# Lab 6 : Cache

**Table of Contents**

[Lab 6 : Cache 1](#__RefHeading___Toc137_1923721532)

[Program 1: Hello.c 1](#__RefHeading___Toc139_1923721532)

[Comparison 2](#__RefHeading___Toc141_1923721532)

[Program 2: Hello.cpp 2](#__RefHeading___Toc143_1923721532)

[Comparison 3](#__RefHeading___Toc145_1923721532)

[Program 3: matrix-mul-col-major 3](#__RefHeading___Toc147_1923721532)

[Comparison 4](#__RefHeading___Toc149_1923721532)

[Program 4: matrix-mul-row-major 4](#__RefHeading___Toc151_1923721532)

[Comparison 5](#__RefHeading___Toc153_1923721532)

# Program 1: Hello.c

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| --- |
| **Performance data for hello\_c.LI.mem**  misses: 8831  total accesses: 180723  Miss rate: 4.89  Way bits: 2  Set bits: 10  Tag bits: 18  Associativity: 2  Cache Size: 32768  Replacement: LRU |

|  |
| --- |
| **Performance data for hello\_c.L.mem**  misses: 4765  total accesses: 33884  Miss rate: 14.06  Way bits: 2  Set bits: 9  Tag bits: 19  Associativity: 2  Cache Size: 16384  Replacement: LRU |

|  |
| --- |
| **Performance data for hello\_c.I.mem**  misses: 5231  total accesses: 146839  Miss rate: 3.56  Way bits: 2  Set bits: 8  Tag bits: 20  Associativity: 2  Cache Size: 8192  Replacement: LRU |

### Comparison

((4765 + 5231) / (33884 + 146839) )\* 100 = 5.53 miss rate as compare to 4.89 miss rate of hello\_c.LI.mem

# Program 2: Hello.cpp

|  |
| --- |
| **Performance data for hello\_cpp.LI.mem**  misses: 38350  total accesses: 2829662  Miss rate: 1.36  Way bits: 2  Set bits: 10  Tag bits: 18  Associativity: 2  Cache Size: 32768  Replacement: LRU |

|  |
| --- |
| **Performance data for hello\_cpp.L.mem**  misses: 31332  total accesses: 545012  Miss rate: 5.75  Way bits: 2  Set bits: 9  Tag bits: 19  Associativity: 2  Cache Size: 16384  Replacement: LRU |

|  |
| --- |
| **Performance data for hello\_cpp.I.mem**  misses: 28272  total accesses: 2284650  Miss rate: 1.24  Way bits: 2  Set bits: 8  Tag bits: 20  Associativity: 2  Cache Size: 8192  Replacement: LRU |

### Comparison

((31332 + 28272) / (545012 + 2284650) )\* 100 = 2.106 miss rate as compare to 1.36 miss rate of hello\_cpp.LI.mem

# Program 3: matrix-mul-col-major

|  |
| --- |
| **Performance data for matrix-mul-col-major.LI.mem**  misses: 46256  total accesses: 3566455  Miss rate: 1.30  Way bits: 2  Set bits: 10  Tag bits: 18  Associativity: 2  Cache Size: 32768  Replacement: LRU |

|  |
| --- |
| **Performance data for matrix-mul-col-major.L.mem**  misses: 37776  total accesses: 781626  Miss rate: 4.83  Way bits: 2  Set bits: 9  Tag bits: 19  Associativity: 2  Cache Size: 16384  Replacement: LRU |

|  |
| --- |
| **Performance data for matrix-mul-col-major.I.mem**  misses: 30476  total accesses: 2784829  Miss rate: 1.09  Way bits: 2  Set bits: 8  Tag bits: 20  Associativity: 2  Cache Size: 8192  Replacement: LRU |

### Comparison

(( 37776 + 30476) / (781626 + 2784829) )\* 100 = 1.913 miss rate as compare to 1.30 miss rate of **matrix-mul-col-major.LI.mem**

# Program 4: matrix-mul-row-major

|  |
| --- |
| **Performance data for matrix-mul-row-major.LI.mem**  misses: 46285  total accesses: 3566455  Miss rate: 1.30  Way bits: 2  Set bits: 10  Tag bits: 18  Associativity: 2  Cache Size: 32768  Replacement: LRU |

|  |
| --- |
| **Performance data for matrix-mul-row-major.L.mem**  misses: 37739  total accesses: 781626  Miss rate: 4.83  Way bits: 2  Set bits: 9  Tag bits: 19  Associativity: 2  Cache Size: 16384  Replacement: LRU |

|  |
| --- |
| **Performance data for matrix-mul-row-major.I.mem**  misses: 30476  total accesses: 2784829  Miss rate: 1.09  Way bits: 2  Set bits: 8  Tag bits: 20  Associativity: 2  Cache Size: 8192  Replacement: LRU |

### Comparison

(( 37739 + 30476) / (781626 + 2784829) )\* 100 = 1.912 miss rate as compare to 1.30 miss rate of **matrix-mul-row-major.LI.mem**