

# 五、目标代码生成

## (1. RISC-V 概述)

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WELCOME!

A decorative banner at the bottom of the slide featuring the word "WELCOME!" in large, bold, white letters. The letters are partially obscured by a burst of colorful confetti in shades of blue, yellow, red, and green.

RISC: Reduced Instruction Set Computer (精简指令集计算机)



V: Five

CISC: Complex Instruction Set Computer (复杂指令集计算机)

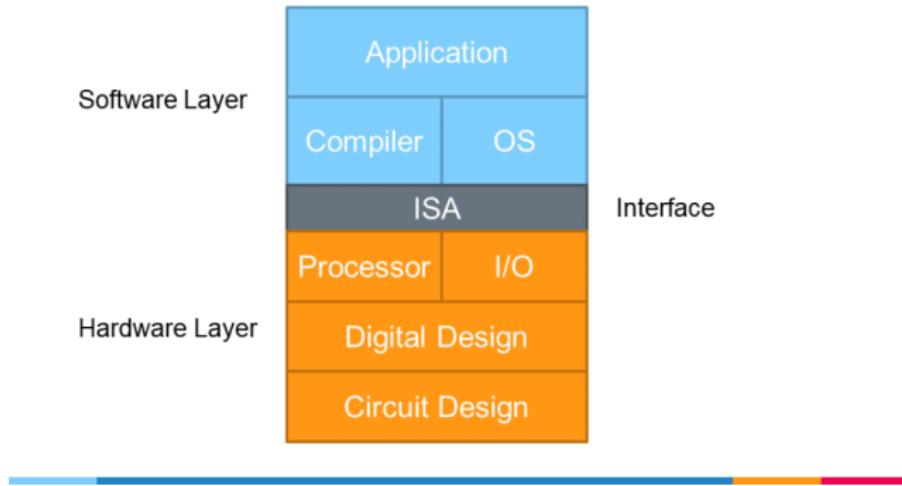


RISC: Each instruction performs only one function.

CISC: SUBL val, %eax ; %eax <- %eax - val)



# ISA (Instruction Set Architecture) as the Software/Hardware Interface



# 2017 ACM Turing Award



“Hennessy and Patterson created a systematic and quantitative approach to designing faster, lower power, and **reduced instruction set computer (RISC)** microprocessors.”



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## Announcements

### First-ever RISC-V Summit Europe Will Demonstrate Technical and Commercial Momentum Across Industries

The Barcelona RISC-V Summit from June 5-9 will focus on industries such as Automotive, High-Performance Compute/Data Center, and Security; Call for Submissions and Sponsorships are now open.

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## Join RISC-V International



RISC-V International comprises a large member organization building the first open, collaborative community of software and hardware innovators powering innovation at the edge forward. Through various events and workshops, RISC-V International is changing the way the industry works together and collaborates – creating a new kind of open hardware and software ecosystem. Become a member today and help pioneer the industry's future!

## Premier Members



成为资本 CHENGJIU CAPITAL



# 2019 年国际芯片大会

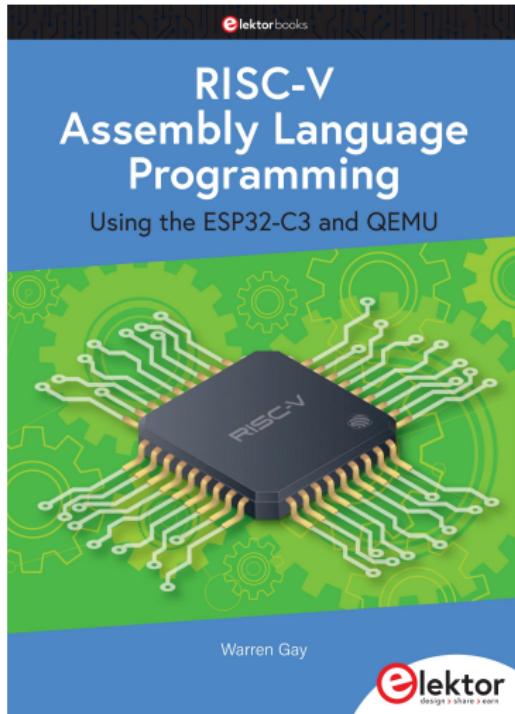


“RISC-V 很可能发展成为世界主流 CPU 之一，在 CPU 领域形成 Intel、ARM、RISC-V 三分天下的格局。” — 中国工程院院士 倪光南



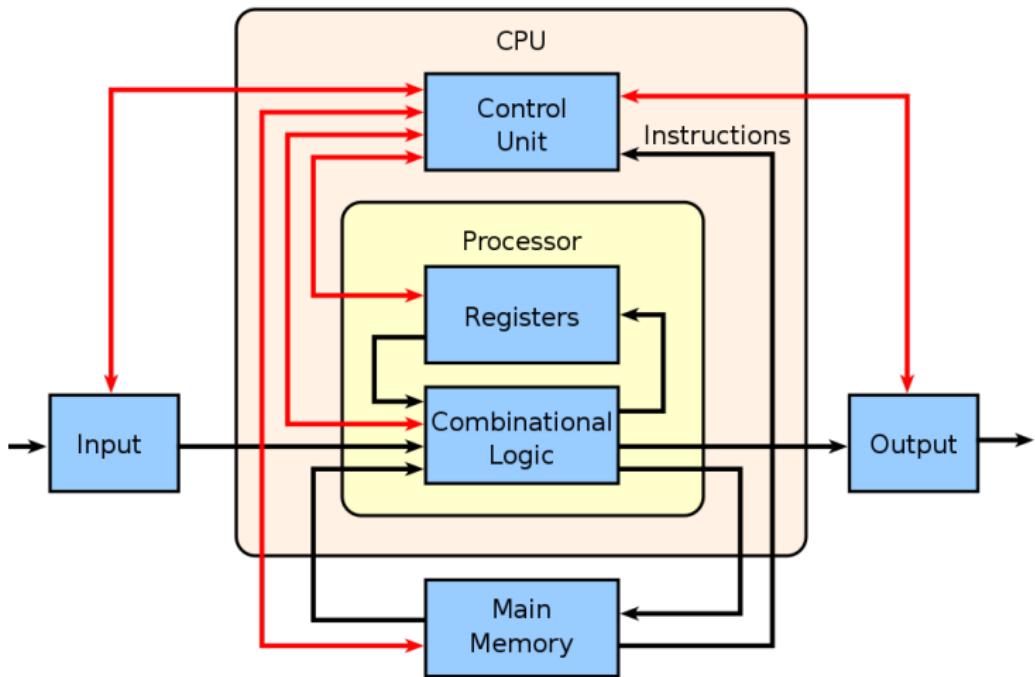
## 新长征路上的摇滚

“万里长征第一步 ...”





CONCEPT & CODE



Registers (zero, pc)

Memory (Data, Instructions)

I/O

add.asm

addi.asm

add-sub.asm

## ecall.asm

## data.asm

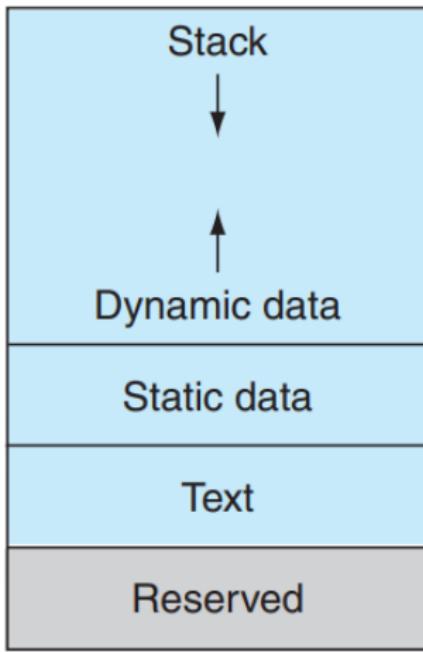
\$sp → 7fff fffc<sub>hex</sub>

\$gp → 1000 8000<sub>hex</sub>

1000 0000<sub>hex</sub>

pc → 0040 0000<sub>hex</sub>

0



array.asm

array-index-bit.asm

## branch-max.asm

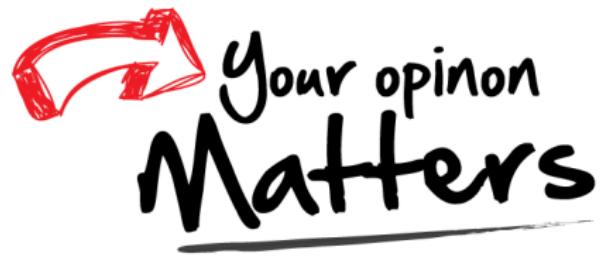
## proc-max.asm

Registers	Symbolic names	Description
x0	zero	Hardwired zero
x1	ra	Return address
x2	sp	Stack pointer
x3	gp	Global pointer
x4	tp	Thread pointer
x5-x7	t0-t2	Temporary registers
x8-x9	s0-s1	Saved registers
x10-x11	a0-a1	Function arguments and return values
x12-x17	a2-a7	Function arguments
x18-x27	s2-s11	Saved registers
x28-x31	t3-t6	Temporary registers

## proc-fact.asm

## bubblesort.asm

# Thank You!



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