



→  
1.

call compare

movq

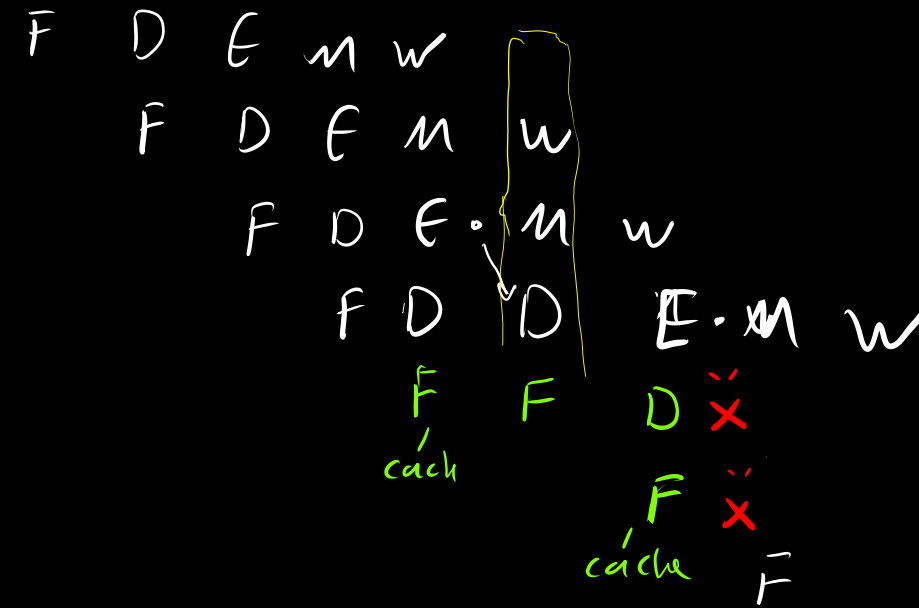
cmpq

jl

retq

(address)

movl



2.

↓ →  
1.

↑

2.

Backen raten  
Furvent nur raten

call compur

maug

compq

ji

marl

may

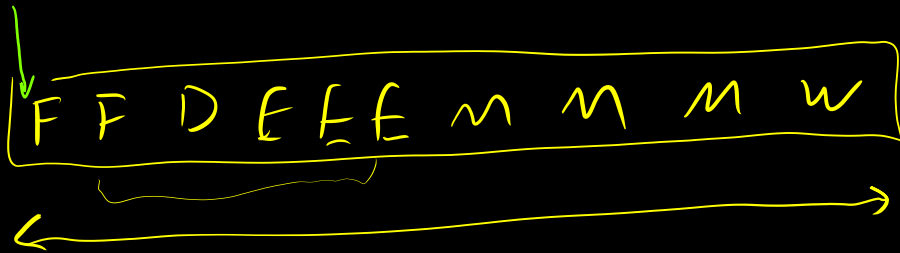
shrq

F	D	E	M	W						
	F	D	E	M	W					
		F	D	E	M	W				
			F	D	D	E	M	W		
				F	F	D	E	M	W	
						F	D	E	M	W
							F	D		

Cache

Physical Address

main  
code



```
if ( password good ) {  
    do server stuff.}
```

```
} else {  
    say "no"  
}
```

strcmp (typed, pw)

password \0

↓ ↓ ↓

pa\$\$word \0

if (T[0] != pw[0])

return false

→ if (T[1] != pw[1])

return false

Superscalar

Out-Of-Order Execution

Register renaming

$\mu$ -ops

run first code w/ right results  $\neq$  run right code

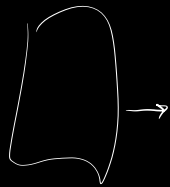
$\mu$ -op

addq \$-8, %rsp -cc

movq %rax, (%rsp)

pushq

%rax



pushq

F

D

F

M

W

pushq

addq

F D E M W

F D E M W