University of Johannesburg
Academy of Computer Science & Software Engineering
IFM2A10: Informatics 2A – Database Design

Practical Assignment 5 (Due: 22 March 2016 @ 12h30)

Assignment

The *Fire Protection Association of South Africa* (FPASA) is trying to get its fire department under control. They currently don't have a managed way of keeping track of their commanders, fire units and fire fighters. You have been approached by FPASA to design and implement a working database to organise their records. The following data will be provided to you:

Chief Commander
- Name

Fire Defence Unit
- Name
- Province (named after the 9 South African provinces)

Fire Fighter
- Name
- Years in *Fire Department*
- Status (Active, Resting, Decommissioned)
- Number of *fires fought*

Each **Fire Fighter** belongs to *one* **Fire Defence Unit**. A **Unit** can have multiple **Fire Fighters**. A **Chief Commander** can command *several* **Fire Defence Units**. A **Fire Defence Unit** can only be commanded by one **Chief Commander**.

Note: Add at least 5 Chief Commanders, 10 Fire Defence Units and 25 Fire Fighters.

Complete the following using **SQL queries**:

A. Create **multiple** tables (minimum of 3). Name the tables; and name and type all fields appropriately.

B. Add **TWO** entries to **EACH** table using SQL (save these queries), other entries may be entered directly into the table.

C. How many Fire Defence Units are currently working on each province?

D. Which *Fire Fighters* (by name) have been decommissioned?

E. List each Fire Defence Unit and the sum of all fires fought by all Fire Fighters on the Fire Defence Unit.

F. Fire Fighters can be promoted to Chief Commanders. The *Fire Department* uses the following formula:

```
(Years in Fire Department * Number of fires fought)
```

F1 – Show a list of all Fire Fighters and their promotion calculation score

F2 – Show, by name, which Fire Fighter has the highest score.

G. List each Fire Fighter and their Fire Defence Unit's Chief Commander.

H. Which Chief Commander, by name, has the most Fire Fighters?

I. Which Chief Commander, by name, has the most <u>Active</u> Fire Fighters?

- This solution must be implemented in Microsoft Access or equivalent.
- Name all queries according to their question number. For example:
    - Question A as "**A**"
    - Question B1 as "**B1**"
    - etc.

Mark Allocation

Query A	14
Query B (B1 – B6)	6
Minimum Data Requirements	5
Query C	5
Query D	5
Query E	5
Query F (F1 & F2)	10
Query G	10
Query H	15
Query I	15
Total	**90**
Penalties • Late submission [0%]	