Birla Institute of Technology & Science, Pilani
Pilani Campus

II SEMESTER 2024-2025
Assignment

Course No.:	**CS F422**	**Course Title:**	**Parallel Computing**
Deadline:	**As per Canvas**	**Maximum Marks:**	**40M (20%)**

Note:
- Maximum of two students per group.
- Demo & viva will be scheduled after submission.

P1. Consider the following datset that contains reviews for Electronic items on Amazon website. Please implement the following.

Dataset:review dataset Datset description: decsription

(a) Implement a CUDA program cuda_toprated.cu for listing the names of top 10 rated products. Rating is average of all ratings for the product.

(b) Also implement cuda_toprated_optimized.cu that applies all possible optimizations given in book R6 to (a).

(c) Compare the performance of the two in (a) and (b).

(d) Implement a CUDA program cuda_reviewanalysis.cu that analyzes the reviews and labels them as positive (if sentiment score>0) and negative (if sentiment score<0). Make use of lexicon sentiment scores and calculate sentiment score as lexicon frequency* lexicon score. Lexicon can be combination of more than one word.

(e) Also implement cuda_reviewanalysis_optimized.cu that applies all possible optimizations given book R6 to (d).

(f) Compare the performance of the two in (d) and (e).

(g) Implement a sequential C/C++ program c_elaborate.c to identify reviewers who have written elaborate reviews. Elaborate reviewers are defined as len(review text) >= 50 words and at least 5 such reviews.

(h) Apply OpenMP exensions to parallelize this program on GPUs and saved as c_elaborate_openmp.c.

(i) Compare the performance of the two in (f) and (g).

Deliverables:

- Well commented source code files for (a), (b), (d), (e), (g) and (h)
- Design Document (.pdf) containing design aspects and optimizations. Also must contain answers for (c), (f) and (i).

[40M]

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