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[**Group Assignment - Term Project Phase 2 – Logical Design (Normalization: BCNF)**](https://ku.blackboard.com/webapps/assignment/uploadAssignment?content_id=_264997_1&course_id=_30974_1&group_id=&mode=view)

This is a GRADED GROUP ASSIGNMENT (forming 30% of your Term Project grade)

DEADLINE:  **26th March 2020 Thursday 23:30**

**LOGICAL DESIGN (Normalized Schema)**

This assignment, made of 2 sections, will form the second step for your term project.

SECTION 1: Transforming all the entities and relationships to PK-FK pairs, finalizing ER Diagram.

SECTION 2: Identifying all functional dependencies, normalizing schema in Boyce-Codd Normal Form (BCNF).

**The input** of this phase is E-R diagram uploaded to Term Project - Phase 1.

**The output** of this phase is:

1. Logical Design of your database: A detailed document of your logical design (either in word or excel or pdf, whichever is easier for you)

SECTION 1: Transforming all the entities and relationships to PK-FK pairs, identifying all functional dependencies.

Your logical design shall include the following steps:

i) All multivalued and composite attributes shall be converted as necessary.

ii) Table structures, all M:N relations converted / transformed to 1:M relations and an associative entity.

iii) All relations with attributes shall be converted / transformed to entities. Column data types and lengths, if exists default values of columns, valid values for columns as domain constraints shall be defined.

iv) Identifying all primary keys and foreign keys of every entity.

The output of this section is a schema of tables ready to be created which will be input for section 2.

SECTION 2: Identifying all functional dependencies, normalizing schema in BCNF.

Congratulations ! Now you have a schema ready to be created as tables, however you need to be sure that your design isn't prone to anomalies jeopardizing the consistency of your *loved* db. This section is to verify that your model is in Boyce-Codd Normal Form (BCNF)

i) List all the functional dependencies of each entity using a notation either in the form of X -> Y or using arrows (see lecture slides).

ii) Identify each table’s normalization degree, convert them to BCNF if they are not so.

*The following items/documents shall be uploaded to blackboard for this assignment by one of the group members:*

**1-**  The logical design of your E-R diagram as a word, excel or pdf document. Consisting of 4 parts:

PART1- *If you modified* include the recent ER Diagram you used during the logical design construction. Your logical design will be based on your ERD, it is OK if you needed to modify your ERD during this stage. According to the feedback I gave you on 13rd March, some of you might need to modify/add new entities, change relationships at this stage too. Therefore if your ER diagram is modified during the logical design, I need the recent one to evaluate correctly. *If so*, PLEASE upload ERD both as a link and also as a pdf document.

PART2- For each table structure in your logical design identify the foreign keys in each table structure. Each FK shall point to the related PK. Use a notation of your choice.

PART3- For each table structure in your logical design identify its normal form as 2NF, 3NF or BCNF.

PART4- Identify each table’s normalization degree, convert them to BCNF if they are not so. Briefly explain the normalization steps you did, with your reasoning.

Name your file(s): COMP306-<YourGROUPName>\_Phase2 eg COMP306-GROUP1\_Phase2.

All your uploaded documents shall have a header (it doesn't have to be a separate page), including

* Course code and course name, Assignment number/name, the date
* Group name, group members (ids, full names), name of your project

The output of this phase is finalized ER Diagram, Normalization notes which will be input for Phase 3 Physical Design of Term Project.