

University of Victoria - Computer Science

Name: Han Tran – CSC230

	Test case A	Test case B	Test case C
<i>File 1</i>	Integers-10-314	Integers-40-2653	Integers-200-42624
<i>File 2</i>	Integers-10-1592	Integers-40-5897	Integers-200-93238
<i>Instruction statistics</i>			
<i>ALU</i>	338 (48%)	1028 (46%)	4708
<i>Jump</i>	15 (3%)	15 (1%)	15
<i>Branch</i>	117 (17%)	447 (20%)	2207
<i>Memory</i>	197 (28%)	617 (27%)	2857
<i>Other</i>	42 (6%)	132 (6%)	612
<i>BHT prediction:</i>			
<i>Best</i>	94.44% (index 1)	98.63% (index 1)	99.74% (index 1)
<i>Median</i>	53.24%	60.94%	64.41%
<i>Worst</i>	0% (index 2,6,8,10,15)	0% (index 2,6,8,10,15)	0% (index 2,6,8,10,15)
<i>Cache (8 lines, 8 words per line)</i>			
<i>Direct Mapping</i>	67%	61%	57%
<i>2-way set associative</i>	85%	81%	81%
<i>4-way set associative</i>	94%	91%	92%
<i>Full Associative</i>	94%	91%	92%

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Explanation:

- For instruction statistics, the ALU is decreasing at a steady rate, Jump will be consistent throughout the program and branches will continue to increase due to the increase in size of the data, more data result in more branches being taken. Memory will also be consistent throughout.
- For BHT prediction, the larger the data, the better the prediction of program will get.
- For Cache, as the program caches more data, more miss cache will appear in direct mapping due to its simplicity in handling memory but the bigger the size, the less effective direct mapping will be. On the other hand, Set Associative Cache does a way better job at handling big files, and we can see a noticeable difference when increasing the set from 2 to 4, but from there, increasing the set will not significantly change the hit rate.