**vNithin Das, CWID: 10422784, Date: 11/21/19 Assignment W&A 4th Edition, Ch 16, Q 2**

I pledge on my honor that I have not given or received any unauthorized assistance on this

assignment/examination. I further pledge that I have not copied any material from a book, article,

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Signature: NITHIN DAS

Date: 11/21/2019

**Management Overview**

* **Problem Statement**

To determine how many ambulances to assign to each district using goal programming.

* **Data Sources**

**Input variables**: Time taken for district 1 and 2

Yearly expense to run an ambulance

**Constraints**: Number of ambulances should be integer

**Changing cells**: Number of ambulances for District 1 and District 2

* **Model Approach**
* Enter the input variables in the spreadsheet model
* Enter the required constraints in the model
* Calculate Total Cost = “Service cost / ambulance” \* “Total Number of Ambulance”
* Enter “Number of Ambulances” as the changing cells
* First, all the goals are added to solver as constraints and run to see if there is a feasible solution satisfying all the conditions. We leave the objective cell in solver empty in this step (No feasible solution obtained in this case)
* The deviation for the goal with the highest priority is added in the objective cell and it is minimized. Once we get the minimal value after running solver, we then set this value as a hard constraint. Next, we choose the deviation for the goal with the second highest priority as the objective unction to be minimized. We continue the above steps until the goal with the lowest priority.
* **Solution**

Results:

2A) The number of ambulances to be assigned to district 1 and district 2 =10.

2B) If the goal priority is in the order Goal 2>Goal 3> Goal 1, the number of ambulances required for district 1 =11, district 2=10