**Assignment III**

**DATABASE DESIGN Z511**

**FNU ANIRUDH**

**QUESTION 1**

**Entity integrity** is an integrity rule which states that every table must have a primary key and that the column or columns chosen to be the primary key should be unique and not NULL.

**Referential integrity** is a concept for ensuring that relationships between database tables remain consistent. In other words, references to data must be valid. A relationship between two database tables, called a referenced table and a referencing table, is created by using a foreign key.

**Importance of Defining Entity integrity and referential integrity in Database:-**

1. Improved Data Quality
2. Data Reliability
3. Faster Development
4. Fewer Bugs
5. Consistency across Applications

**QUESTION 2**

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**QUESTION 3**

**STUDENT U INSTRUCTOR**

|  |  |
| --- | --- |
| NAME | NUMBER |
| Susan | 123 |
| Sam | 234 |
| Mary | 321 |
| Dan | 255 |

|  |
| --- |
| **STUDENT ∩ INSTRUCTOR** |
| |  |  | | --- | --- | | NAME | NUMBER | | Mary | 321 | |

**STUDENT - INSTRUCTOR**

|  |  |
| --- | --- |
| NAME | NUMBER |
| Susan | 123 |
| Sam | 234 |

STAFF **|X|**INSTRUCTOR (**NATURAL JOIN**)

|  |  |  |
| --- | --- | --- |
| Adm | Number | Name |
| Janitor | 255 | Dan |
| Dean | 321 | Mary |

STAFF **]X|** INSTRUCTOR (**LEFT OUTER JOIN**)

|  |  |  |
| --- | --- | --- |
| Adm | Number | Name |
| Secretary | 123 | NULL |
| Janitor | 255 | Dan |
| Dean | 321 | Mary |

STAFF **|X[**INSTRUCTOR (**RIGHT OUTER JOIN**)

|  |  |  |
| --- | --- | --- |
| Adm | Number | Name |
| Janitor | 255 | Dan |
| Dean | 321 | Mary |

**QUESTION 4**

**TABLE CHARTER**

|  |  |
| --- | --- |
| PRIMARY KEY | CHAR\_TRIP |
| SUPER KEY | CHAR\_TRIP + CHAR\_DATE+ CHAR\_PILOT |
| CANDIDATE KEY | None |
| FOREIGN KEY | AC\_NUMBER, CUS\_CODE (present in Tables AIRCRAFT, CUSTOMER) |
| SECONDARY KEY | CHAR\_DATE + CHAR\_PILOT |

**TABLE AIRCRAFT**

|  |  |
| --- | --- |
| PRIMARY KEY | AC\_NUMBER |
| SUPER KEY | AC\_NUMBER + MOD\_CODE |
| CANDIDATE KEY | None |
| FOREIGN KEY | MOD\_CODE (Also present in table MODEL) |
| SECONDARY KEY | MOD\_CODE + AC\_TTAF |

**TABLE MODEL**

|  |  |
| --- | --- |
| PRIMARY KEY | MOD\_CODE |
| SUPER KEY | MOD\_MANUFACTURER + MOD\_NAME + MOD\_SEATS |
| CANDIDATE KEY | None |
| FOREIGN KEY | MOD\_CODE (Also present in table AIRCRAFT) |
| SECONDARY KEY | MOD\_NAME + MOD\_SEATS |

**TABLE PILOT**

|  |  |
| --- | --- |
| PRIMARY KEY | EMP\_NUM |
| SUPER KEY | EMP\_NUM + PIL\_LICENSE + PIL\_MED\_TYPE |
| CANDIDATE KEY | None |
| FOREIGN KEY | EMP\_NUM (Also present in Table EMPLOYEE) |
| SECONDARY KEY | PIL\_MED\_TYPE + PIL\_MED\_DATE |

**TABLE EMPLOYEE**

|  |  |
| --- | --- |
| PRIMARY KEY | EMP\_NUM |
| SUPER KEY | EMP\_NUM + EMP\_LNAME |
| CANDIDATE KEY | None |
| FOREIGN KEY | EMP\_NUM (Also present in Table PILOT) |
| SECONDARY KEY | EMP\_LNAME + EMP\_DOB |

**TABLE CUSTOMER**

|  |  |
| --- | --- |
| PRIMARY KEY | CUS\_CODE |
| SUPER KEY | CUS\_CODE + CUS\_LNAME |
| CANDIDATE KEY | None |
| FOREIGN KEY | CUS\_CODE (Also present in Table CHARTER) |
| SECONDARY KEY | CUS\_LNAME + CUS\_PHONE |

**Note:** - If we assume Phone Numbers to be unique then CUS\_PHONE alone can be secondary key.

**QUESTION 5**

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**REFERENCES**

1. Database Systems: Design, Implementation, & Management by Rob and Coronel.