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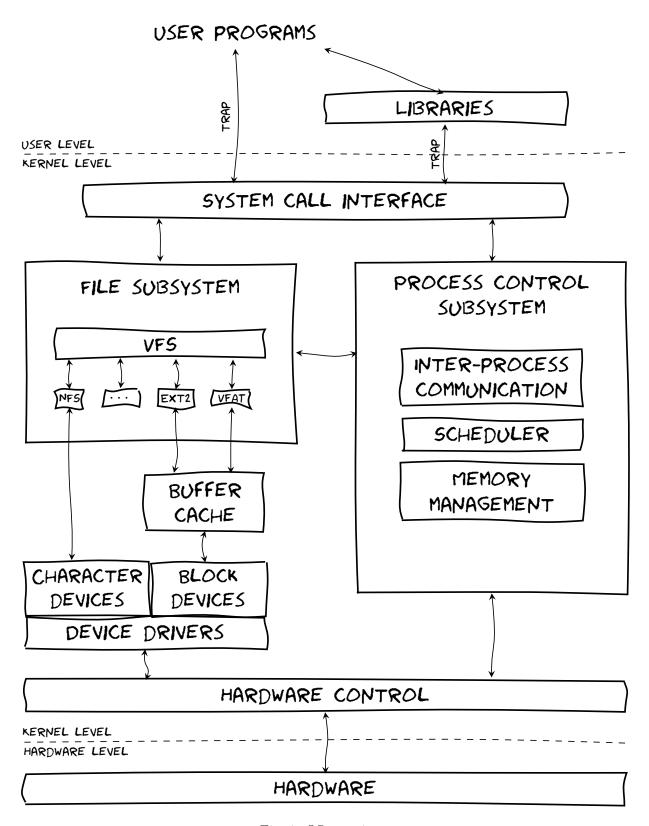
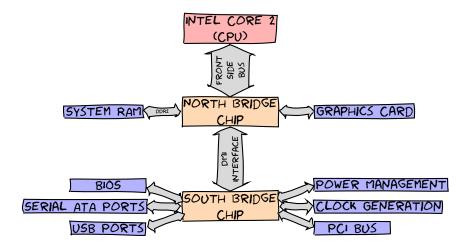


Fig. 1: OS overview



 $Fig.\ 2:\ Motherboard\ chipsets$ 

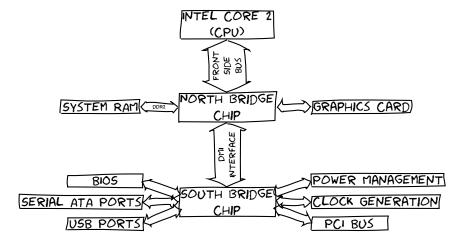


Fig. 3: Motherboard chipsets (bw version)



Fig. 4: CPU's working cycle

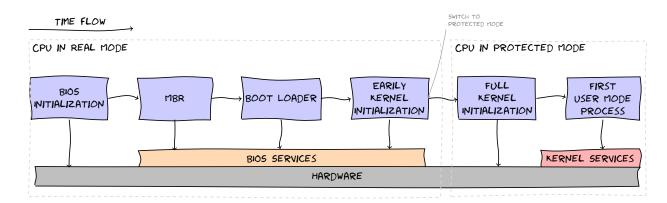


Fig. 5: Bootstrapping

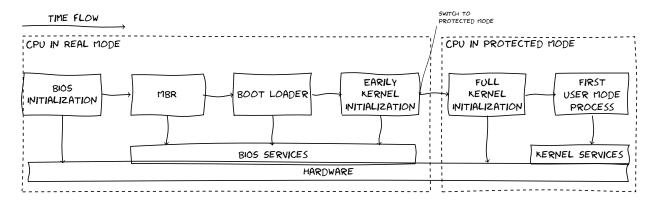


Fig. 6: Bootstrapping (bw version)

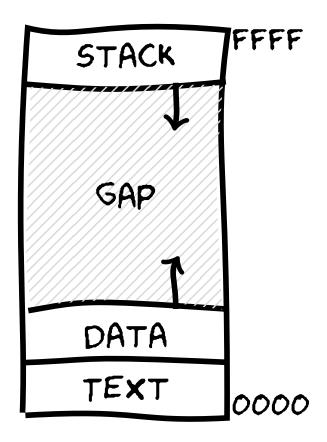
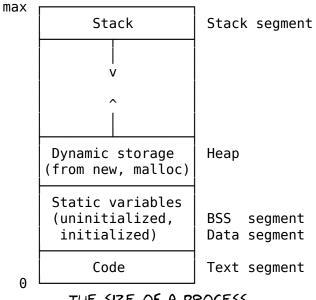


Fig. 7: Process' virtual address space



THE SIZE OF A PROCESS

(TEXT + DATA + BSS) IS

ESTABLISHED AT COMPILE TIME

Fig. 8: UNIX view of a process

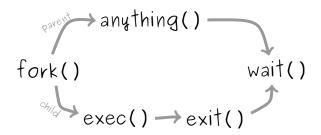


Fig. 9: Process creation

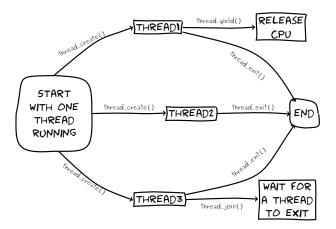


Fig. 10: Thread operations

```
typedef int semaphore;
    semaphore resource_1;
                                   semaphore resource_1;
    semaphore resource_2;
                                   semaphore resource_2;
    void process_A(void) {
                                   void process_A(void) {
        down(&resource_1);
                                       down(&resource_1);
        down(&resource_2);
                                       down(&resource _2);
        use_both_resources( );
                                       use_both_resources();
        up(&resource_2);
                                       up(&resource 2);
        up(&resource_1);
                                       up(&resource_1);
   }
                                  }
    void process_B(void) {
                                   void process_B(void) {
        down(&resource_1);
                                       down(&resource_2);
        down(&resource_2);
                                       down(&resource_1);
        use_both_resources( );
                                       use_both_resources();
        up(&resource_2);
                                       up(&resource_1);
        up(&resource_1);
                                       up(&resource_2);
   }
                                               (b)
            (a)
```

Fig. 11: Deadlock — Resource issues

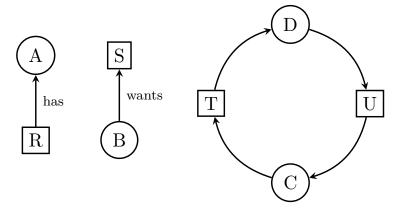


Fig. 12: Deadlock notions

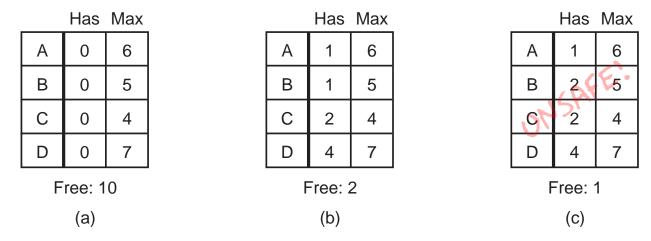


Fig. 13: Deadlock — Banker algorithm

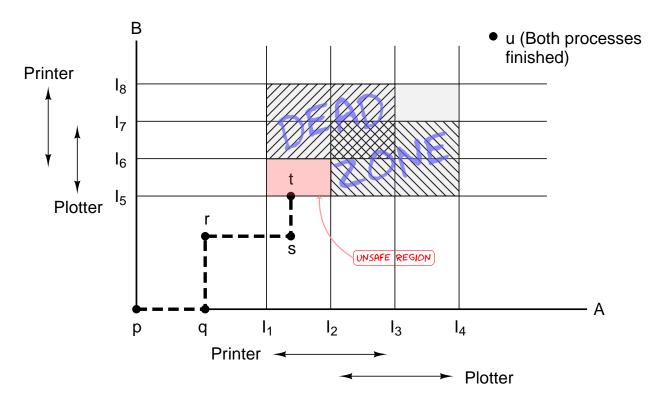


Fig. 14: Deadlock avoidance

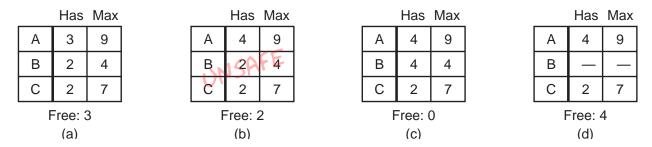


Fig. 15: Deadlock avoidance

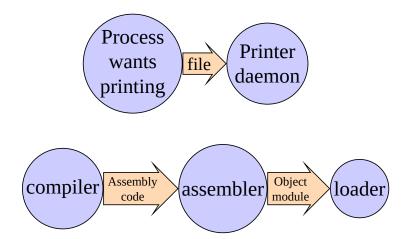


Fig. 16: Producers and consumers

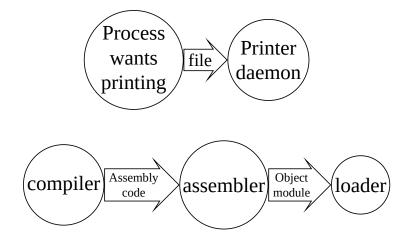


Fig. 17: Producers and consumers (bw version)

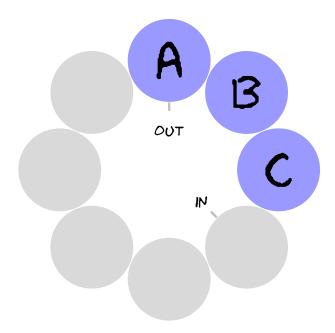


Fig. 18: A circular array

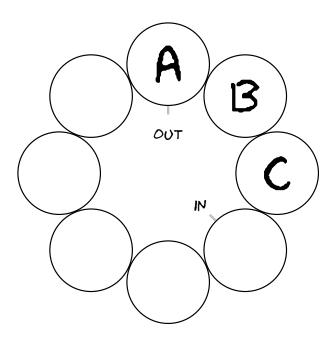


Fig. 19: A circular array (bw version)

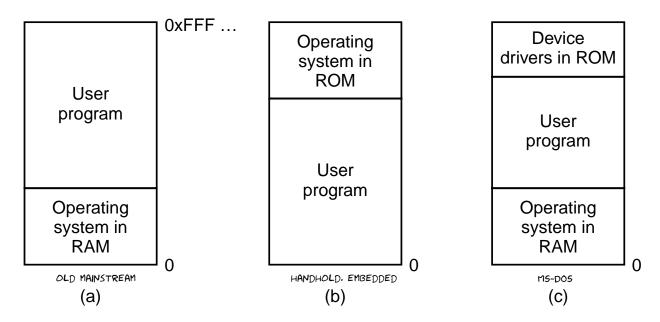


Fig. 20: Real mode memory layouts

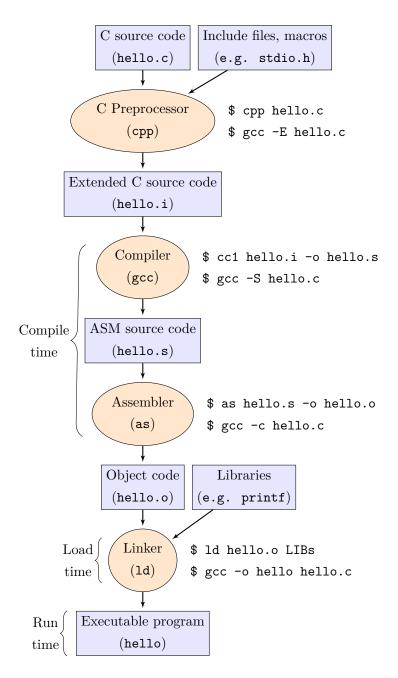


Fig. 21: Tool chain

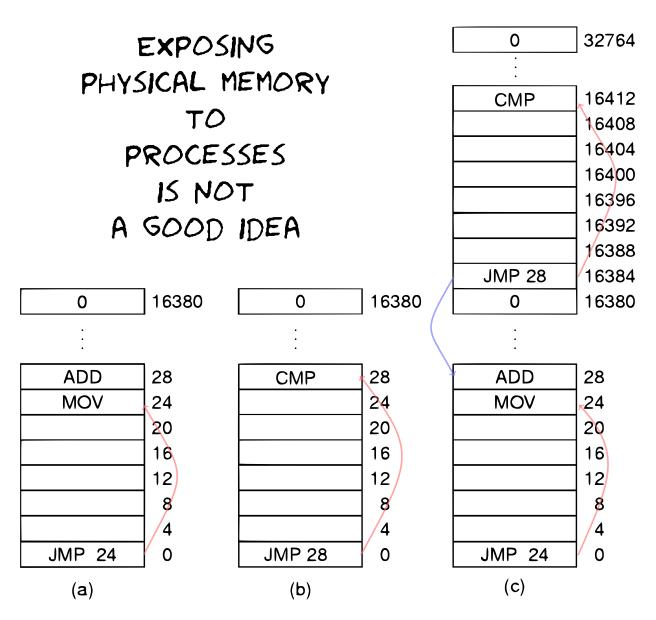


Fig. 22: Relocation

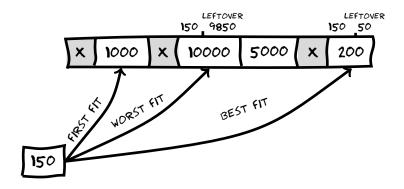


Fig. 23: First fit, best fit, worst fit

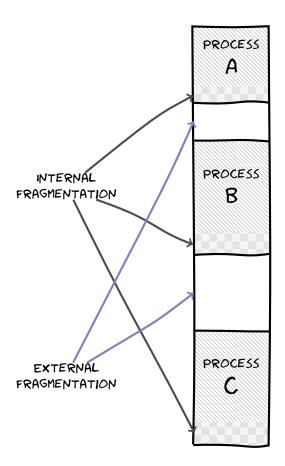


Fig. 24: Memory fragmentation

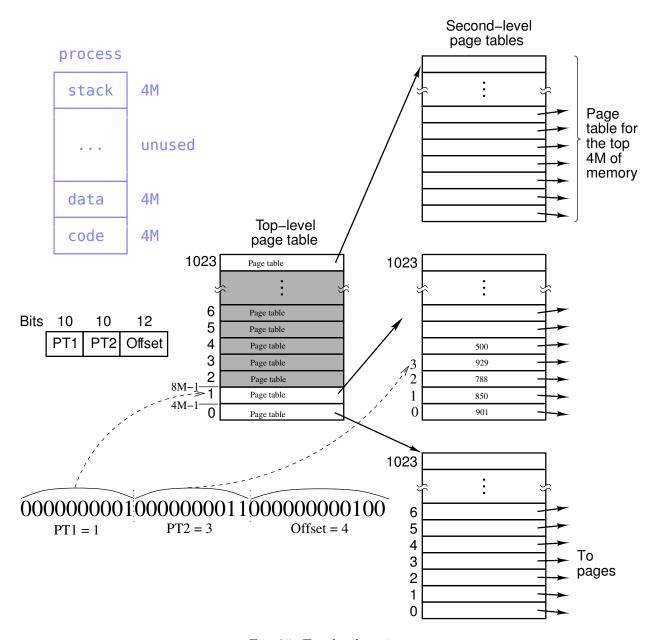


Fig. 25: Two-level paging

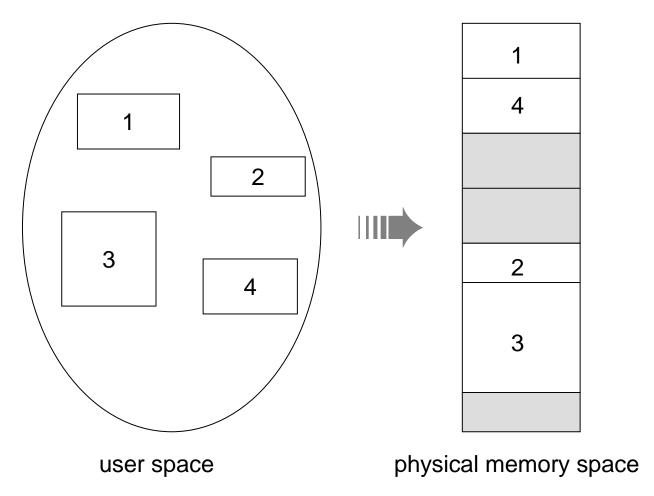


Fig. 26: Memory segmentation

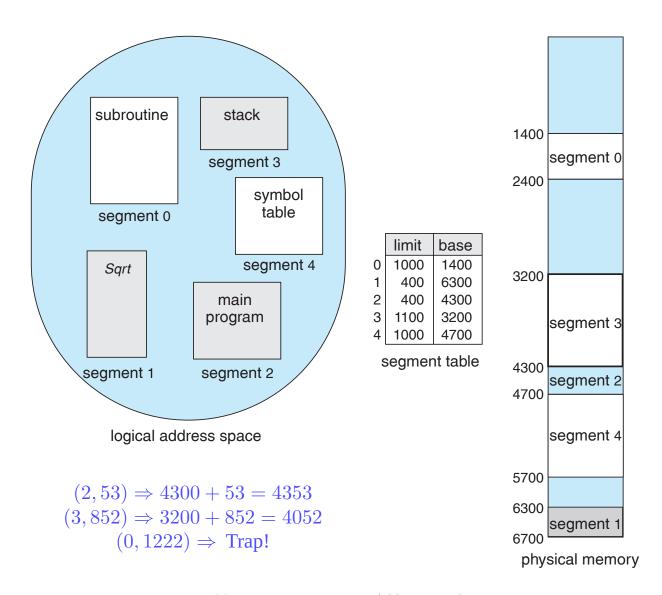


Fig. 27: Memory segmentation — Address translation

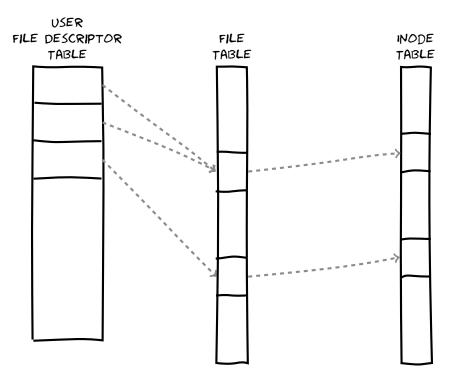


Fig. 28: File system tables

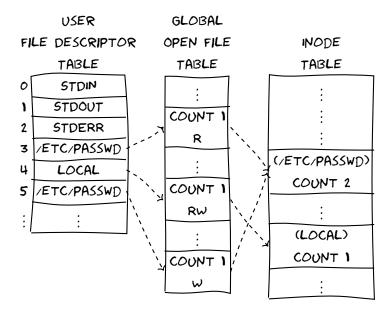


Fig. 29: File tables

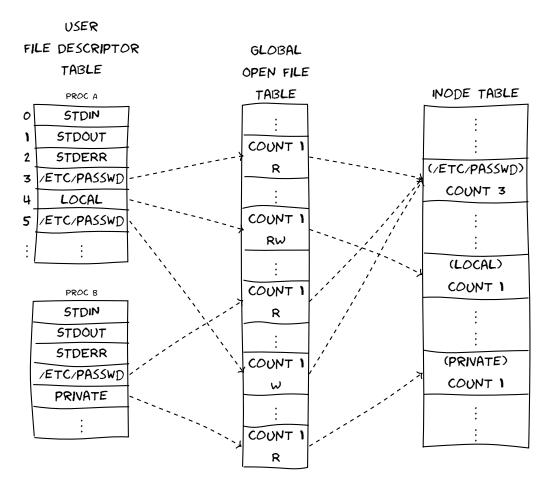


Fig. 30: File tables

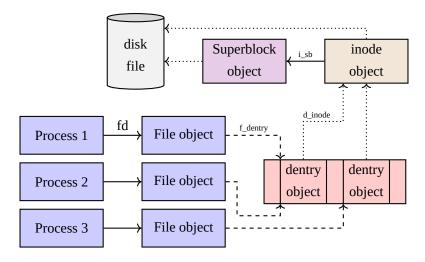


Fig. 31: VFS objects

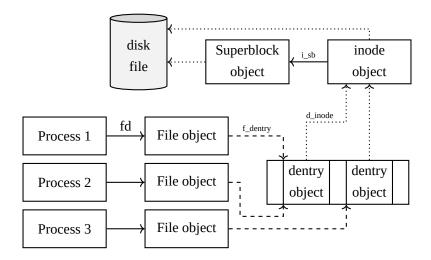


Fig. 32: VFS objects

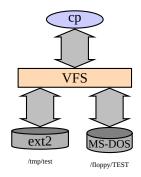


Fig. 33: VFS file copy

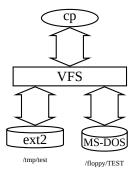


Fig. 34: VFS file copy (bw version)

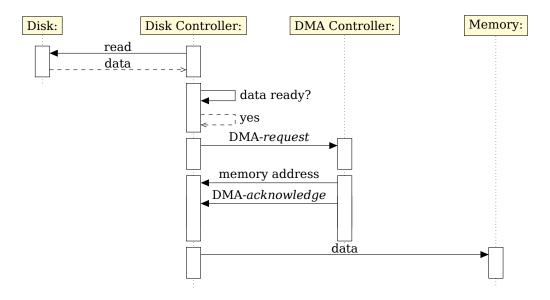


Fig. 35: DMA handshaking

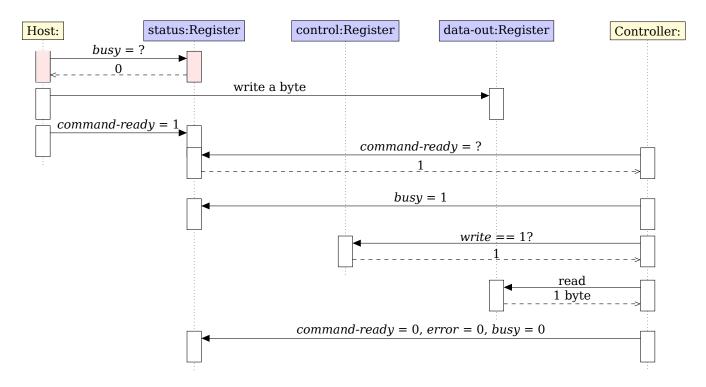


Fig. 36: Handshaking