University Management System

1.1 University Management System Informal Description

ABC University is a large institution with several campuses. Each campus has a different name, address, distance to the city center and the only bus running to the campus. Each campus has one club. The name of the club, the building in which the club is located, the phone number of the club and the multiple sports which club offers, should all be recorded.

The University consists of a number of faculties, such as the Art Faculty, the Science Faculty, and so on. Each faculty has a name, dean and building. A faculty may be divided into a number of schools, for example, the Science Faculty has a School of Physics and a School of Chemistry. Each school belongs to one faculty only and is located on just one campus, but one campus maybe the location of many schools.

Every school has name and an building assigned to. Each school offers different programmes and each programme can be offered by only one school. Each programme has a unique code, title, level and duration. Each programme comprises several courses, different programmes have different courses. Each course has a unique code and course title. Some courses may have one or more prerequisite courses and one course can be the prerequisite course of some other courses.

Each of the students is enrolled in a single programme of study which involves a fixed core of courses specific to that programme as well as a number of electives taken from other programmes. Students work on courses and are awarded a grade in any course if he/she passes the course. Otherwise the student has to re-take the failed course. The system needs to record the year and term in which the course was taken and the grade awarded to the student. Every student has a unique ID. The system also keeps the student name, birthday and the year he/she enrolled in the course.

The school employs lecturers to teach the students. A lecturer is allowed to work for one school only. Each lecturer is assigned an ID which is unique across the whole university. The system keeps the lecturer's name, title and the office room. A supervisor maybe in charge of several lecturers, but a lecturer, however reports to only one supervisor. A lecturer can teach many different courses. A course may also have been taught by many different lecturers.

The university is operated by committees. Each faculty has to have a number of committees with the same titles across the university, such as the Faculty Executive, the Post Graduate Studies Committee, the Health and Sanity Committee, and so on. The committees meet regularly, such as weekly or monthly. The frequency is determined by the faculty involved. A committee's members are all lecturers. A lecturer may be a member of several committees.

Task1

The basic steps in producing the Logical Model are:

- Specify all entities.
- Find attributes for each entity.
- Specify primary keys for all entities.
- Find the relationships between different entities.
- Resolve many-to-many relationships.
- Perform normalization.

The basic steps in producing the Physical Model are:

- Convert entities into tables.
- Convert relationships into foreign keys.
- Convert attributes into columns.
- Modify the physical data model based on physical constraints/requirements.

Logical Data Model	Physical Data Model
Entity, Attribute, Relationship.	Table, Column, Key, Data Type, Validation , Trigger, Stored Procedure, Constraint.
The name of Entity & Attribute are more business friendly.	The name of Table & Column are more defined and less generic specific.
Independent of technical platform.	Depend on technical platform.
Normalized	May de-normalized to meet performance requirements.