

Assignment 10: Databases and Data Structures

Date Due: May 5, 2015 (Class Time)

Instructor: Trani

Problem 1

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

Table 2. Airport database (for North Carolina)..

Location_id	Airport ID	State	City	Airport_Type	Land Area (acres)	Lat(seconds)	Lon(seconds)	Lat (deg) format	Lon (deg) format	Lat (deg)
16494.*A	6NC8	NORTH CAROLINA	ADVANCE	PR	3	129377.4930N	289384.1950W	12	12	35.94
16494.1*A	30NC	NORTH CAROLINA	ADVANCE	PR		129775.0000N	289645.0000W	12	12	36.05
16499.3*A	ASJ	NORTH CAROLINA	AHOSKIE	PU	210	130671.0930N	277815.0800W	12	12	36.30
16499.31*A	15NC	NORTH CAROLINA	AHOSKIE	PR	40	130463.0000N	277106.0000W	12	12	36.24
16503.*A	VUJ	NORTH CAROLINA	ALBEMARLE	PU	300	127500.1010N	288542.8640W	12	12	35.42
16503.01*H	9NC1	NORTH CAROLINA	ALBEMARLE	PR		127308.0000N	288701.0000W	12	12	35.36
16506.*A	RHP	NORTH CAROLINA	ANDREWS	PU	206	126702.8270N	301906.9390W	12	12	35.20
16506.52*A	87NC	NORTH CAROLINA	ANGIER	PR		127590.0000N	283156.0000W	12	12	35.47
16506.53*A	NC44	NORTH CAROLINA	ANGIER	PR		127681.0000N	283262.0000W	12	12	35.47
16510.*A	NC11	NORTH CAROLINA	APEX	PR	7	128669.5430N	284129.0310W	12	12	35.74
16510.01*A	NC81	NORTH CAROLINA	APEX	PR		128706.5440N	283895.0260W	12	12	35.75
16515.12*A	1NC0	NORTH CAROLINA	ASHEBORO	PR	100	128599.4910N	287789.1410W	12	12	35.72
16515.21*A	7NC9	NORTH CAROLINA	ASHEBORO	PR		128618.4910N	287680.1350W	12	12	35.73

Table 3. Sample File runways_aircraft_airports.xls.

Location_id	RunwayName	Length (ft)	Width (ft)	RunwayMaterial
16494.*A	40717	2500	60	TURF
16494.*A	40717	2500	60	TURF
16494.1*A	16/34	2700	50	TURF
16494.1*A	16/34	2700	50	TURF
16499.3*A	40561	4502	75	ASPH-G
16499.3*A	40561	4502	75	ASPH-G
16499.31*A	14/32	1800	50	TURF
16499.31*A	14/32	1800	50	TURF
16503.*A	04L/22R	3500	75	ASPH-G
16503.*A	04L/22R	3500	75	ASPH-G
16503.*A	04R/22L	5500	100	ASPH-G
16503.*A	04R/22L	5500	100	ASPH-G

Task 1:

Import both files into Access creating a new database. Define **Location_id** as a text datatype in both tables. The Location_id field, serves to connect both files in a database. Establish a one-to-many relationship between the North Carolina airports and the runways_NC_airports files using the field **Location_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 North Carolina whose runways longer than 4,200 feet. In your query, include the number of airports and show the resulting Access table. In your solution table include the following fields:

- Airport ID
- Runway label
- Runway length
- Runway width

Task 3:

Create another MS Access query to find the **public airports** in North Carolina with **runways longer than 6500 feet** and with **Asphalt (ASPH) runways**. State the number of airports and show the resulting Access table showing the following fields:

Airport ID

Runway label (s)

Runway length

Task 4:

Create an MS Access query to find all the runways at airports in North Carolina with **land areas greater than 10 acres**. The query should produce a table with the airport ID, runway label, runway length, airport latitude and longitude.

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 using the US map used in class..