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**SE(4a) | 19F-0916**

Database Assignment

Assignment # 1

Table

Description automatically generated**Question # 1**

Solution

|  |  |
| --- | --- |
| **Primary Key** | **Foreign Key** |
| * **Primary key in Person Table:**   PK is PersonID  **Reason:**  Because it cannot be same for everyone. Person id changes with the change in person. It is also a numeric value hence it is the only primary id in the person table.   * **Primary key in Order Table:**   PK is OrderID  **Reason:**  It is only key which is unique in order table. Order number can somehow become equal on equal items | * **Foreign key in Order Table:**   FK is PersonID  **Reason:**  It is the primary key in Person table and is acting as a foreign key in order table to access it.  So, person table is acting as parent and order table is acting as child here. |

**Question # 2**

Table

Description automatically generated

Solution

|  |  |
| --- | --- |
| **Super Key** | **Composite Key** |
| * EmpSSN   It is acting as a unique super key in the above table because it cannot be altered in any way. It is unique for every employee.   * EmpNum   It is also acting as a unique super key in the above table because it cannot be altered in any way. It is unique for every employee. | * EmpSSN and EmpNum   EmpSSN and EmpNum are collectively acting as composite key in the given table. Both of them alone can act as super key but when after joining together, they become composite key. |

**Question # 3**



Graphical user interface, application

Description automatically generated

Solution

|  |  |
| --- | --- |
| **Candidate Key** | **Primary Key** |
| * StudID   StudID is acting as candidate key here because it can act as a Primary key. It is unique for all the students and cannot repeat itself.   * Roll No   Roll No is acting as candidate key here because it can act as a Primary key. It is unique for all the students and cannot repeat itself.   * Email   Email is acting as candidate key here because it can act as a Primary key. It is unique for all the students and cannot repeat itself. (only if it contains numeric or alphanumeric values) | * StudID   StudID can act as a Primary key here because it satisfies all of the properties of a Primary key. It is short, unique, consist of numeric values, meaningful and does not repeats itself.  **Note:** Roll No can also act as Primary key, but we know that it must be short as possible hence StudID in the given table contains single digit values but Roll No consists of double-digit values. |

**Question # 4**



Table

Description automatically generated

Graphical user interface, application

Description automatically generated with medium confidence

Solution

|  |  |  |  |
| --- | --- | --- | --- |
| **Candidate Key** | | **Super Key** | |
| * GST#   It can act as a candidate key because GST Numbers are unique in nature for every citizen of Pakistan.   * CUSTOMER ID   Customer ID can also be a candidate key because every consumer is allotted with a special unique key which in this term is Customer ID.   * REFERENCE NO.   Same as other terms, Reference Number is also unique for all consumers hence it can also act as candidate key.   * Address   Address is unique for all consumers; hence it can also be a candidate key.   * Meter No.   Meter Number is also unique for all customers. It can be a candidate key. | | * GST #   GST # can act as a Super Key alone because it is unique for all the customers even all the citizens of a country hence it cannot be same among a bunch of people or even whole population of country.   * CUSTOMER ID   Customer ID is also another Super key from the given template. Customer ID is allotted to every consumer which is unique in nature and cannot be same in any condition (rather than his/her own self).   * REFERENCE NO.   Reference No. can again act as Super Key because it is unique for all the consumers and it will not produce redundancy in searching. | |
| **Composite Key** | | **Primary Key** | |
| * CUSTOMER ID and REFERENCE NO   Together they can act as effective composite key. Although length of this key will increase but it can still act as a composite key.   * GST # and CUSTOMER ID   Together they can act as effective composite key. Although length of this key will increase but it can still act as a composite key.   * GST # and REFERENCE NO   Same is the case here, it can also become a composite key by mixing these two up. | | Let us try to summarize it up. GST # cannot act as a good primary key because of its extreme length. Same is the case with REFERENCE No. as it is also lengthy. Then comes address which will produce redundancy upon multiple Electricity meters connected to same house. Meter No. will also produce repetitions because if meter somehow taken away by authority than it will be connected to some other place which will produce redundancy.  So, at the end we remain up with CUSTOMER ID and this can act as a primary key because it will be different for all customers and even if someone have 2 or more meters, it will cover it up by showing the person with all meters. | |

**Table

Description automatically generatedQuestion # 5**

Solution

|  |  |  |  |
| --- | --- | --- | --- |
| Here, DeptCode from Department Table will act as Foreign Key in Teacher Table. | | | |
| Teacher ID  (PK) | DeptCode  (FK) | Fname | Lname |
| B002 | 001 | David | Warner |
| B009 | 002 | Mike | Brunton |
| B017 | 005 | Sara | Joseph |

This is the sorted form of Teacher’s table by giving random Department to respected Teachers. TeacherID is Primary Key for Teacher Table and DeptCode is acting as Foreign Key in the Teacher’s Table and Primary Key in Department Table.

Table

Description automatically generated**Question # 6**

Solution

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ***Candidate*** | ***Super*** | ***Composite*** | ***Foreign*** | | ***Unique*** | ***Surrogate*** | ***Primary*** |
| Branch\_Info  Branch\_Id  Branch\_Name  Branch\_Code  Student\_In-  -formation  Student\_Id  College\_Id  Rtu\_Roll\_No | Branch\_Info  Branch\_Id  Branch\_Name  Branch\_Code  Student\_In-  -formation  Student\_Id  College\_Id  Rtu\_Roll\_No | Branch\_Info  Branch\_Id  And  Branch\_Code  Student\_In-  -formation  Student\_Id  And  Rtu\_Roll\_No  Student\_Id  And  Branch\_Id | Branch\_Info  Nohing  Student\_In-  -formation  Branch\_Id | Branch\_Info  Branch\_Id  Branch\_Name  Branch\_Code  Student\_In-  -formation  Student\_Id  College\_Id  Rtu\_Roll\_No | | Branch\_Info  Branch\_Id  Student\_In-  -formation  Student\_Id | Branch\_Info  Branch\_Id  Student\_In-  -formation  Student\_Id |

**Question # 7**

Solution

**Referential Integrity Constraint:**

It is a constraint between two tables which is applicable when they have relations between them. Like suppose if there is a Table name as Cities and there is another table named as Routes for a Bus System. Cities table has its own primary key which is acting as foreign key in Routes table. All the values of City’s table primary key must be in the Routes table. There should be no value in foreign key of Routes table that is not present in Cities table. It should be NULL in this case. Let us try to understand it with following example:

|  |  |  |
| --- | --- | --- |
| Bus\_Id (PK) | Route | City\_Id (FK) |
| B01 | A1 | 1 |
| B02 | A2 | 3 |
| B03 | A3 | 4 |

**Route Table**

|  |  |
| --- | --- |
| City\_Id | Name |
| 1 | Faisalabad |
| 2 | Lahore |
| 3 | Karachi |

Broken

Here, we can see that City table has City\_Id Primary key which is acting as Foreign key in Route Table.

City\_Id 1 got accepted.

City\_Id 3 got accepted.

But City\_Id 4 get rejected and link got broken. This constraint is known as Referential Integrity Constraint.

It enables only to enter valid Foreign Key and if something comes out of boundary, link automatically gets broken there.

**City Table**