The Project Overview for ITM 411

➢ Description

This is an individual project. You can choose any one of important concepts learned in the lectures. With the concept, present two major points: <u>1) explain the concept based on your understanding</u> and <u>2) apply the concept into a real-world problem based on the programming</u>.

- All the concepts you are interested in are possible. The examples will be as follows:
    - Major topics: ER model, SQL, normalization, indexing, and transactions
    - Specific topics: how to design ER model, how to write efficient SQL, strategies for normalization, performance comparison between different indexing methods, and extreme cases to break the consistency of transactions
- <u>For the first part (i.e., explain the concept)</u>, the following points should be considered:
    - You can start the basic information learned from the lecture. But, it's required to explain <u>more details of the concept beyond the lecture slide by investigating about the concept</u>.
    - If you refer to the other references, you need to state exactly where you see the references.
    - Official references are recommended such as papers or official home pages rather than private blogs
- <u>For the second part (i.e., apply the concept to a real-world problem)</u>, the following points should be considered:
    - For the real-world problem, you can use the well-known problems or applications. Or, you can make the case or example where the concept will be importantly applied.
    - The result does not need to be complicated. It is enough to show what you explained in the first part.
    - You can use any kinds of programming languages (e.g., Java, Python) and environments you prefer.

➢ Example

- Topic
    - In the lecture, we learned the meaning of DISTINCT operator in SQL, which gets the input data and eliminates the duplicates in the data, and how to use it
    - A possible topic: how to implement DISTINCT operator and show the results using real datasets
- 1st part: Explain the concept
    - To identify the unique values efficiently, first we need to sort the values, which is the details for the implementation and is not covered in the lecture specifically
    - Then, check the redundancy of values and eliminate them while scanning all the values
- 2nd part: Apply the concept to a real-word problem
    - Choose real-world datasets having many redundant values
    - Implement algorithms to remove the redundancy
    - Show the results using the real-world datasets

➢ Presentation and submission

- Present your results. Each presentation should be done within 10 minutes
- The presentation is divided into two groups: half of you will present near mid-term exam (7th week), and the other will near final exam (14th week). This will be randomly selected by the system and be announced.
- The presentation manners will be determined by online or offline manners according to the COVID pandemic situations.
- If the presentation will be done by an online manner, refer to the following directions:

  Build your own video presentation and upload it with the presentation slide. When we record the video, please note that your face needs to be included. For easy recording for this configuration, using of Zoom is recommended.

  Submit 1) video contents, 2) the presentation slide, and 3) supplementary materials (e.g., source codes) to Google Drive (a specific location will be noticed in the e-class)
- If the presentation will be done by an offline manner, you need to submit 2) and 3) above to e-class

➢ First presentation submission

- WHEN: 3 Apr. 2022 at 23:59 PM. Late submissions are not allowed
- Scope of the topics: 1st~ 6th Lectures (before mid-term exam)

➢ Second presentation submission

- WHEN: 22 May 2022 at 23:59 PM. Late submissions are not allowed
- Scope of the topics: 9th (after mid-term exam) ~ 13th Lecture (before final exam)

➢ Evaluation criteria

- Chosen topic
  - The chosen topic is meaningful to explain the details of the concept and to apply it to a real-world problem
- Depth and width of understanding
  - Theoretical depth of the concept
  - Applicable to the real-world problems
- Application of using the concept
  - Is the chosen problem or application valid to apply the concept?
  - Is the overall process to apply the concept well designed?
  - Is the assumption for the problem or application realistic?
  - Is the result valuable?
- Presentation
  - Organization of the presentation
  - Effectively understandable considering the given time limitation (i.e., 10 minutes)

➢ Feedback strategy

- The feedbacks will be given during the presentation or through e-class system