

## **CIT 419 ASSIGNMENT**

### **GROUP 7**

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### **QUESTION:**

Dictionary construction and lookup, searching and matching procedure with examples

### **DICTIONARY CONSTRUCTION**

In the field of Management Information Sciences (MIS), dictionary construction refers to the process of creating and organizing a structured repository of key-value pairs that represent data elements and their attributes within an information system. This dictionary, often referred to as a data dictionary or metadata repository, serves as a comprehensive guide that provides detailed information about the data used within an organization's information systems.

Key Aspects of Dictionary Construction in MIS:

1. Data Definition:

The dictionary outlines the definition of each data element used in the organization's information systems. This includes specifying the data type, format, and any constraints associated with each data element.

## 2. Metadata Management:

It encompasses the management of metadata, which refers to data about data. The dictionary stores metadata such as the source of data, ownership, data relationships, and other information critical for understanding and managing the data effectively.

## 3. Standardization:

The dictionary plays a key role in standardizing terminology and ensuring consistency in how data elements are defined and used across different systems and departments within the organization. This standardization promotes clear communication and understanding.

## 4. Database Design and Data Modelling:

In the context of database design, the data dictionary is instrumental in the creation of an effective data model. It defines entities, attributes, relationships, and constraints, providing a blueprint for database developers to follow during system development.

## 5. Data Governance:

The construction of a data dictionary supports data governance efforts within an organization. It helps establish and enforce data quality standards, access controls, and security measures, contributing to the overall governance framework.

## 6. System Integration:

For organizations with multiple information systems or those undergoing system integration, the data dictionary aids in mapping and translating data elements between different systems. This is crucial for maintaining consistency and coherence across integrated systems.

## 7. Adaptability to Change:

The dictionary should be designed to accommodate changes in data structures and definitions as business requirements evolve. This adaptability ensures that the information systems remain aligned with the dynamic needs of the organization.

In essence, dictionary construction in MIS is about creating a centralized and organized resource that provides comprehensive information about the data assets of an organization. It serves as a fundamental tool for effective data management, system development, and decision-making within the MIS domain.

## **DICTIONARY LOOKUP**

In the context of Management Information Sciences (MIS), lookup operations are fundamental processes for efficiently retrieving specific information from databases or information systems. A lookup operation involves searching for and accessing detailed information related to a particular entity, often identified by a unique key or identifier. This process is crucial for organizations utilizing MIS to manage and leverage their data effectively.

Scenario:

Consider an organization that employs an MIS to oversee employee information, encompassing key details such as employee IDs, names, departments, and project assignments.

The primary objective is to perform a lookup operation to retrieve comprehensive information about a specific employee based on their unique identifier, namely the employee ID.

Lookup Procedure:

1. Construct an Employee Dictionary:

The first step is to construct a dictionary representing the employee data. Each entry in the dictionary corresponds to an individual employee, with keys representing attributes such as 'EmployeeID,' 'Name,' 'Department,' and 'Project.'

```
python
employee_data = {
    'EMP001': {'Name': 'John Doe', 'Department': 'IT', 'Project': 'Software Development'},
    'EMP002': {'Name': 'Jane Smith', 'Department': 'Marketing', 'Project': 'Campaign
Management'}},
    # (more employee entries)
}
```

## 2. Perform the Lookup:

Utilize a lookup operation to retrieve detailed information about a specific employee based on their unique identifier (employee ID). In Python, this is achieved using square brackets `[]`:

```
python
employee_id_to_lookup = 'EMP001'
if employee_id_to_lookup in employee_data:
    requested_employee = employee_data[employee_id_to_lookup]
    print(requested_employee)
else:
    print(f'Employee with ID {employee_id_to_lookup} not found.')
```

This lookup operation checks whether the specified employee ID exists in the dictionary. If found, it retrieves and prints the detailed information; otherwise, it provides a notification that the employee was not found.

## 3. Utilize the Retrieved Information:

Once the detailed employee information is retrieved, it becomes available for various purposes within the MIS environment. This may include generating reports, making informed decisions regarding project assignments, or facilitating communication within the organization.

#### Key Considerations:

- Efficiency: Given the potential scale of employee data, lookup operations must be efficient. Utilizing appropriate data structures and algorithms becomes crucial to maintain optimal system performance.
- Data Integrity: Ensuring the accuracy and reliability of data is paramount for successful lookup operations. Regular data validation and maintenance practices help prevent errors and discrepancies.
- Security: As lookup operations may involve accessing sensitive information, implementing robust access controls and security measures is vital to safeguard confidential data during the lookup process.

In summary, lookup operations in MIS are vital for efficiently accessing specific information within structured datasets, empowering organizations to make informed decisions and manage their resources effectively. The success of lookup operations relies on considerations of efficiency, data integrity, and security within the broader context of MIS implementations.

## **SEARCHING AND MATCHING PROCEDURES**

In the context of Management Information Sciences (MIS), searching and matching procedures are fundamental processes for identifying specific information within datasets and making meaningful associations based on predefined criteria. These procedures are crucial for extracting insights, making informed decisions, and optimizing strategies within an organizational context.

### 1. Define Search Criteria:

The process begins by clearly defining the criteria for the search. In this example, the objective is to identify high-value customers. The search criterion is set to customers whose total purchases exceed a specified threshold, in this case, \$1,000.

## 2. Construct a Dictionary for Customer Data:

A dictionary is constructed to represent customer data. Each entry in the dictionary contains information such as 'CustomerID,' 'CustomerName,' 'Email,' and 'TotalPurchases.' This structured representation provides a foundation for efficient data retrieval and manipulation.

```
python
customer_data = {
    'Cust1': {'CustomerName': 'John Doe', 'Email': 'john@example.com', 'TotalPurchases': 1200},
    'Cust2': {'CustomerName': 'Jane Smith', 'Email': 'jane@example.com', 'TotalPurchases': 800},
    #(more customer entries)
}
```

## 3. Perform the Search:

Utilizing a searching procedure, a list comprehension in this case, customers meeting the defined criteria are identified. The procedure checks the 'TotalPurchases' attribute for each customer and creates a list of customer IDs for those whose total purchases exceed \$1,000.

```
python
high_value_customers = [customer for customer, data in customer_data.items() if
data['TotalPurchases'] > 1000]
```

## 4. Match with High-Value Customer Status:

Once the high-value customers are identified, a matching procedure is employed to update their status. This involves adding a 'Status' key to each customer's data, marking them as 'High-Value.'

```
python
for customer in high_value_customers:
```

```
customer_data[customer]['Status'] = 'High-Value'
```

Now, the 'Status' key has been added to the customer entries that meet the high-value criteria.

#### Key Considerations:

- **Dynamic Adaptability:** The searching and matching procedures are adaptable to changes in criteria or business requirements, ensuring flexibility in decision-making and strategy optimization.
- **Data Integrity:** The effectiveness of these procedures relies on accurate and up-to-date data. Regular data validation and maintenance practices are essential to prevent errors during searching and matching operations.
- **Business Decision Support:** The identified high-value customers, marked with a 'High-Value' status, can be utilized for various purposes, such as targeted marketing, personalized services, or strategic decision-making within the CRM system.