

# Effective Implementation of a 32-bit RISC Processor

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## Outline

- ❏ Introduction
- ❏ Architecture of a RISC Processor
- ❏ Implementation



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## Introduction

### Architecture ?

- All aspects visible from the **USER's** (programmer) point of view
- External view
- Specifications of the processor

What the processor is supposed to do



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## Introduction

### Implementation ?

- All aspects visible from the **DESIGNER's** point of view
- Internal view
- How much time does it take to perform some operation ?

Which hardware may be used and how it should be organized to make the specifications feasible



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## Architecture

- ❑ Software visible registers
- ❑ Memory Addressing
- ❑ The instruction set
- ❑ The exception / reset mechanism



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## Architecture

### Architecture of the MIPS processor

#### Mips ?

- A 32-bit processor
- One of the two first RISC architectures
- Defined in 1981 by the *Architecture Research Group* at the Stanford University (John Hennessy)



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## Architecture

### Simplified Mips-R3000 architecture

- No floating point operations
- No virtual memory management



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