

4.

Test Case#	Problem Size	Max Generations	Time Taken vulcan	Time Taken dmc cluster
1	1000*1000	1000	0.58 min	0.39 min
2	5000*5000	1000	14.206 min	11.20 min
3	5000*5000	5000	70.75 min	66.6 min
4	10000*10000	1000	56.985 min	45.678 min
5	10000*10000	5000	283.454 min	190.43 min

From the above experiment result we can see that, the execution time in dmc cluster is faster than the vulcan server for all the test cases. We have seen that the size of L2-cache is 4096k and 2048k in dmc cluster and vulcan server respectively. We know that the L2 plays an important role while cpu operates on particular program. There are significant difference in the size of L1d cache (16k in vulcan and 32k in dmc cluster). In the vulcan server the memory is 3.87 gb while running programs in dmc cluster we have 8gb ram. This might have significant impact on execution time as there was no IO operation. We have compiled our program using gcc compiler. The version is 4.8.5 20150623 in vulcan server and 4.8.5 20150623 in dmc cluster. There might be other reasons for the difference of execution time like the server load, cpu bus speed. Suppose at the time of executing the programs if the server load is high it would take much longer time than expected.

We have executed the last program using Queue type small. All the other programs were executed using Queue type class. As there is a time limit of 2 hours for 'class' type, we were not successful on executing our program within that period. Then we have tried with class type "small" for 5th test case only and we got the above result.

5.

1.

Moore's law is the observation that the number of components (transistors, resistors and capacitors) in an integrated circuit doubles approximately every two years.

2.

Dennard Scaling is a method to scale down transistors but maintaining a constant power density. The power density means energy produces in a square unit of chip area. It is proportional to switching speed and the number of transistors in a unit area. From Denard scaling we know that the power density stays constant as transistors get smaller so the power used is proportional to area.

3.

The S-curve is a mathematical model describes the growth of two variables in terms of one another over time. In business the S curve model is used to describe and predict the performance of a company or a product over a period of time.

4.

Yes Moore's law is dead now. It has sustained for five decades.

5.

The Exponential growth depends on three levels of adoption in the computing ecosystem. These are chip, system, and community.

Yes Exponential growth is likely to be sustained for many more years.

Our source code gitlab link is :

<https://gitlab.cs.uab.edu/mashiur/cs732.git>

I have added Dr Purushotham Bangalore as a member to the project.