**Explain why we need a DataBase Management System (DBMS) instead of a spreadsheet?**

**1**.For long-term projects with numerous monitoring locations, millions of data points can be generated. Because databases store information more efficiently, databases can handle volumes of information that would be unmanageable in a spreadsheet.

**2**.Spreadsheets have record limitations whereas databases do not.

**3**.When a spreadsheet has many fields or a large amount of data (1000s of rows), the spreadsheet can be hard to read. Finding specific data can be cumbersome.

**4.**Databases provide a flexibility to sort and present data in a myriad of ways that would be nearly impossible to do with two-dimensional spreadsheets.

**5.**Data in separate spreadsheets cannot be easily compared and analyzed.

**6.**Databases are designed to refer to information without loading all the information into memory, unlike spreadsheets.

**7**.Database fields can be restricted to specific data types, formats, and/or lengths.

**8**.The database structure also avoids data redundancy . Frequently data in spreadsheets are copied multiple times and the same data are maintained in separate spreadsheet files.

**9**.Preventing and efficiently identifying data errors in spreadsheets is challenging.

**10.** Unlike spreadsheets, modern relational databases are designed for multiple users. For circumstances that require many users to share information, add new data, and/or make changes to data, a spreadsheet is a bad choice. Databases are ideal for sharing and collaboration of information. Since multiple people can access and update the database concurrently, a database is more efficient and the potential for errors is reduced.

**11.** Databases provide centralized data storage and offer better security.

**What are the advantages / disadvantages of using a DBMS (and specifically Postgres) compared to a spreadsheet (specifically MS Excel)**

|  |  |
| --- | --- |
| **MS EXCEL** | **POSTGRES** |
| Smaller data sets: under 1 million rows, even north of 100,000 it will likely slow down your computer. | Larger datasets: depending on the software and database, this can be very very large. Doesn’t slow down like Excel does. |
| Manually entering data | Organization /Structure: SQL tables are more strict about consistent data types and restricts users if they try to enter the wrong type. |
| More flexible structure: any cell can be of any data type, regardless of what column it’s in. | Collaborative work |
| Outputting graphs and visualizations | Prepping data for further analysis in another software |
| Built-in spell check and other useful functions | Consistent reports or calculations: as mentioned earlier, you can save and share queries. |
| Working independently on a project | More secure, as changes are always traceable and auditable. |
|  |  |

**What kind of spatial and thematic data you store? (Questionnaire)**

1.land registry cadastral data.

2.self-attribute data

3.ITRF96 coordinate systems.

4.Aerial photos.

**Why do you think the use of DBMS is important? What is the main benefit to your operation/product/daily use?**

To best manage and present spatial information such as vectors, rasters, and other data types.

**Is it a relational database? If so how many tables do you have?**

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