4900:166 Tools for Aerospace System Engineering Spring 2024

Laboratory #6 (100pts) Decision Making

This is an individual lab. Submit your m-files (.m) to Brightspace. **Due March 8th**.

Rubric:

80% Effort	Full	Lab is complete. Student exhibits work ethic commensurate with a bachelor's degree in engineering.
	Partial	Lab is incomplete.
	None	Lab is not turned in. Student demonstrates a total lack of competency of the subject.
20% Correctness	Full	Demonstrates mastery of the subject. Lab is correct, a few minor mistakes may be present
	Partial	Demonstrates working knowledge of the subject. Lab has a few major mistakes.
	None	Demonstrates minimal or no knowledge of the subject. Major and minor mistakes present.

Write your own script files to solve the following problems. Comments and Headers are automatically expected from each script or function.

1. Evaluate the following in MATLAB:
   a) $14 > 15/3$
   b) $y = 8/2 < 5 \times 3 + 1 > 9$
   c) $y = 8/(2 < 5) \times 3 + (1 > 9)$
   d) $2 + 4 \times 3 \sim= 60/4 - 1$

2. The cost per kilometer for a rental car is \$0.50 for the first 100 miles, \$0.30 for the next 200 miles and \$0.20 for all miles over 300 miles. Write a script that determines the total cost for a given number of kilometers.

3. Write a function to evaluate $f(x, y)$ for any user specified values of x and y. The function $f(x, y)$ is defined as:

$$f(x,y) = \begin{cases} x + y & x \geq 0 \; and \; y \geq 0 \\ x + y^2 & x \geq 0 \; and \; y < 0 \\ x^2 + y & x < 0 \; and \; y \geq 0 \\ x^2 + y^2 & x < 0 \; and \; y < 0 \end{cases}$$