CS631-02 xv6 Page Tables

Project 08   Shared memory
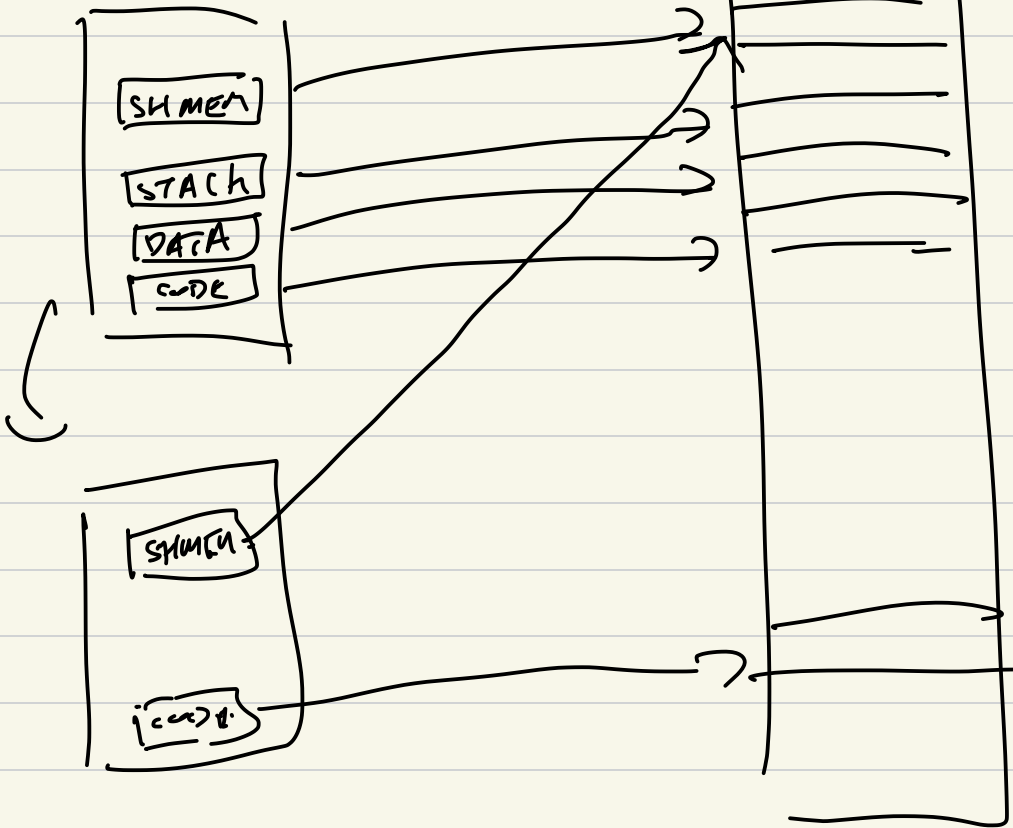
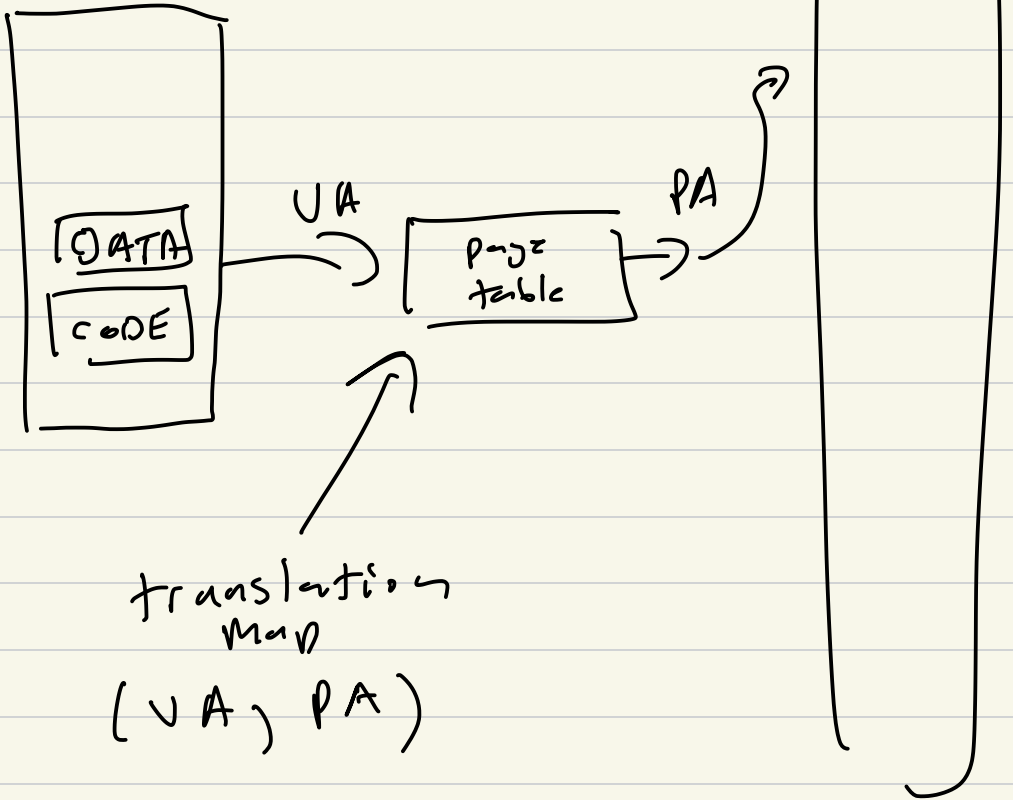f..


```
┌──────────────┐        ┌──────────────┐
│ ┌─────────┐  │        │ ┌─────────┐  │
│ │ SHMEM   │  │───────▶│ │ SHMEM   │  │
│ └─────────┘  │        │ └─────────┘  │
│              │        │              │
│ main() {     │        │  main() {    │
│  smem(addr,sz)│       │              │
│   fork()     │        │   fork()     │
│ }            │        │  }           │
└──────────────┘        └──────────────┘
```

U
───

K   ┌──────────┐   ┌──────────┐
    │ proc   │   │ proc   │
    └──────────┘   └──────────┘

RAM

Parent

SHMEM

STACH

DATA

CODE

SHMEM

code

Page Tables

RAM

DATA

CODE

UA

Page
table

PA

translation
map

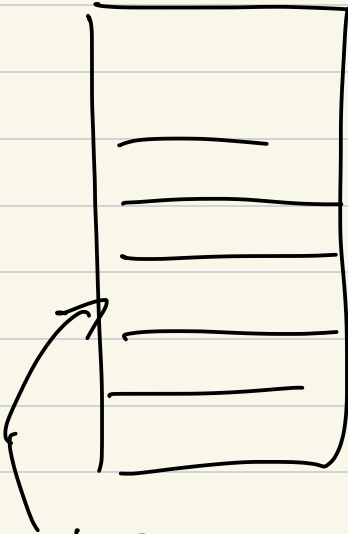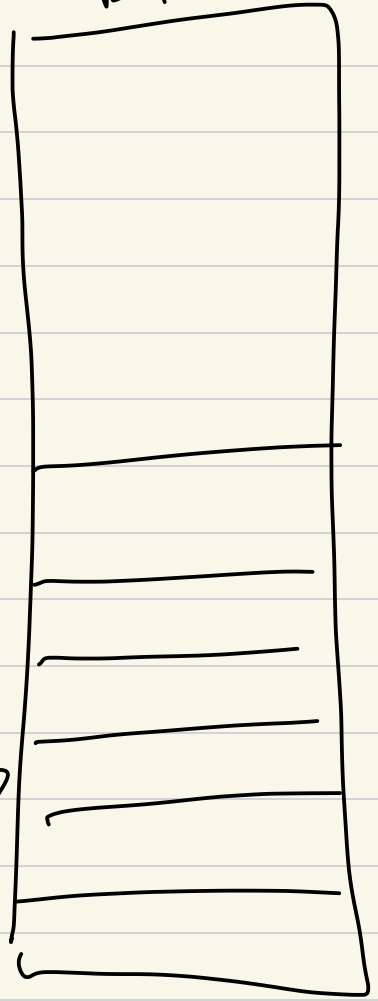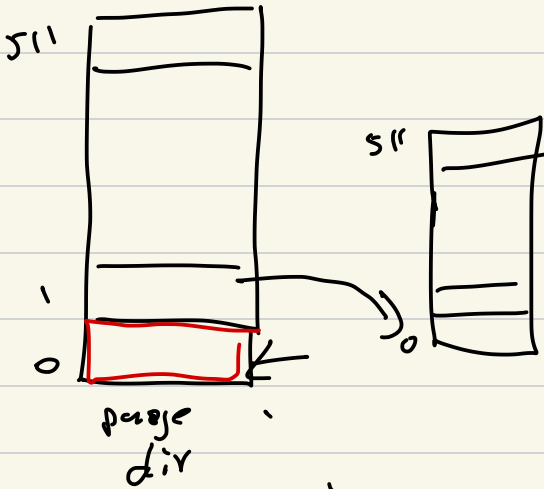(VA, PA)
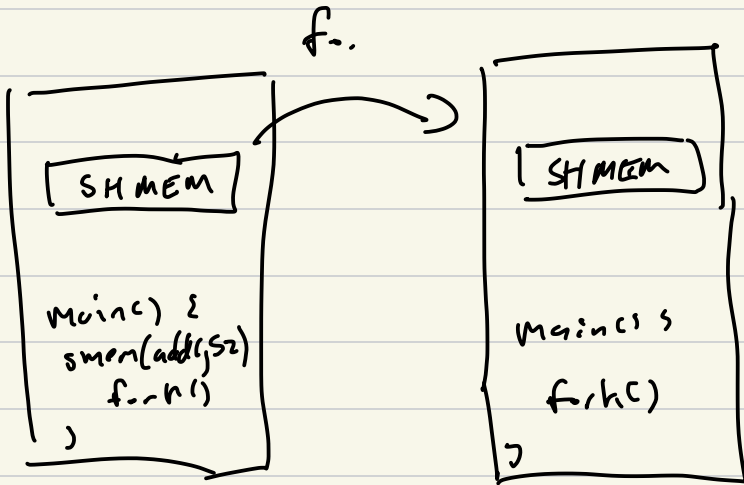
Virtual Address
Space

RAM

4 KB page

4 kB
page
Frames

64 bits   8 bytes 2^3

$2^{27} \cdot 2^3 = 2^{30} = \underline{1 \text{ GB}}$

$2^9 \cdot 2^3 = 2^{12} = 4 \text{ KB}$

Total
Virtual
Addr

511

511

0

page
dir

$$2^{39} = 512 \text{GB}$$

$$\frac{2^{39}}{2^9} = 2^{30} = 1\text{GD}$$

$$\frac{2^{30}}{2^9} = 2^{21} = 2\text{MB}$$

1 GB