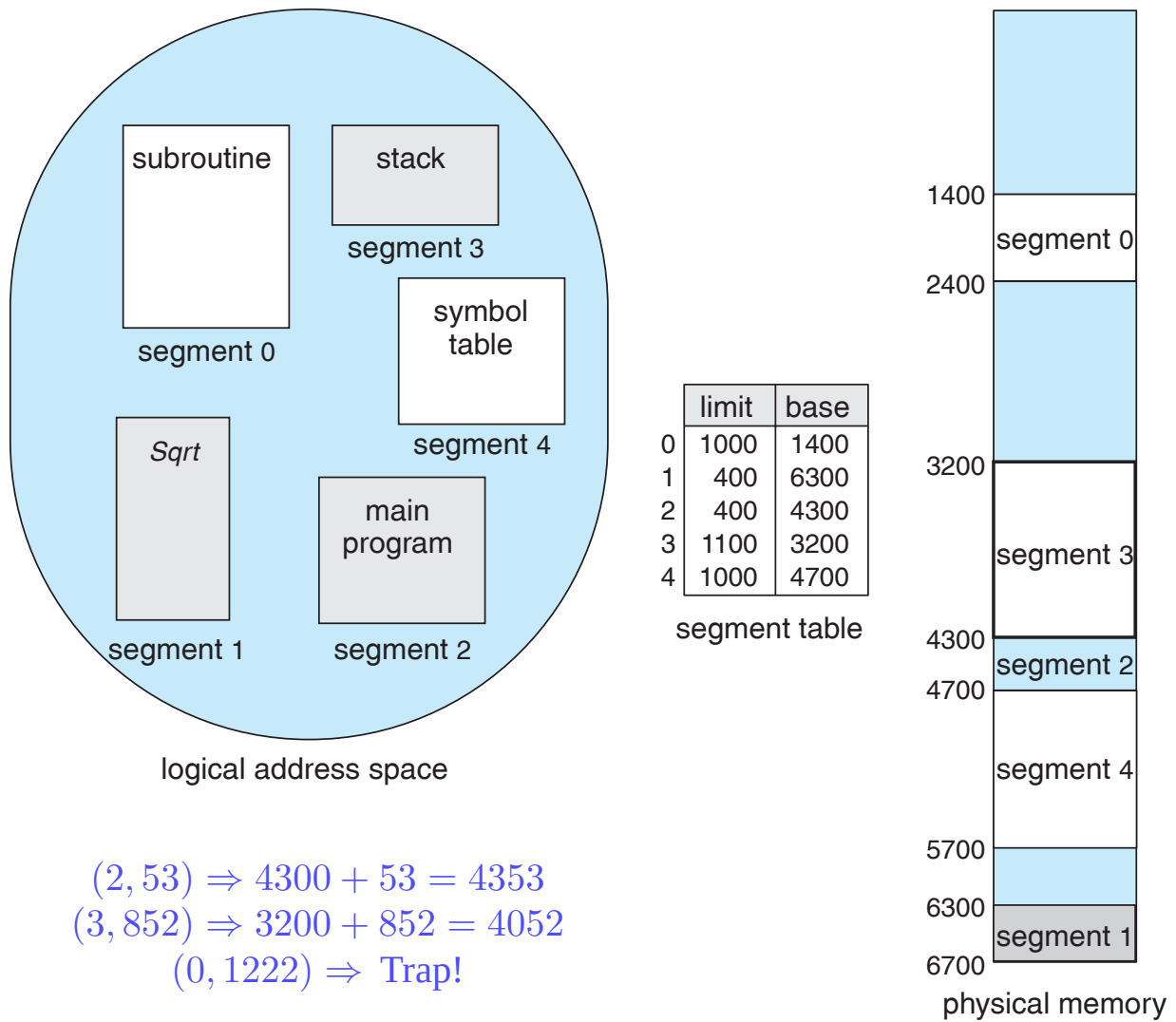


Fig. 28: Memory segmentation — Address translation

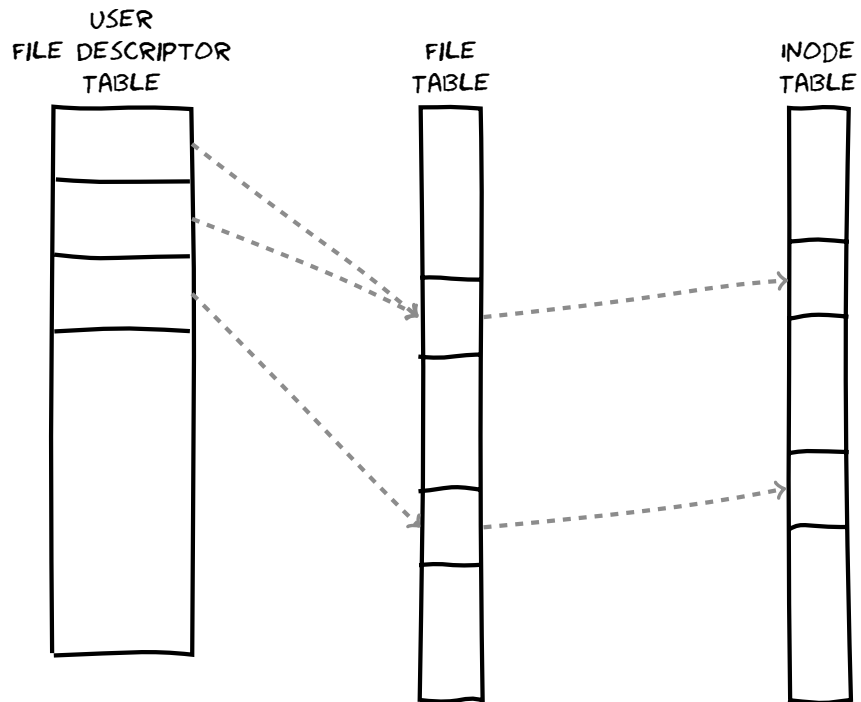


Fig. 29: File system tables

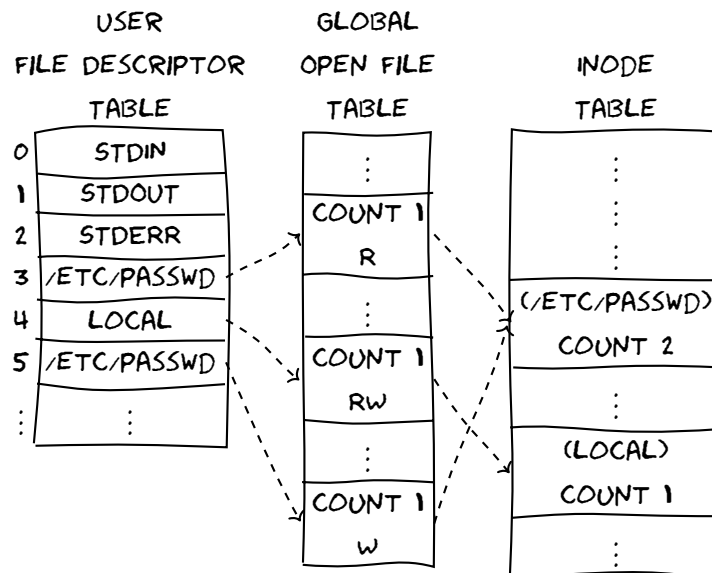


Fig. 30: File tables

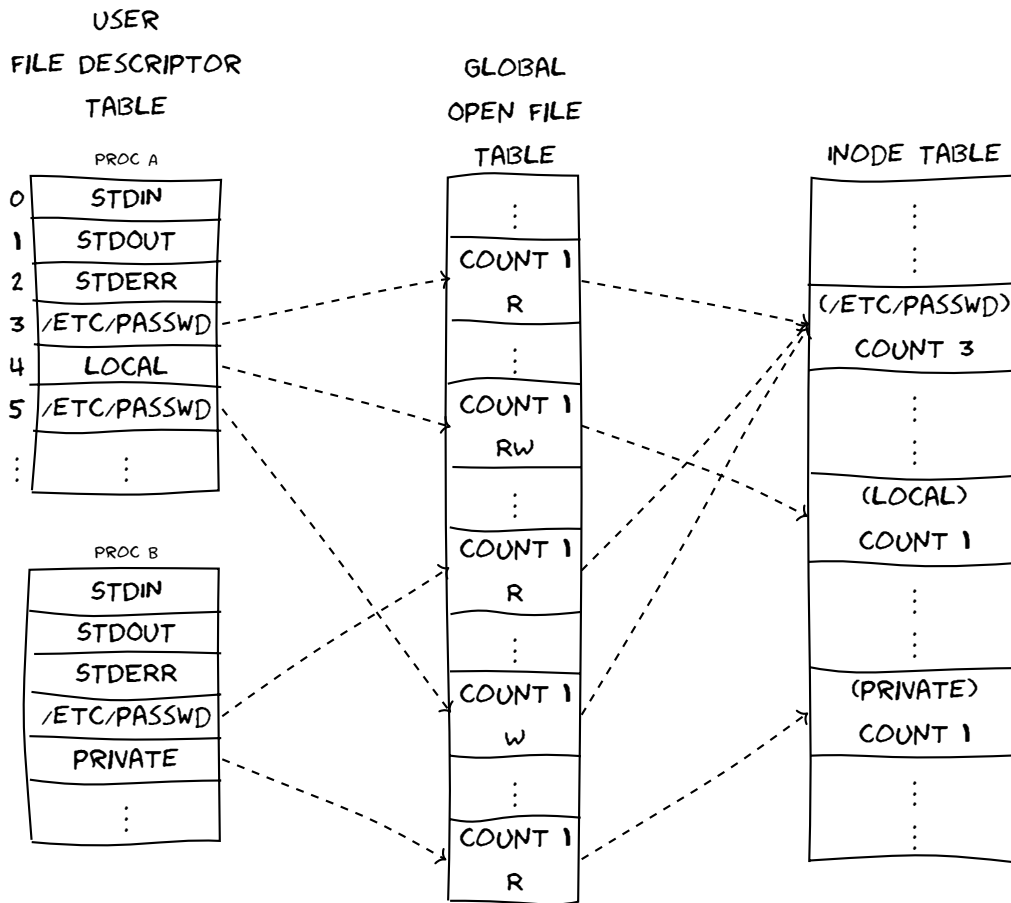


Fig. 31: File tables

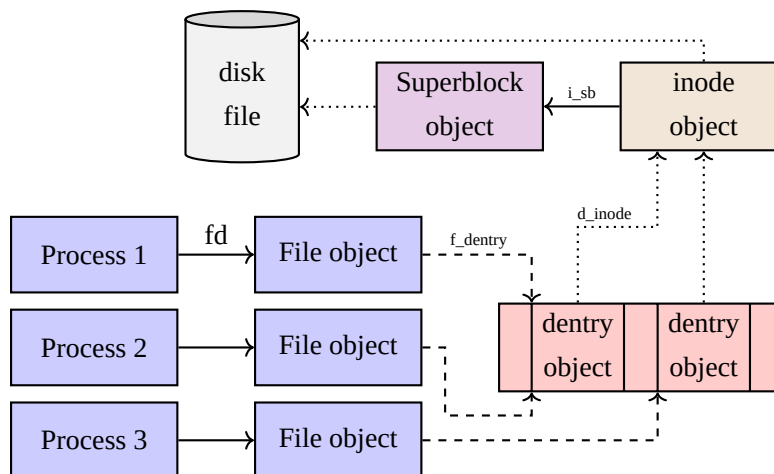


Fig. 32: VFS objects

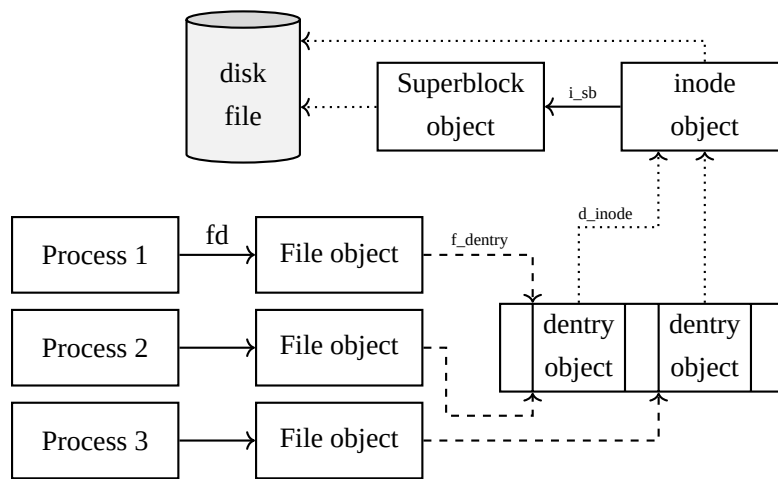


Fig. 33: VFS objects

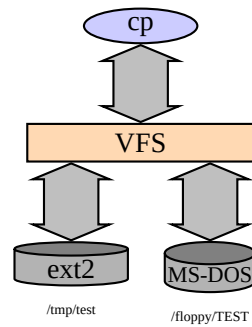


Fig. 34: VFS file copy

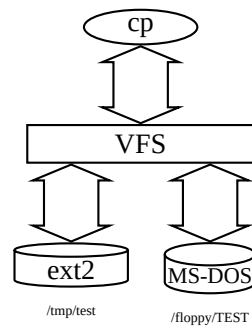


Fig. 35: VFS file copy (bw version)

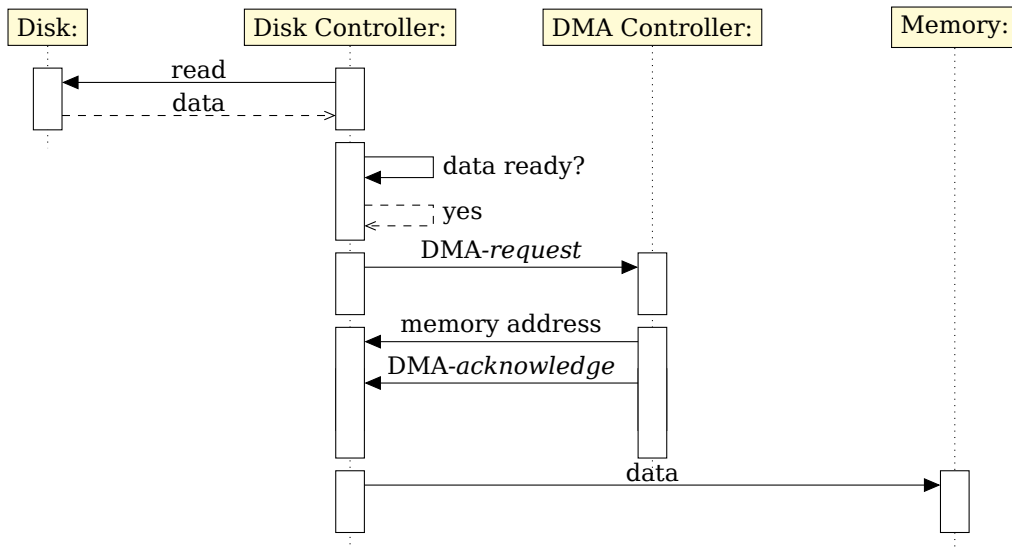


Fig. 36: DMA handshaking

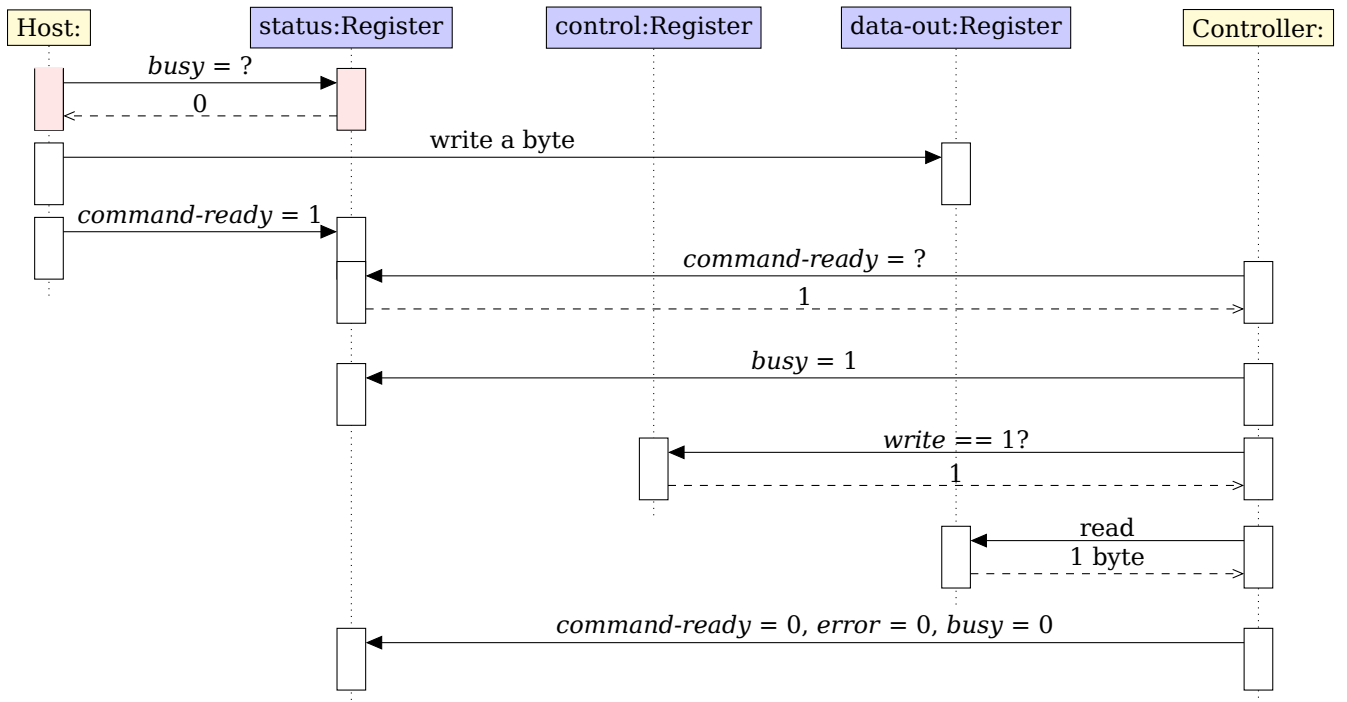


Fig. 37: Handshaking