Assignment 9: Databases and Data Structures

Date Due: May 1, 2012 (Class Time) Instructor: Trani

Problem 1

Download the two Excel files named: a) virginia_airports.xls and b) runways_virginia_airports.xls provided in the syllabus web site. Samples of the files are shown below for reference.

Table 2. Sample File virginia_airports.xls.

Name	ID	Ownership	Airport_ID	Latitude	Longitude
VIRGINIA HIGHLANDS	VJI	PU	25600.*A	36.6871111	-82.033333
ALPHA NATURAL RESOURCES	22VG	PR	25600.01*H	36.6966667	-81.995333
MOUNT VERNON HOSPITAL	VA82	PR	25609.*H	38.7403922	-77.0772
ALEXANDRIA HOSPITAL HELISTOP	9VA2	PR	25609.01*H	38.8226128	-77.104145
HILL TOP	VA64	PR	25617.*A	37.4159831	-77.95389
MERLIN AERODROME	2VA3	PR	25617.2*A	37.315	-77.866111
TIMBERDOODLE	93VA	PR	25618.*A	37.5362533	-79.023356

Table 3. Sample File runways_virginia_airports.xls.

Airport_ID	Runway Label	Length (feet)	Width (ft)	Surface	Lights
25600.*A	06/24	4471	75	ASPH-G	
25600.*A	06/24	4471	75	ASPH-G	ODALS
25600.01*H	H1	600	100	TURF	
25600.01*H	H1	600	100	TURF	
25609.*H	H1	75	75	CONC	
25609.*H	H1	75	75	CONC	

Task 1:

Import both files into Access creating a new database. In the virginia_airports.xls file **define the Airport_ID filed as the primary** key. Define Airport_ID as a text datatype in both tables. Establish a one-to-many relationship between the virginia_airport and the runways_virginia_airports files using the field Airport_ID. Verify that the relationship works. Explain how do you know the relationship works.

Task 2:

Create an MS Access query to find all the airports in Virginia whose runways longer than 6,500 feet. State the number of airports and show the resulting Access table. IN your solution table include the following fields:

Airport name

Airport ID

Runway label

Runway length

Task 3:

Create another MS Access query to find the **public airports** in Virginia (Ownership field = PU) with **runways longer than 7,000 feet** and with **Asphalt (ASPH) runways**. State the number of airports and show the resulting Access table showing the following fields:

Airport name

Airport ownership

Airport ID

Runway label

Runway length

Task 4:

Create an MS Access query to find all the runways at airports in Virginia with **Approach Lighting System with Sequenced Flashing Lights configuration (ALF1 or ALSF2**). The query should produce a table with the airport name, runway label, runway length, lights system name, airport latitude and longitude. A picture of an ALSF1 system deployed at Atlanta International Airport is shown below.

Figure 1. ALSF2 Runway Approach Light System Deployed at Atlanta Hartsfield International Airport.

Task 5:

Export the results of the query performed in Task 4 to a text or Excel file. Read the exported file into Matlab and make a plot of the airport locations with ALSF1 and ALSF2 light systems using the provided map of Virginia (.mat file).