DMD HOMEWORK 7 (4 октября 2015 г.)

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Problem 1.

```
SELECT c.CustName FROM Customers AS c
JOIN Rentals as r ON c.CustID = r.CustID
WHERE r.Title1 = "Die Hard" or r.Title2 = "Die Hard" or r.Title3 = "Die Hard"
```

1. Complicated where condition, because of many Title columns.
2. Nope, because we can't simply use COUNT function.

Problem 2.

1. Add more columns with titles.
2. Add rows with same RentalID, CustID and different titles and nulls for empty columns.

Problem 3. (RentalID, CustID, CheckOutDate, Title)
PK highlighted with underline.

Problem 4.

```
CREATE TABLE Rentals_2(
    RentalID INTEGER NOT NULL,
    CustID INTEGER NULL,
    CheckOutDate DATETIME NOT NULL,
    Title char(50) NOT NULL,
    PRIMARY KEY(RentalID, Title),
    FOREIGN KEY (CustID) REFERENCES Customers(CustID)
);
```

Problem 5.

```
INSERT INTO Rentals_2 (RentalID, CustID, CheckOutDate, Title)
SELECT RentalID, CustID, CheckOutDate, Title1 FROM Rentals
UNION
SELECT RentalID, CustID, CheckOutDate, Title2 FROM Rentals
UNION
SELECT RentalID, CustID, CheckOutDate, Title3 FROM Rentals
```

Problem 6.

```
SELECT c.CustName FROM Customers AS c
JOIN Rentals_2 as r ON c.CustID = r.CustID
WHERE r.Title = "Die Hard"
```

Problem 7.

- $RentalID \rightarrow CustID$
- $RentalID \rightarrow CheckOutDate$
- $RentalID \rightarrow ReleaseType$
- $Title \rightarrow Director$
- $ReleaseType \rightarrow Price$

Problem 8. We have FDs with left-side attribute, that doesn't belongs to key.

Problem 9.

- We don't reuse already existing information. For example, we have two rows with informaiton about film "Die Hard" and it's Director. And every time, when we add rental information about same film, we need to write all information about film, that already exists in other row.
- We lose information about film, when all rows related to this film were deleted.
- We need to change many tuples, when we want change informaiton about one film. For example, with FK it's necessary to change only one row.

Problem 10.

- (RentalID, Title, CustID, CheckOutDate, ReleaseType)
- (Title, Director)
- (ReleaseType, Price)

Problem 11. Multivalued dependency. In that table we have two Multivalued dependencies:

- Course to Teacher
- Course to Book

When we want to add Book to Course it's necessary to add that book for every teacher on that course.

Problem 12. No.

Problem 13. It's necessary to create two relations (Course, Teacher) and (Course, Book).

Problem 14. No. FD $City, State \rightarrow ZipCode$ has not key left-side attribute.

Problem 15. I wouldn't. Because it's too complicated for such small dataset.

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