07-ANOMOLIES another look at them

Given the entity ORDERS with the following attributes

ORDERS [**OID**, ODATE, **PART#**, PART-DESC, QTY-ORD, QUOTED-PRICE ]

Sample data might look like the following:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ORDER  NUMBER | ORDER  DATE | PART  NUMBER | PART  DESCRIPTION | QTY  ORDERED | QUOTED  PRICE |
| 12489 | 09-02-2002 | AX12 | IRON | 11 | 14.95 |
| 12491 | 09-02-2002 | BT04 | GAS GRILL | 1 | 149.99 |
| 12491 | 09-02-2002 | BZ66 | WASHER | 1 | 399.99 |
| 12494 | 09-04-2002 | CB03 | BIKE | 4 | 279.99 |
| 12495 | 09-04-2002 | CX11 | BLENDER | 2 | 22.95 |
| 12500 | 09-05-2002 | BT04 | GAS GRILL | 1 | 149.99 |

Notice that even in this small amount of data that BT04 is listed twice. This is a lot of redundancy and wasteful of space. There are other errors in the design of the table that is important to note. These errors are called update anomalies.

1 UPDATE

A change of a description requires more than one entry in the table to be updated. This requires more logic and more processing

2 INCONSISTENT DATA

There is nothing in the design that prevents more than one description for a part that is listed more than once.

3 ADDITIONS

To add a new item requires a primary key of order number and part number. What if you have a part but no orders for them yet? The only solution is to make up dummy orders.

4 DELETIONS

If you delete 12489 you also lose all the information about AX12.

These problems occur because PART DESC is dependent upon only part of the primary key and not the complete key.