Overall

Elapsed Time: 11.490s

IPC:	2.210
SP GFLOPS:	0.000
DP GFLOPS:	0.182
x87 GFLOPS:	0.000
Average CPU Frequency:	1.7 GHz

Logical Core Utilization: 7.1% (1.136 out of 16)

Physical Core Utilization: 8.8% (1.060 out of 12)

Microarchitecture Usage: 39.1% of Pipeline Slots

Performance-core (P-core):		
Retiring:	40.0%	of Pipeline Slots
Front-End Bound:	5.7%	of Pipeline Slots
Bad Speculation:	1.1%	of Pipeline Slots
Back-End Bound:	53.2%	of Pipeline Slots
Memory Bound:	23.6%	of Pipeline Slots
L1 Bound:	2.9%	of Clockticks
L2 Bound:	0.4%	of Clockticks
L3 Bound:	6.2%	of Clockticks
DRAM Bound:	18.8%	of Clockticks
Store Bound:	0.1%	of Clockticks
Core Bound:	29.5%	of Pipeline Slots
Efficient-core (E-core):		
Retiring:	20.9%	of Pipeline Slots
Front-End Bound:	49.3%	of Pipeline Slots
Bad Speculation:	0.0%	of Pipeline Slots
Back-End Bound:	36.0%	of Pipeline Slots
Core Bound:	9.1%	of Clockticks
Memory Bound:	26.8%	of Clockticks
Back-End Bound Auxiliary:	36.0%	of Pipeline Slots
Resource Bound:	36.0%	of Pipeline Slots

*N/A is applied to metrics with undefined value. There is no data to calculate the metric.

Memory Bound: 23.6% of Pipeline Slots

Performance-core (P-core):		
Memory Bound:	23.6%	of Pipeline Slots
Cache Bound:	9.4%	of Clockticks
DRAM Bound:	18.8%	of Clockticks
Efficient-core (E-core):		
Memory Bound:	26.8%	of Clockticks

*N/A is applied to metrics with undefined value. There is no data to calculate the metric.

Vectorization: 0.0% of Packed FP Operations

Instruction Mix:

SP FLOPs:	0.0%	of uOps
DP FLOPs:	4.1%	of uOps
x87 FLOPs:	0.0%	of uOps
Non-FP:	95.9%	of uOps

Metrics were collected from Big Cores only.

MPI TIME

```
Time taken for matrix multiplication: 4.08691 seconds.
devquest@tanmay08:~/Desktop/PC/Study/CA/Lab/Ass4$
```

Memory Banwidth

Memory Bound : 16.0% of Pipeline Slots

Performance-core (P-core):

Memory Bound :	16.0%	of Pipeline Slots
Cache Bound :	5.2%	of Clockticks
DRAM Bound :	16.1%	of Clockticks

*N/A is applied to metrics with undefined value. There is no data to calculate the metric.

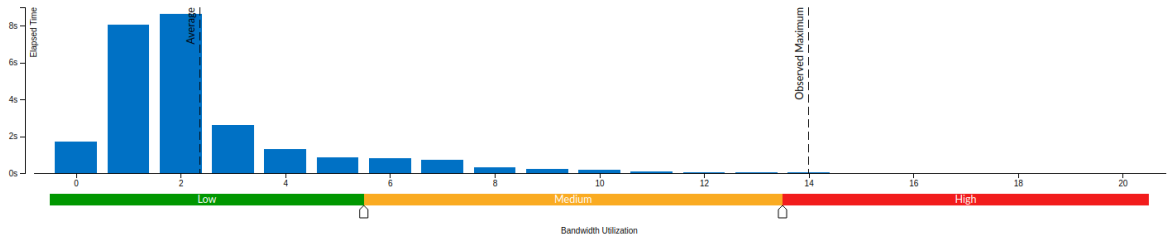
Bandwidth Utilization Histogram

Explore bandwidth utilization over time using the histogram and identify memory objects or functions with maximum contribution to the high bandwidth utilization.

Bandwidth Domain: DRAM, GB/sec

Bandwidth Utilization Histogram

This histogram displays the wall time the bandwidth was utilized by certain value. Use sliders at the bottom of the histogram to define thresholds for Low, Medium and High utilization levels. You can use these bandwidth utilization types in the Bottom-up view to group data and see all functions executed during a particular utilization type. To learn bandwidth capabilities, refer to your system specifications or run appropriate benchmarks to measure them; for example, Intel Memory Latency Checker can provide maximum achievable DRAM and Interconnect bandwidth.



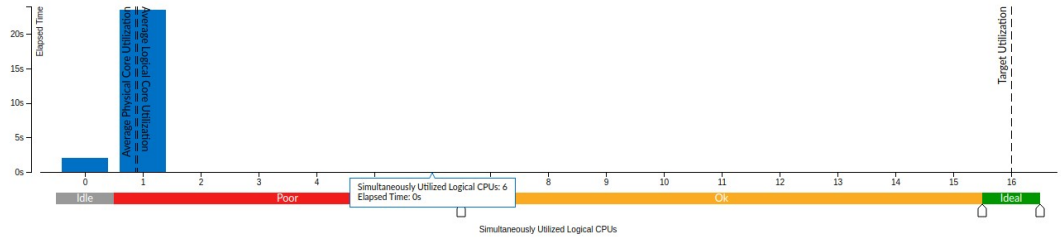
Core Utilization

Effective Physical Core Utilization : 7.3% (0.880 out of 12)

Effective Logical Core Utilization : 5.6% (0.903 out of 16)

Effective CPU Utilization Histogram

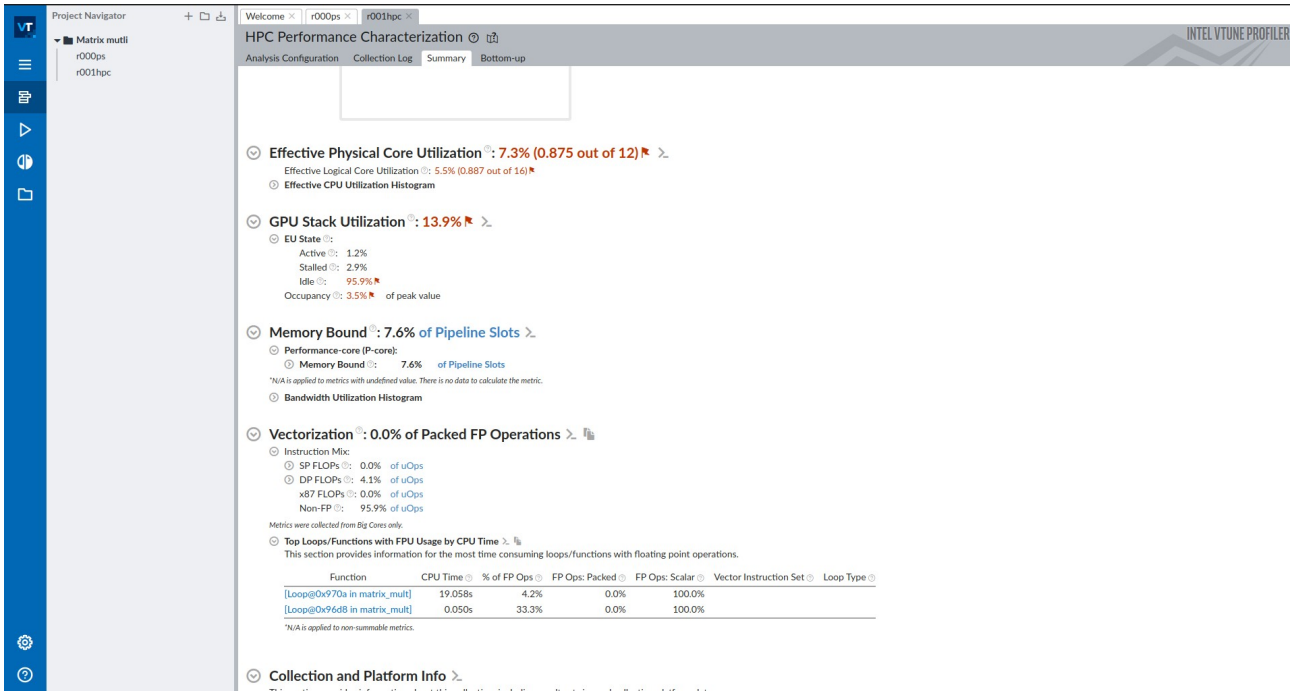
This histogram displays a percentage of the wall time the specific number of CPUs were running simultaneously. Spin and Overhead time adds to the Idle CPU utilization value.



GPU Stack Utilization : 13.6%

EU State :

Active :	1.5%
Stalled :	4.6%
Idle :	93.9%
Occupancy :	5.2% of peak value



Collection and Platform Info

This section provides information about this collection, including result set size and collection platform data.

Application Command Line:	/home/tanmay08/Desktop/PC/Study/CA/Lab/Ass4/main
Operating System:	6.5.0-45-generic DISTRIB_ID=Ubuntu DISTRIB_RELEASE=22.04 DISTRIB_CODENAME=jammy DISTRIB_DESCRIPTION="Ubuntu 22.04.5 LTS"
Computer Name:	tanmay08
Result Size:	4.0 MB
Collection start time:	16:45:36 22/09/2024 UTC
Collection stop time:	16:45:48 22/09/2024 UTC
Collector Type:	Event-based counting driver

Finalization mode: Fast. If the number of collected samples exceeds the threshold, this mode limits the number of processed samples to speed up post-processing.

CPU

Name:	Intel(R) microarchitecture code named Alderlake-P
Frequency:	3.1 GHz
Logical CPU Count:	16

Cache Allocation Technology

Level 2 capability:	available
Level 3 capability:	not detected