MIS542 Database Management, Assignment 5

Total Points: 10 points
On Time Submission: late for 1 day -1 point, late for more than 1 day -2 points, Late for more than a week -3 points.
Each question is worth 2 point.
Use the inappropriate schema style (-2 points).

This assignment is a conceptual assignment on Normalization. There are two problems in this assignment. You need to follow the steps of normalization described in Chapter 3 of your textbook to normalize the relations in the given problems. Write your answers to one single Word Document (or Rich Text File). Your answers must be written in textual schema language. You can use the style shown in the textbook or using SQL language. Do not capture the Table view. Your textbook use the table view with data to show the process of normalization. It is no efficient to capture the sample/partial table to describe your relations. Submit your work before deadline through the assignment page.

Please see the following example for proper written style for schema.

ORDER(OrderNumber, Date, Total)
ORDER_ITEM(*OrderNumber*, ItemNumber, ItemName, Quantity)

Problem 1:

Consider the following relation

COURSE(CourseNumber, CourseName, CourseSection, TeacherName, ScheduledDay, ScheduledHour, ClassRoom, StudentNumber, StudentName, Grade)

The attributes can be described as

There are certain functional dependencies are known.
Each class has a unique teacher
Only one course can meet in a given scheduled hour in a particular room
A teacher can be in only one room at a given hour
A student can be in only one room at a given hour
A student only gets one grade in a course
Assume that TeacherName is unique. That is, no two teachers have the same name.
Please answer the following questions.

1. What are all the keys for Courses? (2 points)
2. Normalize this relationship to
    a. BC/NF Normal Form and Third Normal Form (2 points)

b. Fourth Normal Form (If necessary, or it may be already in Fourth Normal Form, Reach the Fourth Normal Form to get additional 1 point).

Problem 2

Consider a relation
STOCKS(Broker, Office, Investor , Stock , Quantity, Dividend)

Broker is the Broker's Name.
Office is the Broker's Office location.
Investor is the Investor's name. Investors are the people who purchase the stocks.
Quantity is the Quantity of a stock own by an investor.
Dividend is the dividend per stock for a particular stock.

We know that
Stock → Dividend
Investor → Broker
Investor and Stock → Quantity
Broker → Office

3. What are all the keys for Stocks? (2 point)
4. Normalize this relationship to
    a. First Normal Form
    b. Second Normal Form
    c. BC/NF Normal Form
    d. Third Normal Form (Reach Here to get 2 points)
    e. Fourth Normal Form (If necessary, or it may be already in Fourth Normal Form, Reach the Fourth Normal Form to get additional 1 point).