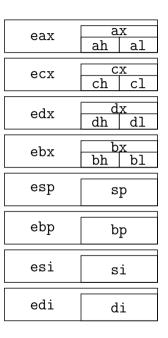
#### 64 Bit vs. 32 Bit

- ▶ 64 Bit Wortbreite
- ▶ 64 Bit Adressen
  - ightharpoonup 2<sup>64</sup> Byte pprox 16 EB Hauptspeicher adressierbar
- ▶ 64 Bit Register

## 32 Bit Register



# 64 Bit Register

rax	eax	ax ah al
rcx	ecx	cx ch cl
rdx	edx	dx dh dl
rbx	ebx	bx bh bl
rsp	esp	sp spl
rbp	ebp	bp bpl
rsi	esi	si sil
rdi	edi	di dil

r8	r8d	r8w r8b
r9	r9d	r9w r9b
r10	r10d	r10w <sub>r10b</sub>
r11	r11d	r11w r11b
r12	r12d	r12w <sub>r12b</sub>
r13	r13d	r13w <sub>r13b</sub>
r14	r14d	r14w <sub>r14b</sub>
r15	r15d	r15w r15b

### Immediate-Operanden

- ▶ x86-32: Alle Immediates 32 Bit, also im Wertebereich  $[-2^{31}, 2^{31} 1]$
- x86-64: 64 Bit Immediates nur bei mov-Instruktionen erlaubt
   32 Bit Immediates sign-extended

```
mov rax, Oxaaaabbbbccccdddd erlaubt add rax, Oxaaaabbbbccccdddd nicht erlaubt
```

### Quiz

Wie kann man rax = rax + 0xffffffff berechnen?

mov rcx, Oxfffffffff add rax, rcx
mov ecx, -1
add rax, rcx