**Marking Criteria of Assignment 2**

* **Group Task (15 marks):**

The group mark is determined based on the overall completion and quality of the assignment. Each member of the group will receive the same group score, reflecting the collective effort and performance of the team as a whole.

* **Individual Task (25 marks):**

Individual mark will be determined based on the accuracy and completeness of the tasks completed by each member in the group.

* **Criteria of Code (Individual Task: 25 marks)**

For Tasks 1 and 2, the code components will be evaluated based on the following three criteria:

* **Correctness (70%):**
* Sequential Scan (**10%**), BF algorithm (**40%**), Divide-and-Conquer (**20%)**.
* The correctness of each algorithm’s code will be considered in terms of whether the code is runnable, whether the results are accurate, and if there are minor errors present in the code, partial marks will be deducted.
* **Efficiency (15%):** If the average query time of an R-tree based algorithm (BF and Divide-and-Conquer) is at least 5 times faster than that of the sequential scan, full marks (15%) will be awarded. If it is at least 2 times faster but less than 5 times, partial marks (10%) will be awarded. If it is less than 2 times faster, no marks will be given.
* **Comments (15%):** You need to provide detailed comments for each key part of your program. This includes each function, each FOR/WHILE loop, and each IF statement, as well as each calculation and value assignment. Your comments should help others, who are not familiar with your program, to clearly understand your code.
* **Criteria of Project Report (Individual Task: 25 marks)**

The project report must include the following content:

* **Function Description (10%):** Your report should include a detailed description of all functions in your source code. This description serves as a formal introduction and typically contains more comprehensive information than the comments within the source code itself. If you only describe a portion of your functions, your grade will be deducted based on the accurate proportion covered.
* **Requirement Description (10%):** Your report should include a clear description of the requirements for executing your code, such as the datasets you selected, the OS environment, placement of input files, any input parameters, etc. Additionally, your report should include screenshots of the running results, such as sample results, and execution time.
* **Analyzing the Working of Task 1 (40%):**

You need to use the sample data we provided for Task 1 analysis on iLearn, which includes 10 data points and 1 query, to complete the following analysis:

* **R-Tree Construction (10%):** Using the provided 10 data points, create detailed diagrams to illustrate the process of constructing the corresponding R-Tree. Your diagrams should comprehensively demonstrate each step of the construction process, including any instances of overflow and the subsequent node splitting. Accompany your diagrams with a thorough discussion that elaborates on the overflow occurrences and node splitting decisions, highlighting the reasoning behind each step in the R-Tree construction.
* **BF Algorithm (20%):** Based on the constructed R-Tree, create detailed diagrams to demonstrate the process of executing the BF algorithm to find the query result. Your diagrams should fully depict each step of the query process.
* **Divide and Conquer (10%):** Using the example above, draw figures to show how the divide-and-conquer idea can be applied with the BF algorithm. You need to provide detailed step-by-step figures to show how it is implemented.
* **Analyzing the Working of Task 2 (40%):**

You need to use the sample data we provided for Task 2 analysis on iLearn, which includes 15 data points to complete the following analysis:

* **R-Tree Construction (10%):** Using the provided 15 data points in the example, create detailed diagrams to illustrate the process of constructing the corresponding R-Tree.
* **BBS Algorithm (20%):** Based on the constructed R-Tree, create detailed diagrams to demonstrate the process of executing the BBS algorithm to identify the skyline. Your diagrams should comprehensively illustrate each step of the process.
* **Divide and Conquer (10%):** Using the example above, draw figures to show how the divide-and-conquer idea can be applied with the BBS algorithm. You need to provide detailed step-by-step figures to show how it is implemented.
* **Criteria of Presentation (Group Task: 15 Marks)**

The quality of the presentation will be evaluated based on the following aspects:

* **Quality of the Slides (40%):**
* **Slide Quantity:** Ideally, the slide should consist of 20-25 slides.
* **Detail of Content:** The slides should contain detailed information relevant to each task.
* **Organization and Logic:** The slide content should be structured in a logical and coherent manner.
* **Use of Visual Aids:** Appropriate use of diagrams, charts, or flowcharts to support and clarify the tasks completed.
* **Color and Design:** Effective use of color to enhance readability and engagement.
* **Quality of Presentation Delivery (60%):**
* **Time Management:** The ability to manage the presentation time effectively, ensuring that all parts of the presentation are covered within the allotted time.
* **Fluidity of Speech:** Smooth delivery of the presentation, without unnecessary interruptions or hesitations.
* **Clarity and Specificity of Expression:** Clear and specific communication of ideas, making it easy for the audience to understand the presented information.