**CSCI 3901 Assignment 2**

First of all, all the details of thesis information will be gathered from the student and validation will be performed in the getDetails() method of the class. Further, the information will be stored in a HashMap which will be passed as a parameter to confirmSchedule() method to get confirmation of the schedule with the supervisor and then the readers and defense chair. Moreover, HashMap will be passed as a parameter to the approveDefense() method to get approval for the defense schedule with the supervisor and then the readers and defense chair. Lastly, the postAnnouncement() method will post the announcement 7 days before the defense.

HashMap<int, List<String>> will be created in main() and will be accessed in all the methods with the help of getters and setters. There are following 4 methods:

1. Public boolean getDetails()

This method gets all the inputs from the user regarding defense information of the student (String studentName, String dateTime, String title, String abstract, String supervisor, String reader1, String reader2, String defenseChair) and validates them. If the information provided is correct then all the information will be stored in a HashMap and the method will return true otherwise the method will return false.

1. Public boolean confirmSchedule(HashMap<int, List<String>>)

Confirms schedule with the supervisor and then the reader and defense chair. Returns true if the schedule has been approved and false otherwise.

1. Public boolean approveDefense(HashMap<int, List<String>>)

Confirms if the defense is at least after 2 weeks. If not, returns false. Otherwise, by sending emails, this method gets approval from the supervisor and if the supervisor confirms the schedule then it takes the approval of readers and the defense chair. If the defense is approved by all three, returns true and false otherwise.

1. Public postAnnouncement(HashMap<int, List<String>>)

This method posts an announcement 7 days before the defense, if the defense schedule has been approved.

**Input validation**

1. Public boolean getDetails(studentName, String dateTime, String title, String abstract, String supervisor, String reader1, String reader2, String defenseChair)

Checks following test cases for student’s name, thesis title, thesis abstract, supervisor’s name, reader’s name, defense chair

* Null value and empty string passed as student name
* Null value and empty string passed as thesis title
* Null value and empty string passed as thesis abstract
* Null value and empty string passed as supervisor
* Null value and empty string passed as reader 1 or reader2
* Null value and empty string passed as defense chair
* Duplicate string passed as student name
* Only numbers passed as student name, supervisor, readers or defense chair
* Special character, white spaces, tab passed as student name, supervisor, readers or defense chair
* Negative value passed for date and time
* Date value passed in past tense
* More than 2 characters passed as date DD or month MM
* Exactly 4 characters not passed as year YYYY
* Different date format
* Time format is not 24-Hour time format
* Supervisor, readers and defense chair does not exists

**Boundary tests**

1. Public boolean getDetails(studentName, String dateTime, String title, String abstract, String supervisor, String reader1, String reader2, String defenseChair)

Checks following test cases for student’s name, thesis title, thesis abstract, supervisor’s name, reader’s name, defense chair

* 1 character passed
* Too many characters passed
* 1 name passed for a supervisor
* Multiple names passed for supervisor or co-supervisors

1. Public boolean confirmSchedule(HashMap<int, List<String>>)

* Get confirmation of schedule when no other confirmations are pending with the supervisor
* Get confirmation of schedule when only 1 confirmation is pending with the supervisor
* Get confirmation of schedule when many confirmations are pending with the supervisor

1. Public boolean approveDefense(HashMap<int, List<String>>)

* Defense is in exactly 2 weeks
* Take approval when no other defense approvals are pending with the supervisor
* Take approval when 1 defense approval is pending with the supervisor
* Take approval when many defense approvals are pending with the supervisor
* Take approval when no other defense approvals are pending with the readers and defense chair
* Take approval when 1 defense approval is pending with the readers and defense chair
* Take approval when many defense approvals are pending with the readers and defense chair

1. Public postAnnouncement(HashMap<int, List<String>>)

* One day is left for the system to post the announcement
* Defense is in exactly 7 days

**Control flow tests**

1. Public boolean getDetails(studentName, String dateTime, String title, String abstract, String supervisor, String reader1, String reader2, String defenseChair)

* Create a defense schedule when no defense has already been scheduled
* Create a defense schedule when only 1 defense has already been scheduled
* Create a defense schedule when many defenses have already been scheduled
* Create a new schedule for a student with an existing defense schedule at some other time

1. Public boolean confirmSchedule(HashMap<int, List<String>>)

* Confirmation of schedule disapproved by the supervisor
* Confirmation of schedule approved by the supervisor
* Confirmation of schedule disapproved by readers
* Confirmation of schedule approved by readers but not the defense chair
* Confirmation of schedule approved by readers and the defense chair

1. Public boolean approveDefense(HashMap<int, List<String>>)

* Defense is scheduled when more than 2 weeks are left
* Defense disapproved by the supervisor
* Defense approved by the supervisor
* Late response from the supervisor
* Defense disapproved by one of the readers
* Defense approved by the readers
* Late response from the supervisor
* Defense disapproved by the defense chair
* Defense approved by defense chair
* Late response from the supervisor

**Data flow tests**

1. Public boolean confirmSchedule(HashMap<int, List<String>>)

* Getting confirmation of schedule on a date and time which overlaps with other already confirmed defense schedule

1. Public boolean approveDefense(HashMap<int, List<String>>)

* Getting approval for an already approved defense
* Getting approval for an already disapproved defense