**Wormhole: A Fast Ordered Index for In-memory Data Management (I)**

NOTE: Your slides/presentation only need to cover background information necessary to answer the given questions (in a clear and well-organized manner). You are allowed to borrow contents from other resources, such as online slides, as long as you acknowledge them. The presentation should be mostly question-focused and proceed mostly in a Q&A format. Please include the questions in your slides. Don’t write detailed answers in the slides and read them to the class. Instead, use bullet points, graphs, or animations to explain your answers to the class.

In your Q&A report, use text to more thoroughly answer the questions. Include a short paragraph at the beginning of the report to summarize the paper.

1. Show an example B+ tree and an example prefix tree. Do both support range search? For a given number of keys, which one has a lower lookup cost?

2. Please design a table to compare B+-tree, prefix tree, and hash table on their lookup cost, support of range search, and space efficiency.

3. If we replace B+ tree’s MetaTree with a hash table, what are the issues? Can we have a B+ tree AND additionally a hash table to accelerate lookup at MetaTree?

4. With B+ tree’s MetaTree replaced by a MetaTrie, anchors are inserted into the trie. Use Fig. 3 as an example to explain how an anchor is determined? If the last key in in the first leaf node is “Austi”, what’s the anchor between the first and the second leaf nodes?

5. Use Figure 4 as an example to explain how search keys “A”, “Denice”, and “Julian” are found in the tree?