Question 1: Use the table below to identify what scale of measurement (Nominal, Ordinal, Interval or Rank) best represents the data

Data set	Scale of Measurement
Genotype	Nominal
Temperature	Interval
Socio economic status	Ordinal
Gender	Nominal
Income level	Ordinal
Credit score	Interval
Race	Nominal
Satisfaction Level	Ordinal
Weight	Ratio
Political Party	Nominal

Question 2: What is the difference between Array, List and Dictionary data structures?

An array is an indexed set of related elements. When we want to store several pieces of data of the same type, instead of using many variables we can instead use an array. You can think of an array as a list of data items or elements each with a number or index to enable you to refer to each item. Note that the index of the array starts at zero (0)

A list is a data structure in Python that is a changeable, ordered sequence of elements. Each element or value that is inside of a list is called an item. Just as strings are defined as characters between quotes, lists are defined by having values between square brackets

A dictionary is a general-purpose data structure for storing a group of objects. A dictionary has a set of keys and each key has a single associated value. When presented with a key, the dictionary will return the associated value. Keys in a dictionary must be unique; an attempt to create a duplicate key will typically overwrite the existing value for that key.

*Differences

Items in an array are accessed by position (often a number) and hence have an order. Items in a dictionary are accessed by key and are unordered.

Only dictionaries can be accessed with keys

Question 3: Give a short overview of how database technology has evolved in the 21st century (more specifically as regards SQL vs NoSQL)

Spreadsheets process numbers, databases process information—specifically, structured information. Databases can be designed to do just about anything with information—track, organize, and edit data; collect data and produce

reports; or, be the foundation for information-rich, dynamic websites. Before databases existed, everything had to be recorded on paper. We had lists, journals, ledgers and endless archives containing hundreds of thousands or even millions of records contained in filing cabinets. When it was necessary to access one of these records, finding and physically obtaining the record was a slow and laborious task.

Database technologies take information and store, organize, and process it in a way that enables users to easily and intuitively go back and find details they are searching for. Database technologies come in all shapes and sizes, from complex to simple, large to small.

The foundation for modern database technology began in the 1970s with the first "relational data model." Its emphasis was on careful organization. Today, relational databases remain important to how websites are built: any website that displays data from a database has to have (a) server-side scripting, (b) HTML & CSS, (c) SQL, a database language, and (d) a database management system (DBMS).Relational databases consist of two or more tables with connected information, each with columns and rows. These connected tables are called database objects, and in order to create them and manage them, you need a relational database management system (RDBMS). RDBMSs allow relational database developers to create and maintain a database program, including tools to: Query data, sort and edit data, design the entire database structure, produce reports and, they often include a built-in programming language to automate some of these functions, such as SQL.

Structured Query Language (SQL) is a standardized programming language for accessing and manipulating databases. In an RDBMS like MySQL, Sybase, Oracle, or IMB DM2, SQL writes programming that can manage data and stream data processing. SQL is responsible for:

- Executing queries, which are "questions" asked of the database
- Retrieving data
- Editing data: inserting, updating, deleting, or creating new records
- Creating views
- Setting permissions
- Creating new databases

SQL is a standard programming language, but has a number of variations—including some databases' own proprietary SQL extensions.

NoSQL - Not only SQL. You need a more flexible database solution when your data is inconsistent, incomplete, or massive. As the kinds and amounts of data that we gather has exploded, the NoSQL database has evolved to solve the challenges of Big Data. These databases are non-relational and distributed. They deviate from the

traditional relational model, addressing the issue that most modern data harvested from the web is not structured information. NoSQL databases are document-oriented. This way, non-structured data (such as articles, photos, social media data, videos, for example, an entire blog post) can be stored in a single document that can be easily found but isn't necessarily categorized into a bunch of pre-set fields.