**Lab 1 (Part 1)** – **Building Models for GIS Analysis Using ArcGIS**

(Due date: Fri. Jan. 27, 2017)

This lab is a general refresher to the concepts and techniques that should have been acquired in previous GIS courses. Please complete the exercises in the lab and answer questions in each exercise as well as following additional questions. Try to make your answers succinct. Submit this file to Laulima before the stated due date.

**Exercise 1: Explore an existing model**

Type in your answers to questions in the exercise here.

Additional Question 1.1: Please list all elements in this model in the following table. If none, put ‘n/a’. Add more rows if necessary.

Additional Question 1.2: In step 7, you changed the paths of **SchoolBuffer**, **gMainBuffer**, **Intersect (2)**, and **GasLeakAreas** from ‘C : \...’ to ‘U: \...’ to make the model correct. Other than this, what is the other way to rectify the model?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Geoprocessing tool | Function description | Input variable | Output variable | Parameter |
| Make Feature Layer | Select parcels whose BUSINESSNA field includes ‘school’, and create a new feature layer for the selected features | Parcels | Schools | BUSINESSNA LIKE '%School%' |
| Select Layer By Location | Select gMain (2) (i.e. main roads) within 500 feet of schools | gMain (2)  Schools | gMain | WITHIN\_A\_DISTANCE  NEW\_SELECTION\* |
| Buffer | Create buffers within XX feet from schools | Schools | SchoolsBuffer |  |
| Buffer (2) | Create 50 feet buffers from the selected main roads | gMain | gMainBuffer | 50 feet  FULL\*  ROUND\*  PLANAR\*  NONE\* |
|  | … |  |  |  |

\* Optional answers. Will not lose point if missing.

**Exercise 2: Prepare for your analysis**

Type in your answers to questions in the exercise here.

Additional Question 2.1: Following Step 4, please write an expression to select water bodies with an area greater than 100,000.

**Exercise 3: Build a site selection model**

Type in your answers to questions in the exercise here.

Additional Question 3.1: What is the difference between ‘Run Entire Model’ in the Model menu and the ‘Run’ button on the ModelBuilder panel (see below)?



Additional Question 3.2: All criteria in this exercise are expressed in a binary form (in/not in), for example, the plant site must be within 3,000 feet of the Cache la Poudre River. Which tool to use to fulfill continuous/fuzzy criteria, for example, the closer to the river the better (more suitable)?