Goals and motivation for the assignment: The purpose of this assignment is to give the student firsthand experience with the challenges entailed in creating a requirements specification.

What is the assignment?:
In assignment #1 you informally described a complex software system of interest to you. In assignment #2 you have demonstrated that you understand the power and difficulties of being precise in specifying such a system. In this assignment you will go further and use some of the precise software product notations introduced in the course as the basis for defining a precise specification of some aspects of the requirements for the complex system you have previously described informally.

SPECIFICALLY:
Develop a specification of the requirements for two representative high-level functional capabilities of the system you described in assignment #1. A suggested approach to doing this is to:

• Start by selecting an approach for structuring these high level functional capabilities: One structuring approach might be to use of functional decomposition hierarchies of nodes such as were presented in class. Another approach might be through the use of use cases, perhaps patterned after the Use Cases in the Tokeneer requirements specification, or hierarchies of Z schemas.

• Augment your structuring choice with specifications of different kinds of requirements that elaborate on different kinds of details of the selected high-level functions: Thus, for example you might choose to elaborate upon specified functions with additional specifications of robustness, security, etc.

For 520 Students: Your requirements specification elaborations should address at least four of the following types of requirements.
Functional
Environmental
Robustness
Accuracy
Timing
Security
Safety

For 620 Students:
Your requirements specification must include at least some Z schemas.

The specification should address all of the following types of requirements.
Introduction
Functional
Environmental
Robustness
Accuracy
Timing
Security
Safety
But, in case you feel that any of the above types of requirements are not applicable or relevant to one of the selected aspects of your system, be sure to explain why.

For each type of requirement you should select a formalism or notation that seems to you to be appropriate for the clear and precise exposition of the type of requirement. Some examples of how to use DFGs, CFGs, Predicate logic, FSMs and other formalisms, have been provided in the lecture material.

Anticipated length:
For CS 520 Students: 8-12 pages
For CS 620 Students: 10-20 pages
BUT NOTE: If you are confident that you can provide good answers to the questions in fewer pages, then do so. Under no circumstances should you put in extra time and effort writing more if you don’t feel that doing so is helping you to learn and understand more.