

Last Date for submission is March 10th, 2023

Problem-Based Assignment (21SW-II)

Of

Data Structure and Algorithms

21SW Batch

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Dataset: <https://www.kaggle.com/datasets/syedasimalishah/auto-pedestrians-crashes>

Step 1: Make a queue for the car crashes based on their time line from January to December (Day 1 to Day 31) and store day of week, crash type, light conditions, weather conditions and other necessary data.

Step 2: Make three sub queues from the original queue such as sub queues storing only clear weather crashes, snow weather crashes and rain weather crashes.

Step 3: Make seven sub queues (one for each day of the week) for all crashes.

Step 4: Make two binary trees to store total number of crashes for each month(use crash number as key) for both ‘hit and run’ and ‘not hit and run’ crash types.

Problem 1: How to find out which day (from Monday to Sunday) was the deadliest of all days as well as which months’ Friday was the deadliest among all Fridays.

Problem 2: How to find the number of rainy day crashes in every month.

Problem 3: Which month had the lowest ‘hit and run’ and which month had the highest ‘hit and run’ crash cases (use binary tree already developed). Which month has lowest ‘not hit and run’ and which month had the highest ‘not hit and run’ crash cases

Postulate 1: Is it true that the weekends (Saturdays and Sundays) when the light conditions were dark, caused more crashes than Mondays and Tuesdays.

Make the algorithm and code (use GUI or command line for results) for the above mentioned problems

Rubric for problem-based learning assignment

	Good (2.5 marks)	Fair (1.5 mark)	Unsatisfactory (1 mark)	Not Submitted(0 mark)
Data Structure creation	Demonstrates the ability to create data structures correctly.	Demonstrates a moderate level of ability to create data structures.	Not able to create data structures properly.	Not submitted
Organization & Structure of algorithms	The algorithms are well organized in a tight and logical fashion.	The algorithms are partially organized in a logical fashion.	The algorithms are not well organized in a tight and logical fashion.	Not submitted
Code Completeness	Demonstrates an in-depth, high-level understanding of the problems with complete code.	Demonstrates a moderate level of understanding of the problems with some code.	Fails to demonstrate an understanding of the problems and code.	Not submitted
Result Accuracy	The results presented are accurate.	The results presented are partially accurate.	The results are not in presentable form.	Not submitted