38 Lecture - CS301

Important Subjective

1. **What is a table, and how is it different from an array?**
Answer: A table is a data structure that consists of rows and columns, much like a spreadsheet. It is different from an array in that the rows and columns can be of different sizes and data types.

2. **How are dictionaries used in programming, and what are some common operations performed on them?**
Answer: Dictionaries are used in programming to store key-value pairs. Common operations performed on them include adding new key-value pairs, removing existing ones, and updating the values associated with a given key.

3. **What is a hash table, and how does it work?**
Answer: A hash table is a data structure that uses a hash function to map keys to indices in an array. The values associated with each key are then stored in the corresponding index of the array.

4. **How does the efficiency of searching and inserting elements in a hash table compare to other data structures?**
Answer: Searching and inserting elements in a hash table can be done in constant time, making it very efficient. However, the efficiency can be impacted by the quality of the hash function used.

5. **How are tables used in databases, and what are some common operations performed on them?**
Answer: Tables are used in databases to store large amounts of data in a structured way. Common operations performed on them include adding new rows or columns, deleting existing ones, and querying the data to retrieve specific information.

6. **What is a trie, and how is it used in text processing?**
Answer: A trie is a tree-based data structure that is used to store and search for words in text processing. It works by breaking down words into their individual characters and representing them as nodes in the tree.

7. **How can a table be sorted, and what is the efficiency of sorting?**
Answer: A table can be sorted by using an algorithm such as quicksort or mergesort. The efficiency of sorting depends on the size of the table and the specific algorithm used.

8. **What is a dictionary lookup, and how is it performed?**
Answer: A dictionary lookup is the process of retrieving the value associated with a given key in a dictionary. It is performed by using the key to search the dictionary and returning the corresponding value.

9. **How do hash collisions impact the efficiency of a hash table?**
Answer: Hash collisions occur when multiple keys map to the same index in the array used by the hash table. This can slow down search and insert operations, as additional steps must be

taken to resolve the collision.

10. **How does the efficiency of searching and inserting elements in a binary search tree compare to other data structures?**
Answer: Searching and inserting elements in a binary search tree can be done in logarithmic time, making it more efficient than linear search but less efficient than hash tables.