**Research Center Management System**

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**Introduction**

The Research Center Management System is deployed to improve the efficiencies of the current paper-based employee information management system. Take This deployment of a Database Management System (DBMS) is vital for improving efficiency, accessibility, and data integrity.

**Reasons**

The research center engages in many cutting-edge projects across various fields. If choosing a paper-based record system to run this center, just imagine what a disaster would happen to the researchers if they want to get their hands on the past patents information. They need to go the stock room, manually look up every shelfs and spend much time on searching. And those files could also be damaged and lost due to some reasons.

Disorganization: Current paper-based methods lead to difficulties in locating and updating records. Obviously, the data accessibility and integrity are affected by the paper-based record system in the research center. Some reasons for current paper-based system are summarized as below:

* Limited Data Accessibility
* Disorganization
* Time-Consuming Processes
* Operational Inefficiencies
* Impact on Data Integrity

**DBMS Advantages**

* Efficiency: streamlines data management for quicker and more reliable access.
* Accessibility: Enables remote access, promoting flexibility.
* Data Integrity: Ensures accuracy and reduces manual errors.
* Security: Provides secure storage for sensitive information.
* Scalability: Adapts easily to the growing volume of data as the Research Center expands.

**DBMS Weakness**

* Implementation Complexity: Initial effort and resources required for implementation.
* Training Needs: Employees may require training to adapt to the new system.

**DBMS Overview&&Rules**

* Research Center includes Chemistry, Automotive, Aerospace departments. Maybe more in the future.
* Each department has specific details: personnel count, establishment time, name, and department ID.
* Chemistry department requires a specialized count of patents.
* Center employs many employees and each of them has unique IDs, names, PPS numbers, and are classified as junior or senior based on technical level.
* Employees may possess zero or multiple patents.
* Patents have attributes like filed, ID, publication date, and journal.
* patents may have one or multiple authors to reflect collaborative efforts.
* Products are with a unique number, price, name, and belonging to a specific department.
* A department may contribute to at least one product, but each product is exclusively associated with one department, optimizing information management.

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