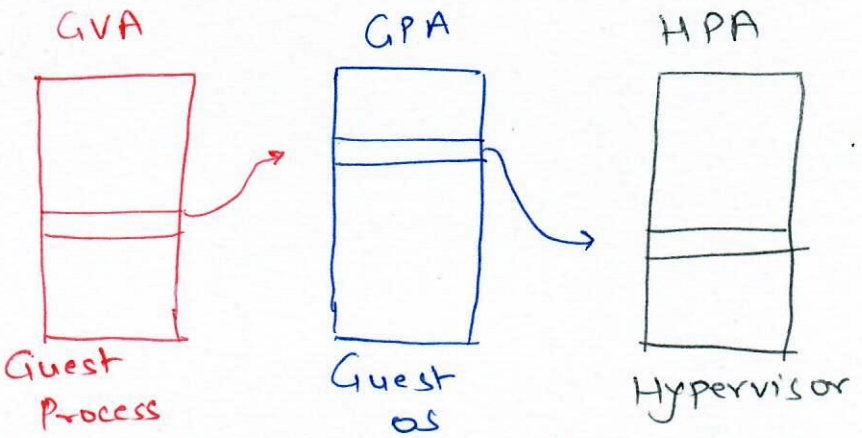
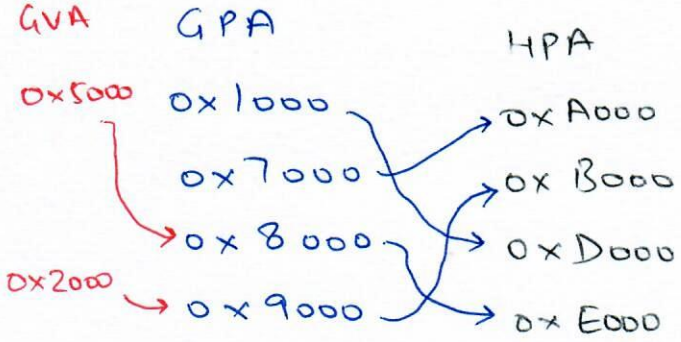
Memory virtualization in VMM ②



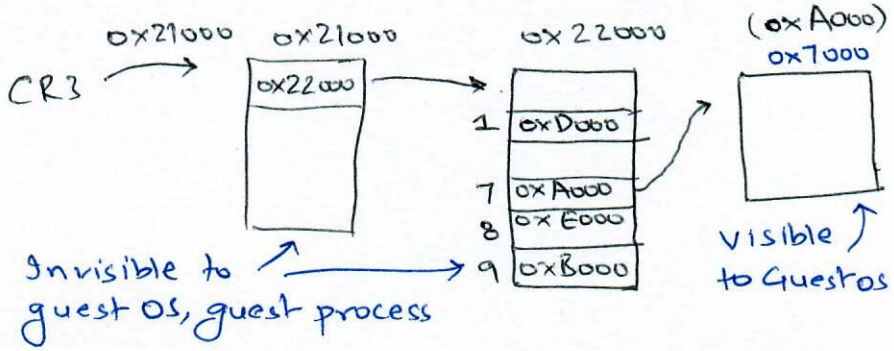
Example: memory mapping for VM ②

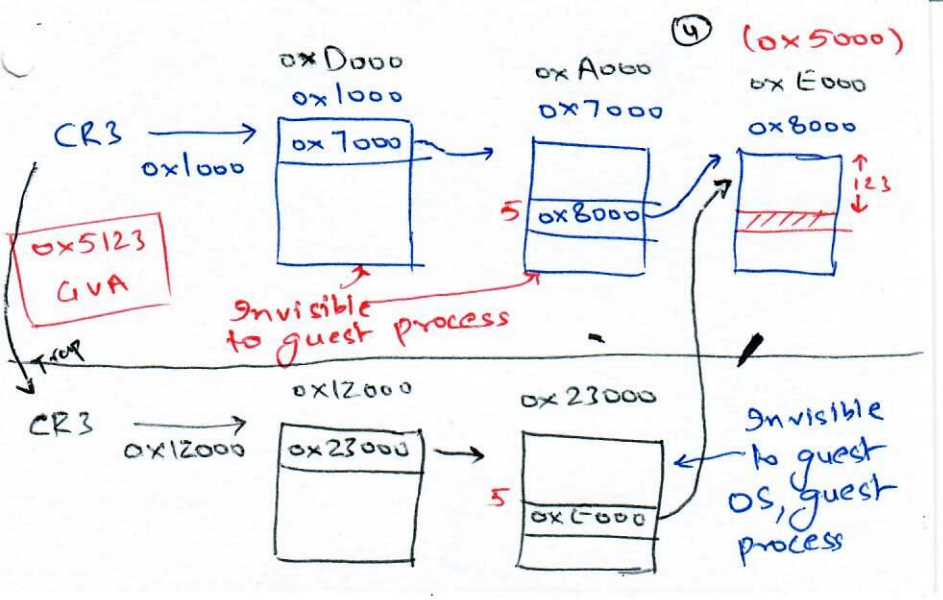


②

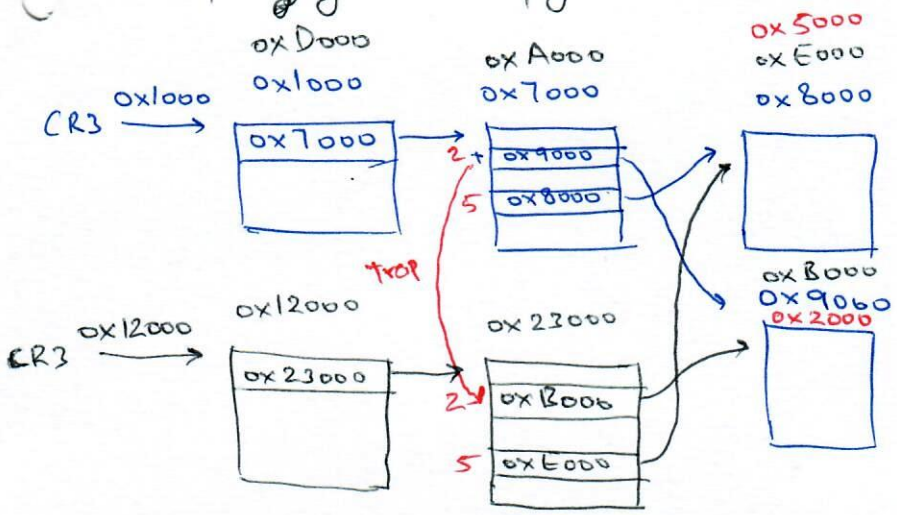
When guest boots, CR0.31 is disabled (virtual memory is disabled)

GPA → HPA





Maintaining shadow page tables ②



Process fork ③

(fork.c)

```
int main() {
    printf("Hello");
    int rc = fork();
    int x = 5;
    if (rc<0){ exit(1); /* fork failed */ }
    if (rc>0){ printf("parent"); x=1; }
    if (rc==0){ printf("child"); x = 2; }
    printf("x: %d", x);
}
```

Observations

- Child does not print "Hello"
- Parent prints x → 6
  Child prints x → 10

Other things are also passed along-
- open file descriptors
- namespaces, priority, etc.

Why?

* shell.c → gap between fork and exec for output redirection
* In-value storage (e.g. Redis) snapshot
  fork → write DB to disk
  ↳ parent process continues to serve requests