|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 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 |

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

Answer: No, the above table is not in 1NF.Because in 1NF, there is a condition a single cell cannot hold multiple values. If a table contains a composite or multi valued attribute, it violates the First Normal Form. So, by reducing it to 1NF it can be like:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 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 |

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

Answer : In the above table Player, there is a there can be two composite primary key –PlayerName, PlayerNo. So by identifying the functional dependencies the table can be divided as below :

Table 1:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sachin Tendulkar | Maharashtra | 11 | India | Greg Chappel |
| Adam Gilchrist | Western Australia | 34 | Australia | John Buchanan |

Table 2:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| 11 | Pakistan | 12/3/03 | 95 |
| 11 | Pakistan | 25/3/03 | 22 |
| 34 | 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 |

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

Answer: 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.

The above tables are in both 1NF and 2NF.

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

Answer:

Table 1:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sachin Tendulkar | Maharashtra | 11 | India | Greg Chappel |
| Adam Gilchrist | Western Australia | 34 | Australia | John Buchanan |

Table 2:

|  |  |  |  |
| --- | --- | --- | --- |
| 11 | Pakistan | 12/3/03 | 95 |
| 11 | Pakistan | 25/3/03 | 22 |
| 34 | 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 |

As you can see from the above tables all the non-key attributes are now fully functional dependent only on the primary key.