**EXTENSIBLE DATA MODEL & REST**

**PROBLEM STATEMENT**

Create a data-driven web interface with a flexible data model and user interface. As opposed to a fixed model and UI the user needs to be able to add new fields to a record as per his requirement. Build this UX on top of a REST API.

Imagine that you were creating a web application to be used by an e-commerce company for customer base. Apart from basic information e.g. First Name, Last Name, Email, City, Phone and so on there would be extended information related to addresses, payment types, subscriptions, etc. As a result, to allow for this level of flexibility, you would need a flexible data model to define additional attributes specific to each customer.

**JUDGING CRITERIA**

* Innovation
* REST Compliance
* Data design and architecture
* Code quality/toxicity

**Approach 1**

Admin can add new columns on top of the existing column defined in the system. This makes the system more flexible to add any new columns in the existing schema.

Pros

* Flexibility of defining new columns without touching the code

Cons

* If any reports planned to take on the new column it would be difficult

**Table Name :**

* Employee

**Column Details**

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Column Type | Length | Nullable |
| ID | int |  | No |
| Firstname | nVarchar | 100 | No |
| Lastname | nVarchar | 100 | Yes |
| Email | nVarchar | 100 | Yes |
| City | nVarchar | 50 | Yes |
| Phone | nVarchar | 20 | Yes |
| ExtendedColumn | XML |  | Yes |

(eg)

<Columns>

<Column><Name>Address1</Name><Value>Isha Yara Block H 304</Value></Column>

<Column><Name>Address2</Name><Value>Vadakkupattu main road</Value></Column>

<Column><Name>Mobile</Name><Value>9952157230 </Value></Column>

</Columns>

**Table Name :**

* MetaTable

**Column Details**

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Column Type | Length | Nullable |
| ID | int |  | No |
| Name | nVarchar | 100 | No |

Sample value

|  |  |
| --- | --- |
| ID | TableName |
| 1 | Employee |

**Table Name :**

* MetaColumn

**Column Details**

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Column Type | Length | Nullable |
| ID | int |  | No |
| MetaTableID | int |  | No |
| ColumnName | nVarchar | 50 | No |

Sample value

|  |  |  |
| --- | --- | --- |
| ID | MetaTableID | ColumnName |
| 1 | 1 | Address1 |
| 2 | 1 | Address2 |
| 3 | 1 | Mobile |

**Approach 2**

Admin can add new columns on top of the existing column defined in the system. This makes the system more flexible to add any new columns in the existing schema under the ExtensionTable. Instead of Parsing XML we can join the table to get the values for the extended table

Pros

* Flexibility of defining new columns without touching the code

**Table Name :**

* Employee

**Column Details**

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Column Type | Length | Nullable |
| ID | int |  | No |
| Firstname | nVarchar | 100 | No |
| Lastname | nVarchar | 100 | Yes |
| Email | nVarchar | 100 | Yes |
| City | nVarchar | 50 | Yes |
| Phone | nVarchar | 20 | Yes |

Sample Value

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | Firstname | Lastname | Email | City | Phone |
| 1 | Muthu | Kumar |  |  |  |
| 2 | Murali | Siddappa |  |  |  |
| 3 | Kannikash |  |  |  |  |
| 4 | Mahendran |  |  |  |  |

**Table Name :**

* ExtensionTable

**Column Details**

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Column Type | Length | Nullable |
| ID | int |  | No |
| MetaColumnID | Int |  | No |
| EntityID | int |  | No |
| FieldValue | nVarchar | 100 | No |

Sample Value

|  |  |  |  |
| --- | --- | --- | --- |
| ID | MetaColumnID | EntityID | FieldValue |
| 1 | 1 | 1 | Isha Yara Block H 304 |
| 2 | 2 | 1 | Vadakkupattu main road |
| 3 | 3 | 1 | 99521 57230 |

**Table Name :**

* MetaTable

**Column Details**

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Column Type | Length | Nullable |
| ID | int |  | No |
| Name | nVarchar | 100 | No |

Sample value

|  |  |
| --- | --- |
| ID | TableName |
| 1 | Employee |

**Table Name :**

* MetaColumn

**Column Details**

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Column Type | Length | Nullable |
| ID | int |  | No |
| MetaTableID | int |  | No |
| ColumnName | nVarchar | 50 | No |

Sample Value

|  |  |  |
| --- | --- | --- |
| ID | MetaTableID | ColumnName |
| 1 | 1 | Address1 |
| 2 | 1 | Address2 |
| 3 | 1 | Mobile |