Course Project:

Government Directory Database System

1. Brief Description of the Project

Singapore's Government Directory (https://www.gov.sg/sgdi/ministries/) promotes awareness of government structure and key appointees of government jobs among the public members. The Government Directory is updated over time to reflect changes to the government's departments. The objective of this course project is for student teams to develop a Government Directory database system which can support the key features specified in **this** document.

2. Key Features of the Project

To simplify the course project, the following are the only functions that your Government Directory database system has to support; **please ignore other functions that real Government Directory may offer**. The attributes that your system must keep track of are specified in this document: your system should **not** keep track of any attribute that is not mentioned in this document, unless it is absolutely necessary to support the required functions.

2.1 Function 1: Department Information

The Government Directory covers all government departments organized in a hierarchy. Each department has a unique **DepartmentID**, **Name, URL** and **Address**. A department can be part of another parent department. A department may also consist of multiple smaller departments. A department however cannot be part of multiple parent departments.

The department may be reorganized such that its **DepartmentID**, **Name**, **Address** and even **parent department** may change. A completely new department may be created. A department may also split into two or more new departments. Multiple departments may also be merged into one new department. Finally, a department may be removed. For example, in March 2017 within the "Prime Minister's Office" department, a new "Smart Nation and Digital Government Office" department was created out of merging 3 departments, namely: "Digital Government Directorate of Ministry of Finance", "Government Technology Policy Department" and "Smart Nation Programme Office". The database has to track these changes over time. When the above changes occur, it is necessary to keep the **StartDate** values of the new departments, and the mapping between old and new department. When a department ceases to exist, its **EndDate** should be recorded. In other words, we

should not remove a department from the database even after it no longer exists. In this project, we assume that **URL** and **Address** of department does not change.

All IDs in this database have integer values. All date values in this database should be in the format "YYYY-MM-DD". For example, the StartDate value is "2017-03-15" if the department is created on 15 March 2017. The URL of department may not exist. If URL exists, it should be no longer than 200 alphanumeric characters. The Address of department is expected to be no longer than 200 alphanumeric characters.

2.2 Function 2: Job Information

Within a department, there is at least one job position and possibly multiple job positions. Each job position has a unique **JobID**, and several other attributes including **JobTitle**, **JobLevel**, **Staff Member** holding the job position, and **Phone Number**. JobTitle attribute is expected to be no longer than 40 alphanumeric characters. It is possible that multiple job positions share the same JobTitle. For example, there may be multiple "admin executives" under the same department. Within the government, there are multiple job levels from level 1 to level N (N being an integer larger than 1). The larger the N value, the more senior the job position. Among the job positions under the same department, the one with the most senior JobLevel will be designated to head the department. We assume that there is only one job position with the most senior JobLevel within each department.

It is important to know which job position heads each department. A job position may report to at most one other job position that is more senior. For example, a "Permanent Secretary" position may have multiple "Deputy Secretaries" and one "Personal Assistant" reporting to it. Such reporting relationship should be maintained by the database.

In the government, job positions are classified as political and non-political. For example, "Minister" and "Senior Minister of State" are political job positions. "Permanent Secretary" and "Deputy Secretary" are non-political job positions. For each non-political job position, the set of required skills should be recorded. For each political job position, the required minimum number of years serving in a political party has to be stored.

2.3 Function 3: Staff Information

Every staff member has a unique **StaffID**, **StaffName**, and **Email**. Most staff members hold one job position in some department. It is possible for a capable staff member to hold multiple job positions under the same or different departments. In this case, the staff member will have different Phone Numbers based on the job positions they hold.

2.4 Function 4: Job Appointment(s)

Staff members can be posted to different job positions throughout their government career. The **PostDate** of each posting is an important piece of information. When a staff member leaves a job position, his/her staff record will not be removed. Instead, we record the **EndDate** of the posting.

Staff members can be classified as political and non-political. For staff members who are political, we need to know the date they join the political party. Only staff members who are political can be appointed to political job positions. Such staff members are also called the political appointees. On the other hand, non-political job positions can be assigned to both political and non-political staff members. We need to also keep track of the set of required skills of each non-political staff member.

2.5 Function 5: Identity Matching

Occasionally, a staff member may have multiple identities in the government directory. This can happen when the staff member has different **StaffID's**, each associated with a different **StaffName** and a different **EmailAddress**. It is important to match the **StaffID**'s that belong to the same staff member. For example, "John Tan" may have StaffID's 2412 and 3950 having (John Tan Chee Ming, Johntan@pmo.gov.sg) and (John Tan, johntan@moe.edu.sg) as StaffName and EmailAddresses respectively. To keep track of multiple identities belonging to the same staff member, the database is required to store pairs of **StaffID's** of the same staff member.

2.6 Function 6: Speeches

In their capacity holding various political job positions, political appointees may give speeches at public events, each held on a specific **EventDate**, **EventTime** and **Location.** Each speech, given by a political appointee, occurs at a specific event. The database should keep track of all such speeches and their **Content abstract**. For an appointee holding multiple political job positions, the system should keep track of the specific political job position in which he is delivering the speech for. Another non-political staff member will serve as the contact person for the speech so as to answer further queries. Every event can be uniquely identified by its **EventName** and **EventDate**. There could be multiple speeches given at one event. Within one event, all the speeches are given in sequential order and are hence identified by their **Order Numbers** (i.e., 1, 2, 3 and others).

3. Project-work description

3.1 Project Phases and Deliverables

Your team is asked to design the Government Directory database. Please ONLY focus on the functions that are listed in this document and ignore other functions that Government Directory may have.

If there is **any business rule or feature stated in this document that conflicts with the actual system, you should adhere to the business rules or features of this document. If you have made any assumptions for the project, please specify in your Phase 1 submission.**

The project work is partitioned into two phases, according to the database development process.

- Phase 1: ER Modeling (by Week 7, Wednesday, Feb 20, 2019, 8pm)
- Phase 2: SQL (by Week 12, Wednesday, Mar 27, 2019, 8pm)

Please refer to individual phase handout sheets for the detailed deliverables and requirements.

3.2 Project work submission and grading

For each phase, you are required to submit a softcopy of your project work as a team via SMU eLearn Assignments.

A late penalty of 10% will be imposed for submissions up to 6 hours late, 20% for submissions between 6 – 24 hours late. Later projects may be awarded partial credit, not to exceed 50%, at the instructors' discretion.

A penalty of up to 50% will be applied to sleeping member(s) of the team. If you have any teaming issues, do highlight to your instructors early.

The page limit of the submission (to be listed in each phase's handout sheet) is firm. For example, if the limit is 4 pages, only the first 4 pages of the report will be marked.