January 2020 CSE208: Data Structures and Algorithms II Sessional

Offline on Branch and Bound technique

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In this assignment, you need to solve the famous Traveling Salesman Problem (TSP). You need to implement an exact solution without any pruning and a solution using Branch and Bound (B&B) technique.

Input:

Test both of your solutions using the dataset presented [here](#).

You can find the details about the data in the following links.
1. [TSP - Data for the Traveling Salesperson Problem](#)
2. [VLSI Data Sets](#)
3. [National Traveling Salesman Problems](#)

Output:

Generate a report in the following format for all the graphs in the given dataset:

Name of the Graph	# of cities	Optimal Solution	Exact algorithm		BnB algorithm	
		Distance	Distance	Time (s)	Distance	Time (s)
att48	48	33523	...	...	...	...
dj38	38	6656	...	...	...	...
...	...	...	...	...	...	...
...	...	...	...	...	...	...
...	...	...	...	...	...	...

You should be able to generate the solutions of small instances during sessional class as well to verify your obtained results.

Special Instructions:

Write *readable, re-usable, well-structured, quality* code. This includes but is not limited to writing appropriate functions for implementation of the required algorithms, meaningful naming of the variables, suitable comments where required, proper indentation etc. In online, you will need to use these algorithms to solve some real problems. With good quality code, your life will be much easier for subsequent assignments.

Please **DO NOT COPY** solutions from anywhere (your friends, seniors, internet etc.). Implement the algorithms with your own style of coding. Any form of plagiarism (irrespective of source or destination), will result in getting -100% marks in the offline. It is your duty to protect your code.

Also, be informed that for the repeated offence of plagiarism, the departmental policies suggest stricter measures.

Submission Guideline:

1. Create a directory with your 7 digit student id as name
2. Put the source files and the report (PDF file) into the directory created in 1
3. Zip the directory
4. Upload the zip into moodle

For example, if your student id is 1405123, create a directory named 1405123. Put your source files(.c, .cpp, .java, .py, .h, .hpp etc) only and the report 1405123.pdf into 1405123. Zip 1405123 into 1405123.zip and upload the 1405123.zip into moodle.

Failure to follow the above-mentioned submission guideline will result in some penalty.

Submission Deadline:

December 11, 2020, 10:00 PM

This is a hard deadline and there shall be no extensions for any reason whatsoever.