Original Table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Player Name | Player State | Player Number | Player Team | Team coach | Game against | Game date | Player Runs |
| Sachin Tendulkar | Maharashtra | 11 | India | Greg Chappel | Pakistan  Pakistan  England | 12/3/03  25/3/03  29/3/03 | 95  22  88 |
| Adam Gilchrist | Western Australia | 34 | Australia | John Buchanan | S. Africa  S. Africa  New Zealand | 10/3/03  11/3/03  12/3/03 | 42  61  62 |

Q1). Is the relation in 1NF? Why or why not? If not, reduce the relation to 1NF.

A). NO the above table is not in a 1NF form. Because according to the rule of 1NF the table should not contain any multivalued Attributes .

* A relation will be 1NF if it contains an atomic value.
* It states that an attribute of a table cannot hold multiple values. It must hold only single-valued attribute.
* First normal form disallows the multi-valued attribute, composite attribute, and their combinations.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Name | State | No | Team | Coach | Game Against | Date | Runs |
| Sachin Tendulkar | Maharashtra | 11 | India | Greg Chappel | Pakistan | 12/3/03 | 95 |
| Sachin Tendulkar | Maharashtra | 11 | India | Greg Chappel | Pakistan | 25/3/03 | 22 |
| Sachin Tendulkar | Maharashtra | 11 | India | Greg Chappel | England | 29/3/03 | 88 |
| Adam Gilchrist | Western Australia | 34 | Australia | John Buchanan | S. Africa | 10/3/03 | 42 |
| Adam Gilchrist | Western Australia | 34 | Australia | John Buchanan | S. Africa | 11/3/03 | 61 |
| Adam Gilchrist | Western Australia | 34 | Australia | John Buchanan | New Zealand | 12/3/03 | 62 |

Q2). Using your knowledge of cricket and from the instance, identify the functional dependencies for this relation.

A). The functional dependency is a relationship that exists between two attributes. It typically exists between the primary key and non-key attribute within a table

I.e. x->y;

The left side of FD is known as a determinant, the right side of the production is known as a dependent.

For Example, from above table:

Player Name, Player State, Player Number, Player Team, Team Coach==>Game Against, Game Date, Player Runs.

Q3) Is the table you created in question 1 also in 2NF? If not decompose the relation into ones that are in 2NF.

A) In the 2NF, relational must be in 1NF. In the second normal form, all non-key attributes are fully functional dependent on the primary key

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Player Number | Player Name | Player State | Player Team | Team coach |
| 11 | Sachin Tendulkar | Maharashtra | India | Greg Chappel |
| 34 | Adam Gilchrist | Western Australia | Australia | John Buchanan |

|  |  |  |
| --- | --- | --- |
| Game against | Game date | Player Runs |
| Pakistan | 12/3/03 | 95 |
| Pakistan | 25/3/03 | 22 |
| England | 29/3/03 | 88 |
| S. Africa | 10/3/03 | 42 |
| S. Africa | 11/3/03 | 61 |
| New Zealand | 12/3/03 | 62 |

Q4).Is/Are the table(s) you created in question 3 also in 3NF? If not decompose into 3NF.

A).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Player Number | Player Name | Player State | Player Team | Team coach |
| 11 | Sachin Tendulkar | Maharashtra | India | Greg Chappel |
| 34 | Adam Gilchrist | Western Australia | Australia | John Buchanan |

|  |  |  |  |
| --- | --- | --- | --- |
| Player Number | Game against | Game date | Player Runs |
| 11 | Pakistan | 12/3/03 | 95 |
| 11 | Pakistan | 25/3/03 | 22 |
| 11 | England | 29/3/03 | 88 |
| 34 | S. Africa | 10/3/03 | 42 |
| 34 | S. Africa | 11/3/03 | 61 |
| 34 | New Zealand | 12/3/03 | 62 |

The table is been divided into two Tables Base table and a Referencing Table where the player number in the base table be the Primary key and player number in Referencing table be the foreign key .