CS 311 : Assignment 5

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September 2022

1 Results

Test Case	No. of Instructions	No. of Cycles	Throughput
descending	336	14930	0.0245
evenorodd	7	254	0.0276
fibonacci	89	3825	0.0233
palindrome	51	2295	0.02223
prime	30	1379	0.0217

2 Observations

1. Here we observe that descending and fibonacci has a very high value of number of cycles. This is because descending has $O(n^2)$, fibonacci has $O(n)$ read and write to memory and each memory access takes around 40 cycles to complete.

2. For evenorodd, palindrome and prime, the number of cycles are moderately less because they do not have memory access bottleneck.

3. The only bottleneck for evenorodd is division which takes around 10 cycles to complete. The rest of the cycles are mostly due to instruction fetch.

4. We also observe that the throughput is around 0.0238 which is around $\frac{1}{42}$. This closely matches the inverse of memory latency. Hence, memory access is the major bottleneck in this simulation.