CPUID Simulation of Intel Processors

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1 Introduction

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1.1 Contributions

In this paper we make the following contributions.

1. Evaluate and compare existing means of processor features identification of different architectures.
2. Describe, implement and evaluate a structured solution to the simulation of CPUID instruction of Intel IA-32.

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2 Overview of Processor Identification

2.1 MIPS

2.2 ARM

2.3 PowerPC

2.4 Intel IA-64 (Itanium)

[?]

2.5 Intel IA-32 and Intel 64

The common PC architecture, starting from Intel Pentium and its clones, provides `CPUID` [?] instruction.

- Leaves
- Subleaves
- Registers
- Non-constant values.

3 Existing Approaches to CPUID Simulation

3.1 Bochs

3.2 Xen

3.3 Qemu

3.4 Simics

4 The Structured Approach

5 Evaluation

6 Conclusions

7 Acknowledgements

References

[1] *Intel® Itanium® Architecture Software Developer's Manual*, 2010.

[2] Intel Corporation, *Intel® 64 and IA-32 Architectures Software Developer's Manual. Volumes 1–3*, 2012.