CS311 - Computer Architecture Lab

Lab Assignment – 6

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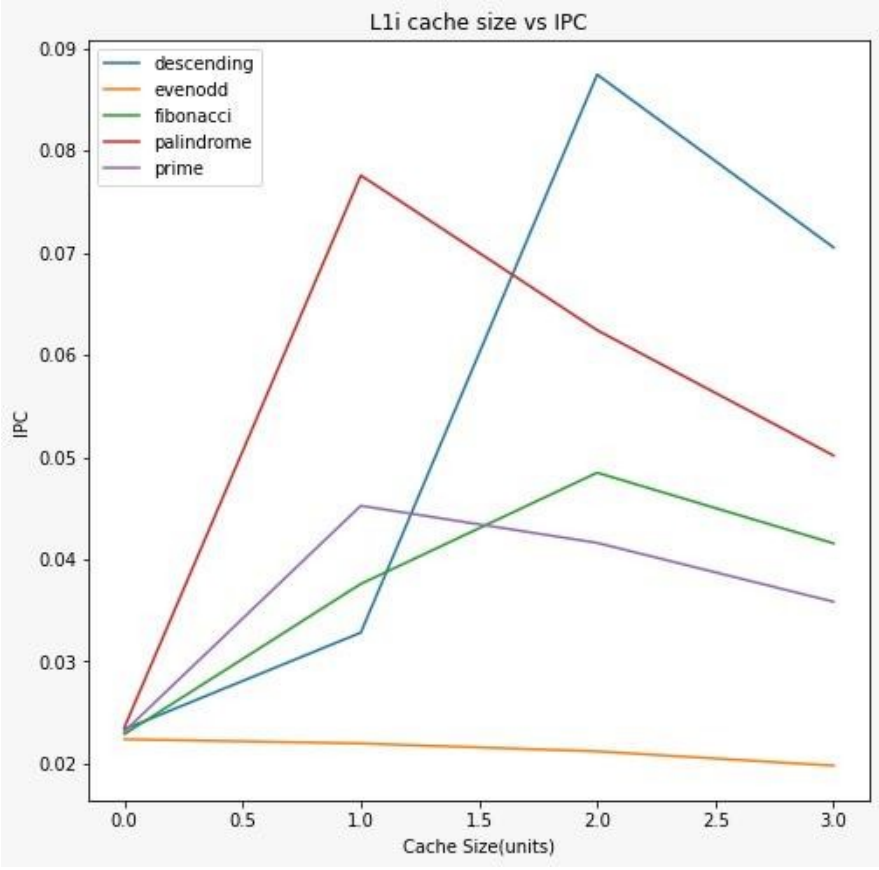
1. L1d = 1kB and L1i varying between 8B to 1kB

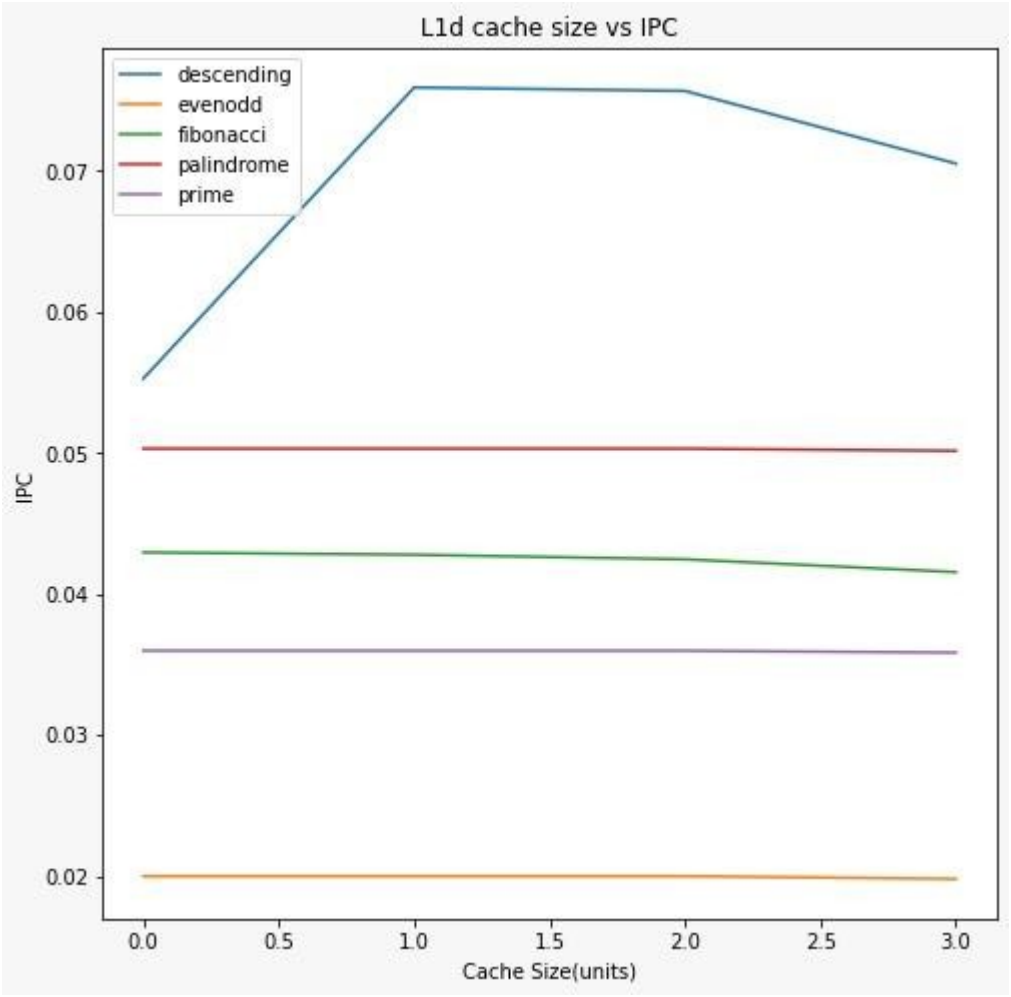
Program	8B	32B	128B	1kB
descending.out	0.02288	0.032821	0.08743	0.07051
evenodd.out	0.02354	0.021978	0.02120	0.01980
Fibonacci.out	0.02314	0.037590	0.04847	0.04155
palindrome.out	0.02288	0.077574	0.06242	0.05015
prime.out	0.02354	0.045241	0.04160	0.03584

As cache size increases, IPC also increase and dropping down after certain size of cache (here 128B). The correlation depends on the program on how frequently it has to access mem



2. L1i = 1kB and L1d varying between 8B to 1kB

Program	8B	32B	128B	1kB
descending.out	0.05527	0.07591	0.07566	0.0705
evenodd.out	0.02	0.02	0.02	0.0198
Fibonacci.out	0.04295	0.04278	0.04246	0.0415
palindrome.out	0.05030	0.05030	0.05030	0.0501
prime.out	0.03598	0.03598	0.03598	0.0358



3. In graph of varying L1i-cache size, there is increase of IPC as expected but, after
size of cache, increasing further will decrease due to higher cache latencies.

In the graph of varying L1d-cache size, as the cache size increases, IPC also increase an
dropping down after certain size of cache (here, 128B). This depends on nature of progr
Here, descending.asm file has to work with previously processed data. Thery increasing

as it can be accessible from cache. Program like evenodd.asm has very little to do with previously processed data, so they don’t show significant changes.

From the above two graphs, programs with iterative loops exhibit higher tempora locality among instructions and increased cache sized help them execute better.