

Instruction Set Architecture

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Computer Organization & Architecture



Lecture 7 (26 March 2013)

CADSL

Memory Address

- Interpreting memory address
 - Big Endian
 - Little Endian
- Addressing mode

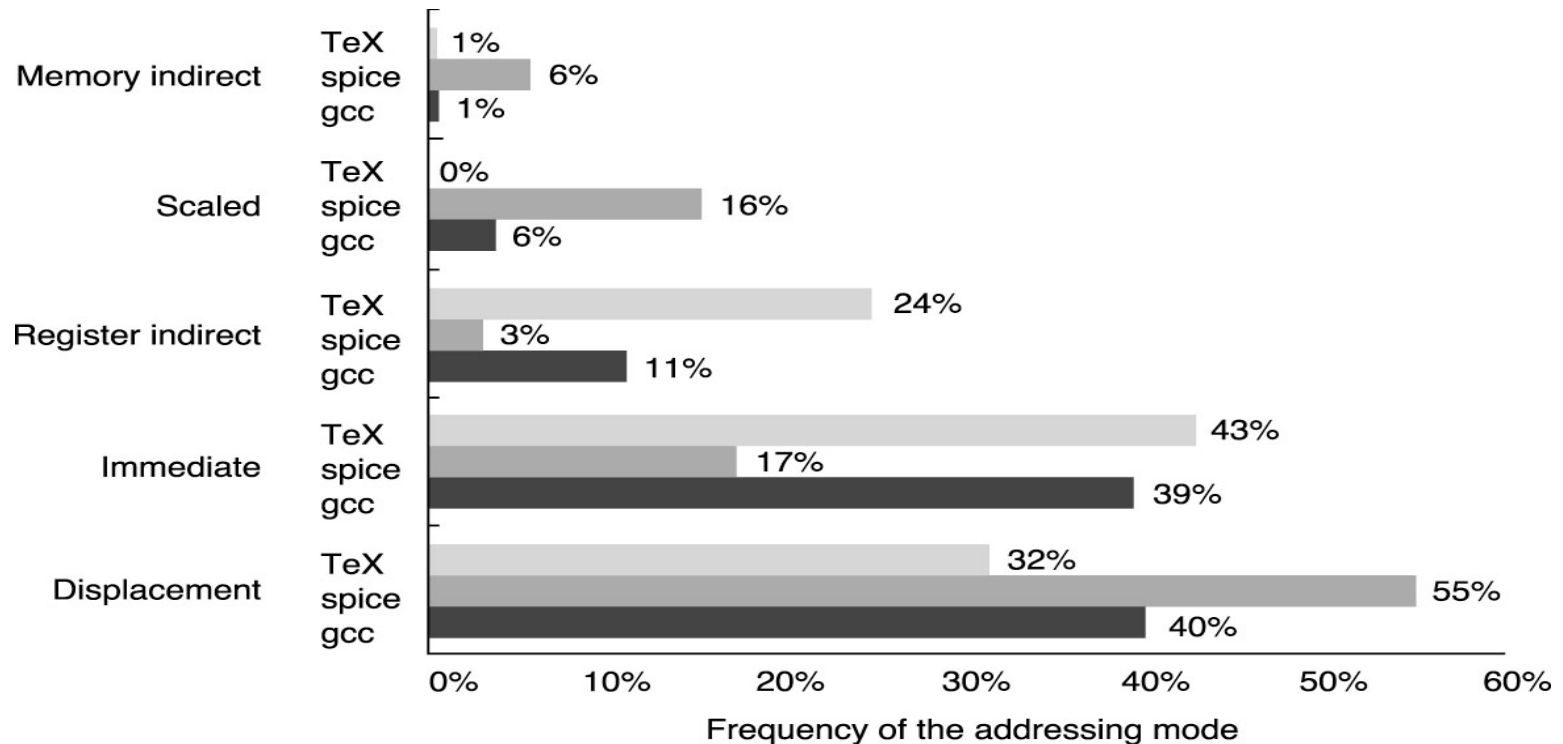


Addressing Modes

- Register
- Immediate
- Register Indirect
- Displacement
- Indexed
- Direct Absolute
- Memory Indirect
- Auto Increment
- Auto decrement



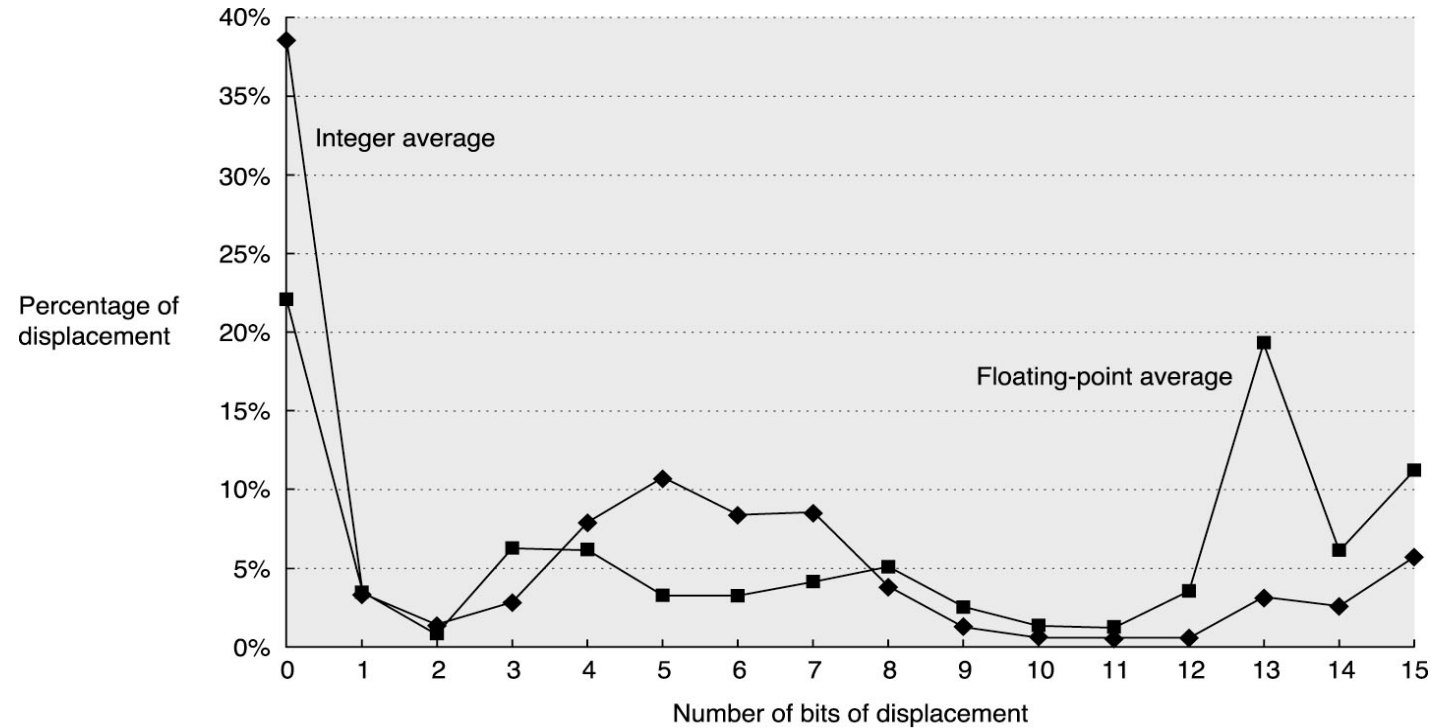
Use of Addressing Modes



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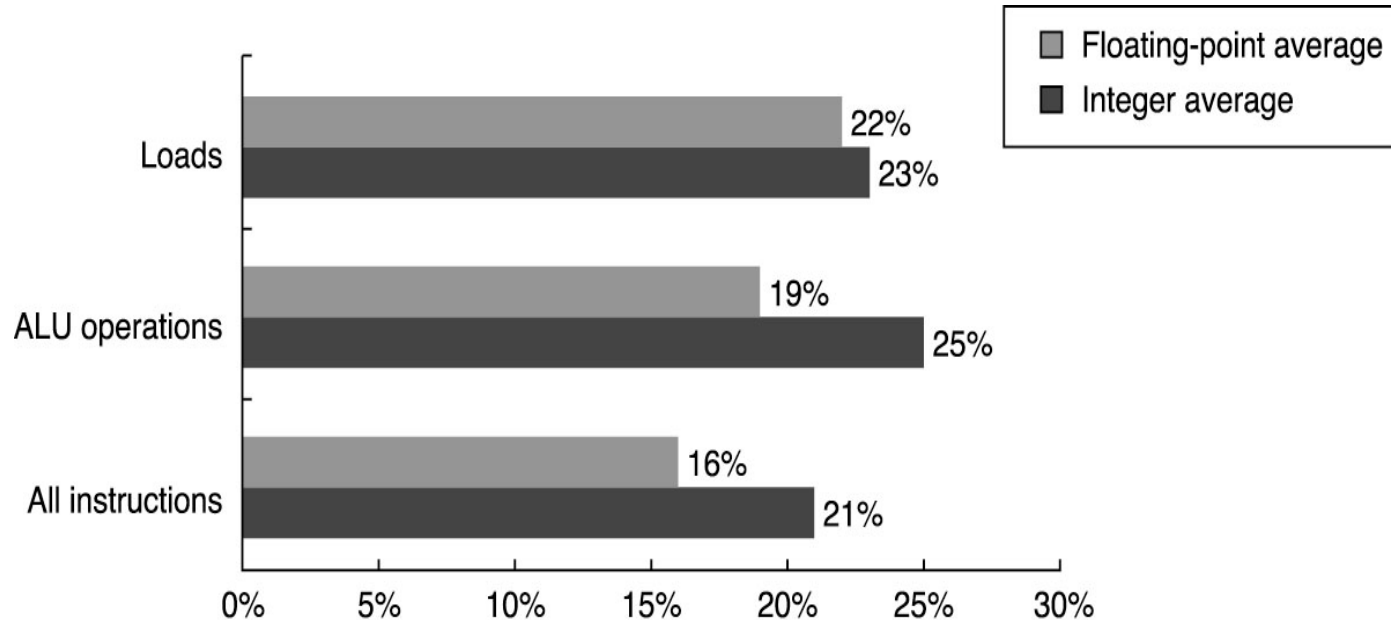
Distribution of Displacement Values



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Frequency of Immediate Operands



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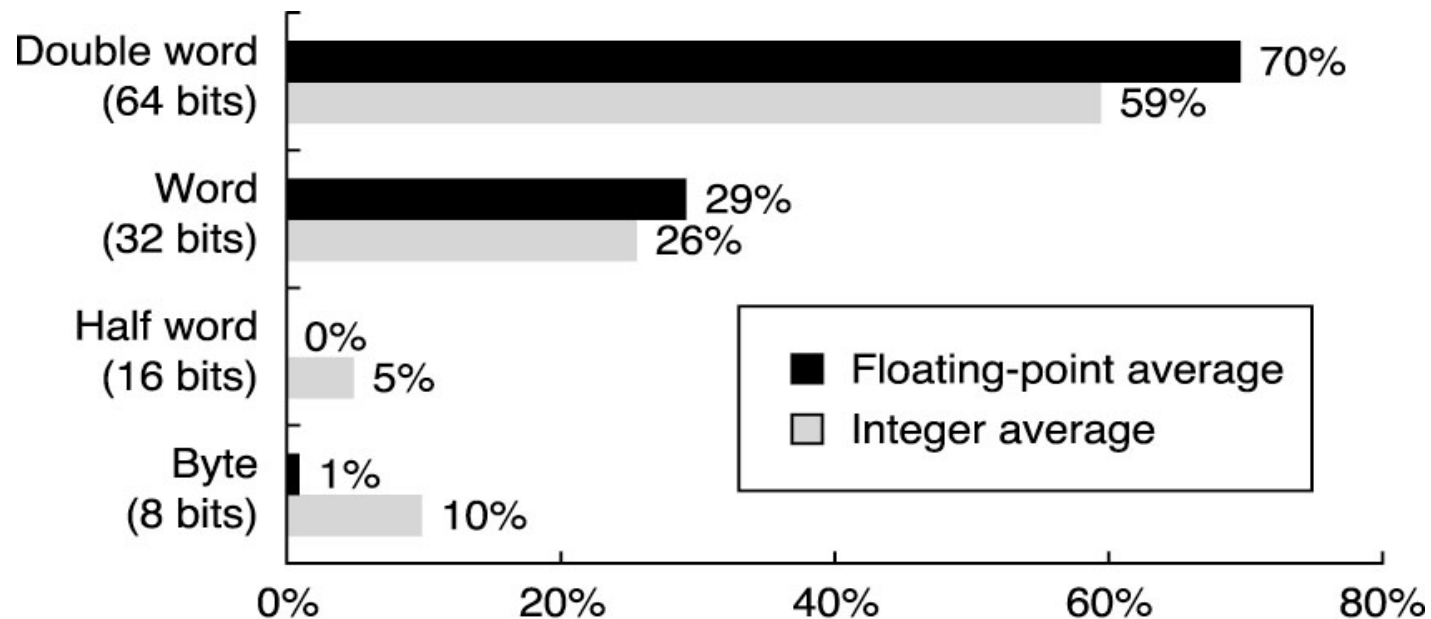


Types of Operations

- ✓ Arithmetic and Logic: AND, ADD
- ✓ Data Transfer: MOVE, LOAD, STORE
- ✓ Control: BRANCH, JUMP, CALL
- ✓ System: OS CALL, VM
- ✓ Floating Point: ADDF, MULF, DIVF
- ✓ Decimal: ADDD, CONVERT
- ✓ String: MOVE, COMPARE
- ✓ Graphics: (DE)COMPRESS



Distribution of Data Accesses by Size



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80x86 Instruction Frequency (SPECint92)

<i>Rank</i>	<i>Instruction</i>	<i>Frequency</i>
1	load	22%
2	branch	20%
3	compare	16%
4	store	12%
5	add	8%
6	and	6%
7	sub	5%
8	register move	4%
9	call	1%
10	return	1%
Total		96%



Thank You

