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I

How does the waterfall model differ from the iterative model? What are the main advantages of the latter over the former?

#### Waterfall

testing or validation after each step  
no iterations

#### Cons

Takes to long  
Small errors are costly

#### Iterative

Infinite weak cycles

#### Advantages

Less effort on each iteration  
plan for change  
Software is always useable, even with minor flaws

II

Use form-based specification to describe how the students can add, remove, and change their course registrations

Network-based course registration system

Function	Add
Description	Add course to registration schedule
Inputs	Course identifier
Source	Client that is registering
Outputs	Update request to database
Destination	Main registration database
Action	Insert new course to clients schedule, update available slots open to other clients
Requirement	No conflicting time slots, all course pre-requisets met, good academic standing, authorization to register
Pre-condition	Course selected
Postcondition	Update to main database, update to clients schedule
Side effects	Time slot filled on clients schedule, one less slot available in the class offerings

Function	Remove
Description	Remove course to registration schedule
Inputs	Course identifier
Source	Client that is registering
Outputs	Update request to database
Destination	Main registration database
Action	Remove course to clients schedule, update available slots open to other clients
Requirement	No conflicting time slots, all course pre-requisets met, good academic standing, authorization to withdrawl
Pre-condition	Course selected
Postcondition	Update to main database, update to clients schedule
Side effects	Time slot opened on clients schedule, one more slot available in the class offerings

Function	Change
Description	Change course to registration schedule
Inputs	Course identifier
Source	Client that is registering
Outputs	Update request to database
Destination	Main registration database
Action	Change course on clients schedule, update available slots open to other clients

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Requirement	No conflicting time slots, all course pre-requisets met, good academic standing, authorization to register
Pre-condition	Course selected
Postcondition	Update to main database, update to clients schedule
Side effects	Time slot filled on clients schedule, one less slot avaiable in the class offerings

III

UML Class and Sequence Diagrams

IV

Design Patterns

I used a abstract class to define the common methods each element would use  
In addition to the interface which would contains the accept method signature