

# DOORS Requirements Specification Class Project

Due Monday, May 8 by 2 pm Pacific time.

This assignment is worth 100 points total.

## Late Submission Policy

If you submit your solution late, you will lose 20 points per week.

## Summary

This assignment will be based on a robot application called RoboCon. Information about RoboCon will be provided to you, but the information is not complete. For this assignment, you will be required to make inferences and apply your judgment as a requirements engineer in some cases. The assignment is intentionally designed this way because it is the normal situation in which requirements engineers work.

For this assignment, you will capture the requirements for the RoboCon system in DOORS and create an SRS.

## Application Background

For this assignment, suppose that you have just been hired as a requirements engineer by a small technology company named CS568 Systems, Inc. CS568 Systems owns several patents for image processing and artificial intelligence algorithms. CS568 Systems business model is to license their algorithms, and software components that implement those algorithms, to third-party companies for inclusion in those companies' products. For example, the manufacturer of a video surveillance product might license one or more of CS568 Systems algorithms to perform automatic threat detection.

Your first task in your new job is to assist with the development of requirements and an SRS for a system called RoboCon. RoboCon is in the early planning stages: some requirements elicitation and evaluation has been performed, but detailed requirements have not yet been defined. The outcome of the requirements elicitation and evaluation activities is (partially) documented in the "RoboCon System Concept" document. You must use this document to perform each of the tasks below. The RoboCon System Concept can be downloaded from the following URL on D2L:

<https://courses.uscdcn.net/d2l/le/content/10796/viewContent/134682/View>

Note that the RoboCon System Concept is intentionally incomplete and contains defects. As a requirements engineer, part of your job will be to identify and address these defects.

## Assignment Description

1. Purpose and Scope: create artifacts in DOORS that capture the **purpose and scope** of the RoboCon. [5 points]
2. Definitions: create artifacts in DOORS that define **relevant terms and concepts** in the application domain. [5 points]
3. Goals: create artifacts in DOORS to capture the **stakeholders' goals**. [5 points]
4. Specific requirements: create artifacts in DOORS that refine the stakeholders' goals into **detailed requirements**. [15 points]
5. Use case diagrams: create UML Use Case Diagrams that depict the **experimentation and demonstration** use cases. [5 points]
6. Class diagrams: create UML Class Diagrams that depict the structure and relationships of all the key domain concepts discussed in the RoboCon System Concept. [10 points]
  - a. Create a UML Class Diagram that depicts the domain concepts related to the **architecture** of RoboCon, including RCUs, ACUs, iRobot Creates, sensors, actuators, and software components.
  - b. Create a UML Class Diagram that depicts the domain concepts related to **routes**, including waypoints, distances, obstacles, and charging stations.
7. Sequence/collaboration diagrams: create a UML Sequence or Collaboration Diagram that depicts the **messages exchanged** between RoboCon components during a particular execution scenario. [10 points]
8. Activity/statechart diagrams: create a UML Activity or Statechart Diagram that depicts the different **operational modes** that a RCU may be in (e.g., formation, movement, and recharge) and the events or conditions that cause a transition between modes. Each mode should further include a number of substates that capture the states that an RCU may have when in that mode (e.g., the “searching for guide” sub-state of the convoy formation mode). [10 points]
9. SRS Document: organize all your artifacts into an SRS in DOORS and **export it to a PDF**. [5 points]

While completing the tasks above you must do the following things [25 points]:

1. Detailed requirements should be **correct, unambiguous, complete, consistent, ranked for importance and/or stability, testable (verifiable), modifiable, and traceable**.
2. You should use **Text, Collection, Module, and Diagram** artifacts in DOORS.
3. You should use **Links** for traceability between all artifact types.

4. You should create and use custom **Artifact Types, Attributes, Attribute Data Types, Link Types.**
5. You should create custom **Views.**
6. You should create and use **Tags.**

Also, you must create a separate document of approximately 1000 words that explains the reasoning behind the decisions you made when creating component properties and artifacts in DOORS. For example, you should explain how you organized artifacts, how you dealt with ambiguities, and so on. [5 points]

### Grading

The grading of this assignment will necessarily be somewhat subjective. Each part of the assignment will be graded based on the overall quantity and quality of your work, not on a checklist or “right” and “wrong” answers. If you go substantially beyond the stated requirements for any part of the assignment, you will receive extra-credit points for that part.

### Submission

You must submit the following files:

1. **PDF of your SRS, exported from DOORS.**
2. **Your project summary document in Word, PDF, or text format.**

Submit all files via the D2L site by **May 8, 2017 at 2:00 PM.**