**Solution-1:**

***Data-*** Data is the unprocessed or processed raw facts or observations. Number values, language, and pictures can be taken as the example of data.

Example: A list of all the temperatures that were taken over a week, without any marking or classifying.

A list of temperatures, such as "50, 55, 60, 70, 75" was recorded every day. As these numbers are in their unprocessed state. They don't have any extra information, classification or any labels. So it's unclear what these numbers mean, including whether they correspond to Fahrenheit or Celsius and which days of the week they correspond to.

**Information-** Information is the result of refining facts about a specific event or topic through data processing. Data is organized, interpreted, and contextualized to provide information.

Example: Based on the raw temperature data, the average temperature for every day of the week is determined. From the previously described raw temperature data, they are processed to extract information. A useful illustration of the general trend can be obtained, for example, by computing the average temperature for every day of the week. With its well-structured and processed output, like "Monday: 72°F, Tuesday: 68°F, etc.," the initial data has been summarized in a way that is understandable and comprehensive.

**Database-** An ordered set of data saved as several datasets is called a database. It enables effective data update, retrieval, manipulation, and storage. It acts as a central repository for information management and storage, offering a methodical and structured way to deal with massive amounts of data.

Example: A university database containing student records, course information, and grades.

A database is set up to hold student-related data in an academic context. They Include fields like "Course Information”, “Student ID," "Course Information” and "Grades". This organized database makes it easier to access student details, handle course data effectively, and update grades when tests are finished. It is a useful tool for student performance analysis and academic management.

**#Solution-2:**

The list of the different types of Database:

Centralized Database: A system where data is stored and managed in a single location or server. It offers simplicity in management. It may become a single point of failure and can suffer from scalability issues.

Distributed Database: These databases spread data across multiple locations or servers. This approach enhances scalability, and performance by distributing the workload. It allows for efficient data retrieval and management.

Relational Database: These types of databases organize data into tables with predefined relationships between them. They use SQL (Structured Query Language) for queries and are suitable for structured data with well-defined schemas.

NoSQL Database: These databases are designed to handle semi-structured data or unstructured. They provide flexibility and scalability.

Cloud Database: A cloud database is hosted on a cloud computing platform. It provides scalability, accessibility, and cost-effectiveness by manipulating cloud infrastructure and services.

Object-Oriented Database: This type of databases store data in the form of objects, mirroring the principles of object-oriented programming. This allows for the representation of complex data structures.

Hierarchical Database: Hierarchical databases organize data in a tree-like structure with parent-child relationships. It's suitable for representing hierarchical data but may lack flexibility.

Network Database: Numerous-to-many links between records are possible in network databases because they store data in a network model. Although they can be difficult to create and manage, they work well for complicated data connections.

**#Solution-3:**

**Structured data:**

Definition:Structured data is very orderly and structured, and it's typically found in spreadsheets or relational databases. It follows an existing data format and is simply queryable.

For eg:

*Database entries*: Contact details, such as name, address, and phone number, about a customer in a CRM system.

*Spreadsheets*: A financial data structure with columns and rows.

*Tables*: Clear linkages between data tables that are kept in SQL databases.

**Unstructured data:**

Definition: Unstructured data does not cleanly fit into typical databases and does not have a predetermined data model. It can incorporate text, photos, audio, and video files and is frequently free-form.

For eg:

*Text Documents*: Reports, emails, and documents that don't follow a set format.

*Multimedia files*: Pictures, audio files, and movies.

*Social media feeds*: Multimedia information, posts, and comments on websites like Instagram and Twitter.

| **Factors** | **Structured data** | **Unstructured data** |
| --- | --- | --- |
| *Flexibility* | Despite its rigidity, it offers a transparent framework for retrieval and storage. | Extremely adaptable, supporting a variety of information forms and kinds |
| *Processing complexity* | simpler to handle and examine using conventional database queries. | For significant insights, sophisticated analytics technologies like picture recognition or natural language processing (NLP). |
| *Volume* | Usually more structured but with a lower volume. | frequently more in volume as a result of the multimedia content. |

**Prevalence:**

In business, there are two types of data: structured and unstructured. Structured data is organized and follows a specific format, making it easy to search and store in databases. Financial databases, customer relationship management, and classic transactional systems are examples of where structured data is commonly used.

Unstructured data, on the other hand, does not follow a specific format and is more difficult to organize and store in databases. With the growth of social media, content development, and multimedia material, unstructured data is becoming more and more important.

**#Solution-4:**

Answer-I: According to the given figure, the file has five records, each of which has five fields: PROJECT\_CODE, PROJECT\_MANAGER, MANAGER\_PHONE, MANAGER\_ADDRESS, and PROJECT\_BID\_PRICE.

Answer-II: Only the city is not mentioned in any records. The city, home number, and street name are all contained in the MANAGER\_ADDRESS. Thus, it would not be effective to list by city. We can make a different record just for the city in order to address this issue.

Answer-III: Zip code, state, city, area code, and last name are not separated fields. I would put the first and last names in other fields. After that, the area code would be taken from the MANAGER\_PHONE and entered into another field. Subsequently, I would divide the zip code, state, and city into individual fields.