

Software Engineering

CSE435, Fall 2024

Homework 4

Due: September 30, 2024

Important: this is an individual assignment. Each team member should *independently* complete the assignment first (i.e., submit to D2L), before sending a copy to your project manager to collate it for the group assignment.

The assignment requires you to develop a list of requirements for your respective project system. First, you should gain an understanding of the domain space. This includes reading the provided project specifications provided under the project section of the website and performing additional research via web and other available resources. Next, **enumerate** a set of requirements that will outline both *functional and non-functional* requirements for your system.

Example for a backup collision avoidance system:

Primary requirement:

1. The system shall turn on when the vehicle is shifted to the reverse gear
2. The system shall use the mounted camera to detect objects within 10 meters.
 - a. If an object is detected within 10 meters, then the system shall alert the driver by beeping once every 200 milliseconds.
 - b. If an object is detected within 5 meters, then the system shall alert the driver by beeping once every 100 milliseconds.
3. ...

Secondary requirement:

4. Do not irritate the driver with false alarms

Invariant and primary requirement:

5. The vehicle shall not exceed 10 meters per second while the system is active.

Assignment:

1. Based on the description of YOUR respective projects, enumerate a set of requirements for YOUR system (i.e., do not reuse the example Backup rollover system above).
 - a. You will need to perform a literature review as part of your research activities to obtain background information regarding YOUR project. Be sure to include any sources that you use for this research in the bibliography.)
 - b. As appropriate, introduce hierarchical numbering to better organize your requirements.
 - c. Remember: requirements should describe (externally) observable behavior – think about how you would test for a given requirement.

Hint: As appropriate, identify any hardware and/or platform constraints for your system,

especially as they impact your requirements.

2. Identify 3 global invariants (i.e., system properties that should always be true) of the system. For instance, "Prevent injuries" is a global invariant of the example application system.

(Find 3 invariants for YOUR specific project.)

3. Identify at least three questions that you would like to pose to the customer in order to better understand the requirements for YOUR project.