

AOS Lab – Assignment 3

Study pthreads and implement the following: Write a program which shows the performance improvement in using threads as compared with process.

Matrix Multiplication

Data size	No of Threads	Execution time 1	Execution time 2	Execution time 2	Execution time 4	Average Execution time
Size 1 (2048)	1	254.00	254.00	254.00	254.00	255
	2	188.00	192.00	190.00	190.00	190
	4	104.00	104.00	104.00	104.00	105
	8	98.00	98.00	98.00	98.00	98
Size 2 (1024)	1	12.00	10.00	14.00	12.00	12
	2	4.00	8.00	8.00	8.00	7.5
	4	4.00	4.00	2.00	4.00	2.5
	8	4.00	4.00	4.00	2.00	2.5
Size 2 (512)	1	2.00	2.00	2.00	2.00	2
	2	0.00	0.00	2.00	2.00	1
	4	0.00	0.00	0.00	0.00	0
	8	0.00	2.00	0.00	2.00	1
Size 4 (254)	1	2.00	0.00	0.00	0.00	0.5
	2	0.00	0.00	0.00	0.00	0
	4	0.00	0.00	0.00	0.00	0

	8	0.00	0.00	0.00	0.00	0
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Quicksort

Data size	No of Threads	Execution time 1	Execution time 2	Execution time 2	Execution time 4	Average Execution time
Size 1 (14284)	1	2002	2002	2004	2007	2004.75
	2	1944	2002	2017	2042	2002
	4	1951	2045	2071	2112	2045
	8	1924	2109	2144	2242	2112
Size 2 (8192)	1	2005	2004	2009	2010	2007.5
	2	1974	1974	2020	2071	2012.25
	4	1979	2074	2102	2142	2074.5
	8	1910	2080	2125	2212	2084.25
Size 2 (4094)	1	1952	1952	1955	1954	1954
	2	1928	2001	2014	2042	1999.5
	4	2027	2098	2145	2197	2121.75
	8	1944	1994	2078	2289	2077.25
Size 4 (2048)	1	1944	1972	2071	2187	2044
	2	2025	2189	2278	2428	2222.5

	4	2047	2142	2122	2498	2202.5
	8	2052	2227	2245	2589	2205.75

Reduction

Data size	No of Threads	Execution time 1	Execution time 2	Execution time 2	Execution time 4	Average Execution time
Size 1	1	1847	1848	1898	1899	1872
	2	1875	1921	1984	2052	1940.75
	4	1845	1950	2010	2107	1978
	8	1905	2078	2145	2428	2141.5
Size 2	1	1888	1878	1922	1922	1907.75
	2	1914	2018	2198	2224	2091.5
	4	1879	1987	2012	2245	2055.75
	8	1845	2025	2122	2419	2110.25
Size 2	1	1925	1989	2145	2401	2120
	2	1947	2010	2295	2418	2147.5
	4	1945	2070	2178	2247	2115
	8	1971	2149	2244	2598	2241
Size 4	1	1950	1951	2004	2007	1978.5
	2	1952	2015	2042	2122	2028.25
	4	1924	2021	2088	2205	2045
	8	1978	2104	2145	2298	2154.25

Sieve

Data size	No of Threads	Execution time 1	Execution time 2	Execution time 2	Execution time 4	Average Execution time
Size 1	1	2090	2071	2074	2105	2085
	2	2021	2098	2092	2127	2087
	4	2029	2112	2148	2192	2125.5
	8	2002	2207	2244	2242	2198.75
Size 2	1	2084	2092	2084	2109	2092
	2	2022	2027	2110	2152	2082
	4	2044	2142	2147	2224	2157.75
	8	1991	2152	2227	2289	2144.75
Size 2	1	2012	2002	2024	2051	2022.5
	2	1990	2070	2102	2122	2071.5
	4	2081	2195	2241	2271	2202
	8	2014	2051	2148	2279	2152
Size 4	1	1998	2059	2144	2281	2121
	2	2079	2228	2241	2505	2290.75
	4	2127	2191	2194	2598	2277.5
	8	2127	2191	2194	2598	2277.5