Question 1:

Table 2.1 STUDENTFINE records data on traffic offences by students in a college.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **StudentID** | **Name** | **LicenseNo** | **CarReg** | **ReceiptNo** | **Date** | **OffenceCode** | **Fine(RM)** |
| F1011 | CK fong | P100 | JGK9201 | 00-345  00-690  00-810 | 10/03/06  15/03/06  20/03/06 | 2  1  2 | 30.00  20.00  30.00 |
| L782 | Adam james | P290 | JJL99 | 00-459 | 13/03/06 | 1 | 20.00 |
| H762 | MalaDewi | P764 | JJK7654 | 00-564  00-770 | 12/03/06  19/06/06 | 3  2 | 40.00  30.00 |

1. Table 2.1 is said to be an unnormalized table. Why?

Ans🡪 1) Table has much data redundancy problem & anomalies also

2) It has multiple values in same column i.e. it does not have atomic records.

B. Transform the unnormalized Table 2.1 into a first normal form (1NF) table. Show the

transformed 1NF table. What is the primary key for this new INF table?

Answer: -

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **StudentID** | **Name** | **LicenseNo** | **CarReg** | **ReceiptNo** | **Date** | **OffenceCode** | **Fine(RM)** |
| F1011 | CK fong | P100 | JGK9201 | 00-345 | 10/03/06 | 2 | 30.00 |
| F1011 | CK fong | P100 | JGK9201 | 00-690 | 15/03/06 | 1 | 20.00 |
| F1011 | CK fong | P100 | JGK9201 | 00-810 | 20/03/06 | 2 | 30.00 |
| L782 | Adam james | P290 | JJL99 | 00-459 | 13/03/06 | 1 | 20.00 |
| H762 | MalaDewi | P764 | JJK7654 | 00-564 | 12/03/06 | 3 | 40.00 |
| H762 | MalaDewi | P764 | JJK7654 | 00-770 | 19/06/06 | 2 | 30.00 |

Here Receipt no can be taken as PK as it is minimal no attriburtes which candidate key has.

1. Write the functional dependencies from the Transformed 1NF table.

Ans🡪 Here Transient dependency is observed as

Student info---🡪CarReg , CarReg--🡪 ReceiptNo , Receipt-🡪 Offencode🡪 Fine

D. As a last step convert the 1NF into 2NF.

Ans🡪 Here to avoid data redundancy & functional dependency we can sort this table in two table as

StudentInfo

|  |  |  |  |
| --- | --- | --- | --- |
| **StudentID** | **Name** | **LicenseNo** | **CarReg** |
| F1011 | CK fong | P100 | JGK9201 |
| L782 | Adam james | P290 | JJL99 |
| H762 | MalaDewi | P764 | JJK7654 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Primary key | **ReceiptNo** | **Date** | **OffenceCode** | **Fine(RM)** | **StudentID** |
| 1 | 00-345 | 10/03/06 | 2 | 30.00 | F1011 |
| 2 | 00-690 | 15/03/06 | 1 | 20.00 | F1011 |
| 3 | 00-810 | 20/03/06 | 2 | 30.00 | F1011 |
| 4 | 00-459 | 13/03/06 | 1 | 20.00 | L782 |
| 5 | 00-564 | 12/03/06 | 3 | 40.00 | H762 |
| 6 | 00-770 | 19/06/06 | 2 | 30.00 | H762 |