

CS 3704: Intermediate Software Design

Group 2

TA Queue

Design I: Detailed Class & Data Design

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Check out our GitHub Project here:

<https://github.com/Intermediate-Software-Design/ISD-Group-Project>

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Chapter 1

Design Class Diagram

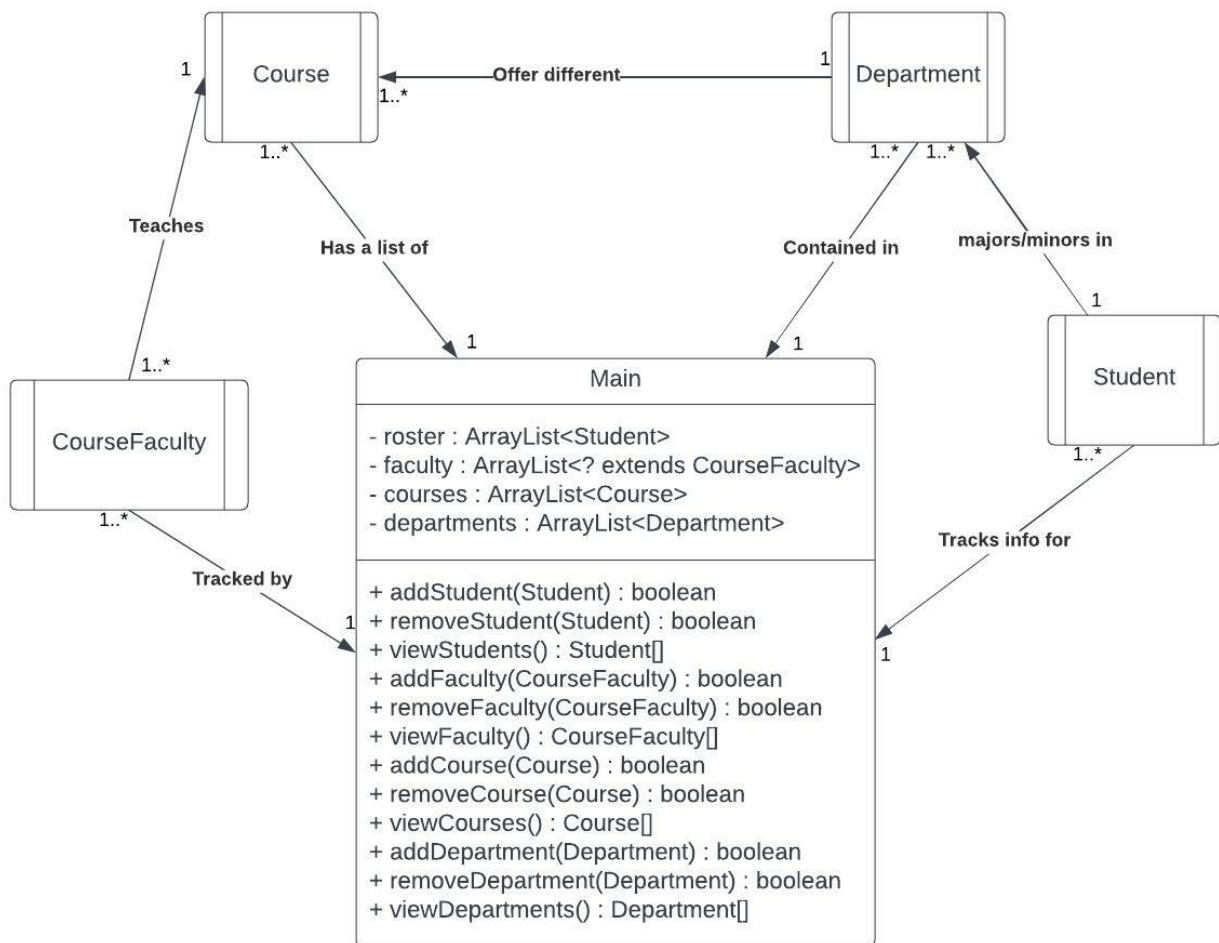
1.1 Introduction to Design Class Diagrams

Note that to preserve readability and rendering speed, some diagrams may have classes lacking either Fields or Methods in their representations, though the relationships and multiplicities linking them will be preserved. To better describe the classes, fields and methods, as well as any superclasses (labeled as Extends) and any interfaces being implemented (labeled as Implements) for all classes will be described following the diagrams that showcases their local interactions.

In addition, LucidChart (the program used to make all the diagrams here) has a limit on shapes added to each diagram, thus larger diagrams (such as the Overall DCD) have to be limited to show only the major interactions between classes, whereas some of the minor connections between classes are showcased in the more specialized diagrams. This also improves readability, as the software overly compresses the images.

1.2 Design Class Diagram: Overall Diagram

1.2.1 The Diagram



1.2.2 Main

Fields

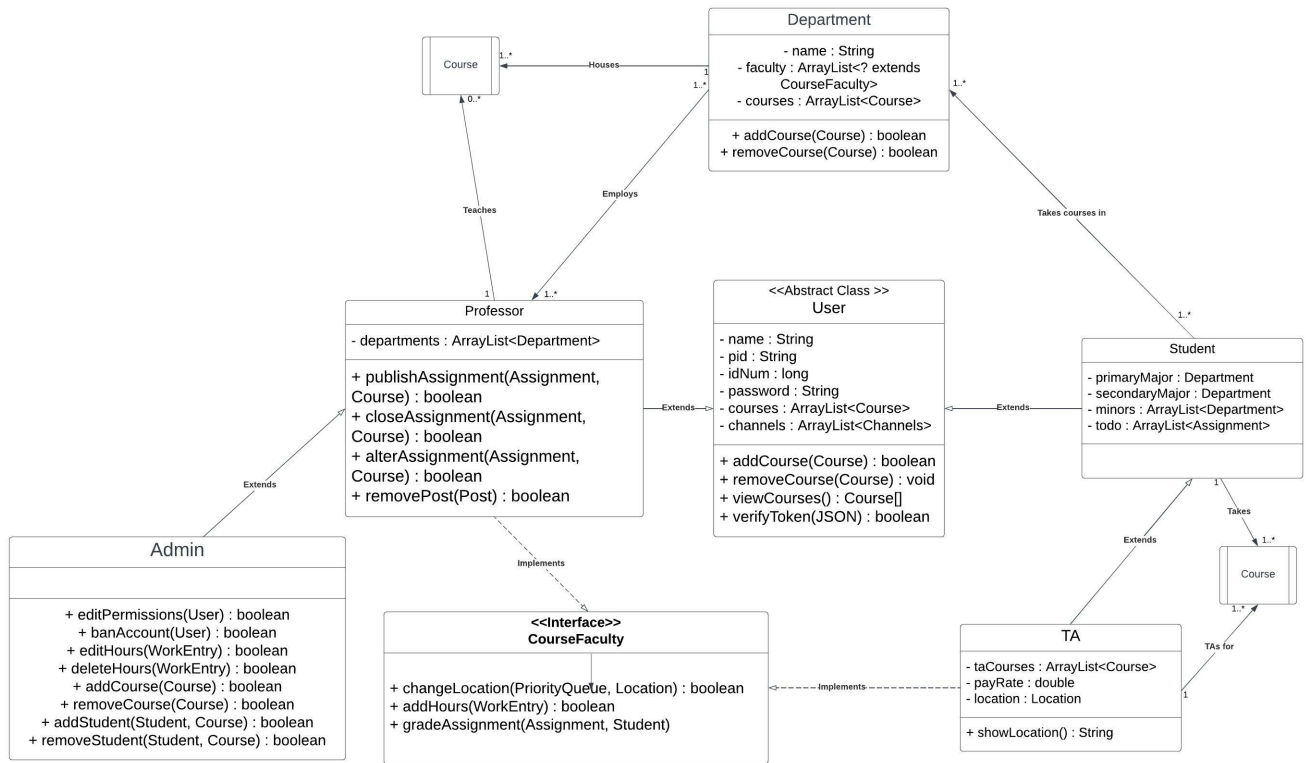
- roster : ArrayList<Student>
- faculty : ArrayList<? extends CourseFaculty>
- courses : ArrayList<Course>
- departments : ArrayList<Department>

Methods

- + addStudent(Student) : boolean
- + removeStudent(Student) : boolean
- + viewStudents() : Student[]
- + addFaculty(CourseFaculty) : boolean
- + removeFaculty(CourseFaculty) : boolean
- + viewFaculty() : CourseFaculty[]
- + addCourse(Course) : boolean
- + removeCourse(Course) : boolean
- + viewCourses() : Course[]
- + addDepartment(Department) : boolean
- + removeDepartment(Department) : boolean
- + viewDepartments() : Department[]

1.3 Design Class Diagram: User Accounts

1.3.1 The Diagram



1.3.2 User

Abstract Class

Fields

- name : String
- pid : String
- idNum : long
- password : String
- courses : ArrayList<Course>
- channels : ArrayList<Channel>

Methods

- + addCourse(Course) : boolean
- + removeCourse(Course) : void
- + viewCourses() : Course[]
- + verifyToken(JSON) : boolean

1.3.3 CourseFaculty

Interface

Methods

- + changeLocation(PriorityQueue, Location) : boolean
- + addHours(WorkEntry) : boolean
- + gradeAssignment(Assignment, Student) : boolean

1.3.4 Student

Extends User

Fields - primaryMajor : Department
 - secondaryMajor : Department
 - minors : ArrayList<Department>
 - todo : ArrayList<Assignment>

Methods

1.3.5 TA

Extends Student

Implements CourseFaculty

Fields - taCourses : ArrayList<Course>
 - payRate : double
 - location : Location

Methods + showLocation() : String

1.3.6 Professor

Extends User

Implements CourseFaculty

Fields - departments : ArrayList<Department>

Methods + publishAssignment(Assignment, Course) : boolean
 + closeAssignment(Assignment, Course) : boolean
 + alterAssignment(Assignment, Course) : boolean
 + removePost(Post) : boolean

1.3.7 Admin

Extends Professor

Fields

Methods + editPermissions(User) : boolean
 + banAccount(User) : boolean
 + editHours(WorkEntry) : boolean
 + deleteHours(WorkEntry) : boolean
 + addCourse(Course) : boolean
 + removeCourse(Course) : boolean
 + addStudent(Student, Course) : boolean
 + removeStudent(Student, Course) : boolean

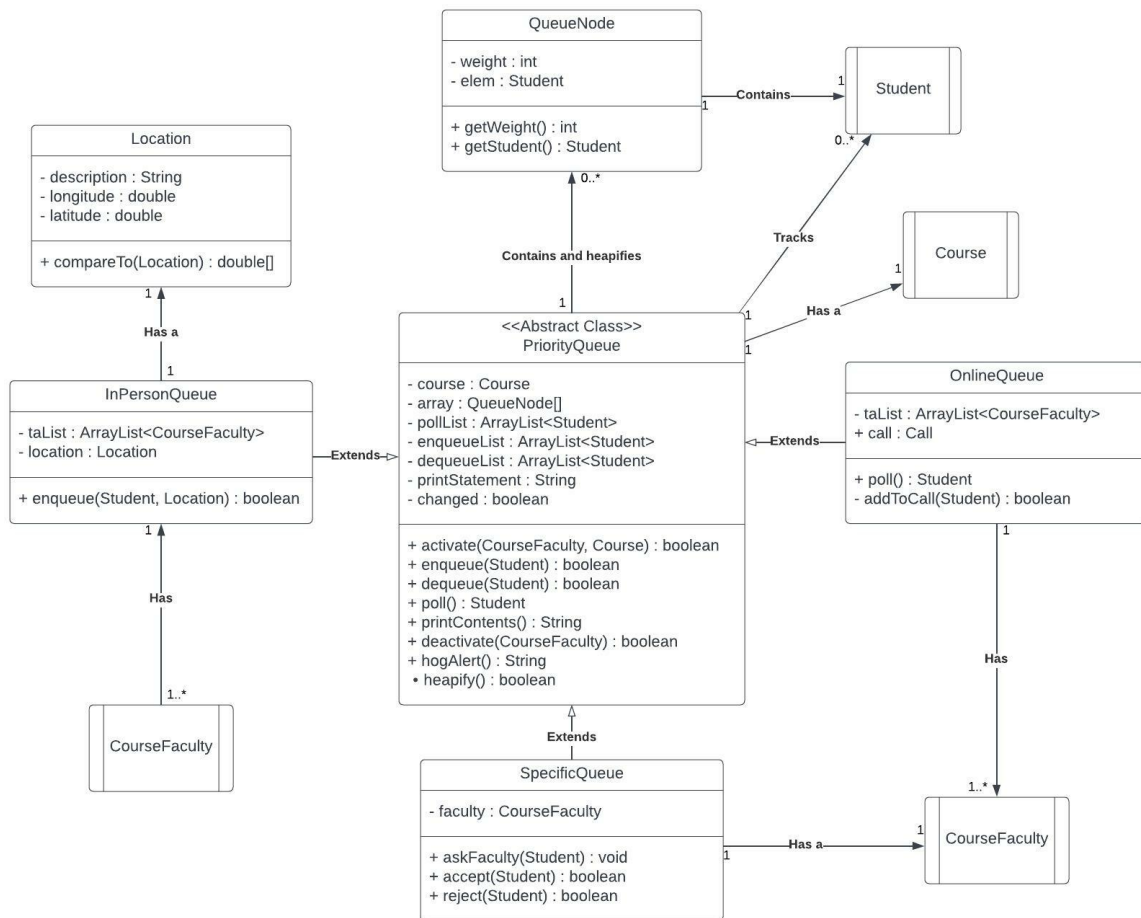
1.3.8 Department

Fields - name : String
 - faculty : ArrayList<? extends CourseFaculty>
 - courses : ArrayList<Course>

 + addCourse(Course) : boolean
 + removeCourse(Course) : boolean

1.4 Design Class Diagram: Queues

1.4.1 The Diagram



1.4.2 PriorityQueue

Abstract Class

Fields

- course : Course
- array : QueueNode[]
- pollList : ArrayList<Student>
- enqueueList : ArrayList<Student>
- dequeueList : ArrayList<Student>
- printStatement : String
- changed : boolean

Methods

- + activate(CourseFaculty, Course) : boolean
- + enqueue(Student) : boolean
- + dequeue(Student) : boolean
- + poll() : Student
- + printContents() : String
- + toString() : String
- + deactivate(CourseFaculty) : boolean
- + hogAlert() : String
- heapify() : boolean

1.4.3 QueueNode

Fields - weight : int
 - elem : Student

Methods + getWeight() : int
 + getStudent() : Student

1.4.4 InPersonQueue

Extends PriorityQueue

Fields - taList : ArrayList<? extends CourseFaculty>
 - location : Location

Methods + enqueue(Student, Location) : boolean

1.4.5 Location

Fields - description: String
 - longitude : double
 - latitude : double

Methods + compareTo(Location) : double[]

1.4.6 OnlineQueue

Extends PriorityQueue

Fields - taList : ArrayList<? extends CourseFaculty>
 + call : Call

Methods + poll() : Student
 - addToCall(Student) : boolean

1.4.7 SpecificQueue

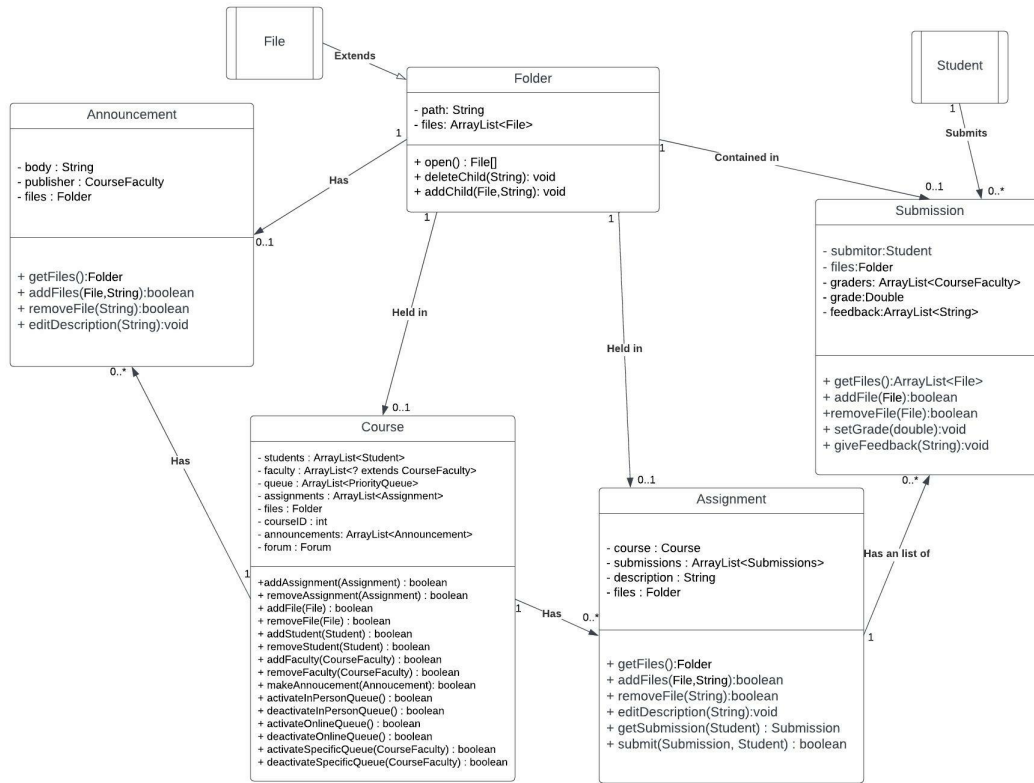
Extends PriorityQueue

Fields - faculty : CourseFaculty

Methods + askFaculty(Student) : void
 + accept(Student) : boolean
 + reject(Student) : boolean

1.5 Design Class Diagram: Courses

1.5.1 The Diagram



1.5.2 Course

Fields

- `students : ArrayList<Student>`
- `faculty : ArrayList<? extends CourseFaculty>`
- `queues : ArrayList<PriorityQueue>`
- `assignments : ArrayList<Assignment>`
- `announcements : ArrayList<Announcement>`
- `files : Folder`
- `courseID : int`

Methods

- + `addAssignment(Assignment) : boolean`
- + `removeAssignment(Assignment) : boolean`
- + `addFile(File, String) : boolean`
- + `removeFile(String) : boolean`
- + `addStudent(Student) : boolean`
- + `removeStudent(Student) : boolean`
- + `addFaculty(CourseFaculty) : boolean`
- + `removeFaculty(CourseFaculty) : boolean`
- + `makeAnnouncement(Announcement): boolean`
- + `activateInPersonQueue() : boolean`
- + `deactivateInPersonQueue() : boolean`
- + `activateOnlineQueue() : boolean`
- + `deactivateOnlineQueue() : boolean`
- + `activateSpecificQueue(CourseFaculty) : boolean`
- + `deactivateSpecificQueue(CourseFaculty) : boolean`

1.5.3 Assignment

Fields	<ul style="list-style-type: none">- course : Course- submissions : ArrayList<Submission>- files : Folder- description : String
Methods	<ul style="list-style-type: none">+ addFile(File,String) : boolean+ removeFile(String) : boolean+ getFiles() : Folder+ editDescription(String):void+ getSubmission(Student) : Submission+ submit(Submission, Student) : boolean

1.5.4 Submission

Fields	<ul style="list-style-type: none">- submitor:Student- gradesList : ArrayList<double>- files : Folder- graders : ArrayList<CourseFaculty>- feedback: ArrayList<String>
Methods	<ul style="list-style-type: none">+ setGrade(double) : boolean+ addFile(File,String) : boolean+ removeFile(String) : boolean+ getFiles() : Folder+ giveFeedback(String):void

1.5.5 Announcement

Fields	<ul style="list-style-type: none">- body : String- publisher : CourseFaculty- files : Folder
Methods	<ul style="list-style-type: none">+ editBody(String) : void+ addFile(File) : void+ publish() : boolean

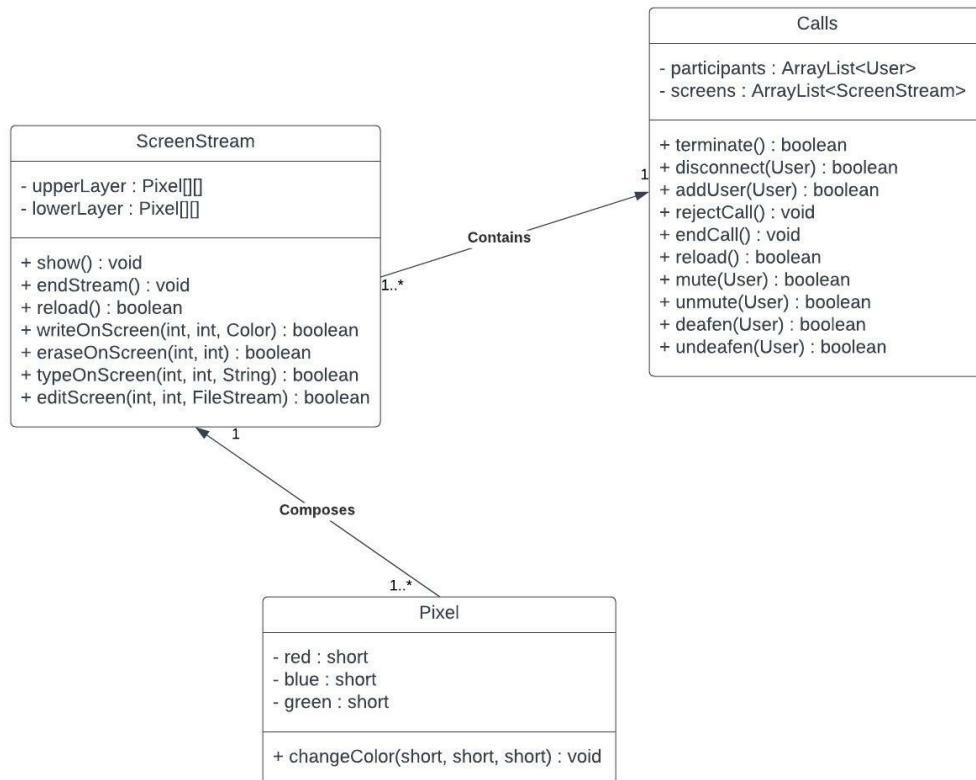
1.5.6 Folder

Extends File

Fields	<ul style="list-style-type: none">- path: String- files: ArrayList<File>
Methods	<ul style="list-style-type: none">+ open() : File[]+ deleteChild(String): void+ addChild(File,String): void

1.6 Design Class Diagram: Calls

1.6.1 The Diagram



1.6.2 Call

Fields - participants : ArrayList<User>
 - screens : ArrayList<ScreenStream>

Methods + terminate() : boolean
 + disconnect(User) : boolean
 + addUser(User) : boolean
 + rejectCall() : void
 + endCall() : void
 + reload() : boolean
 + mute(User) : boolean
 + unmute(User) : boolean
 + deafen(User) : boolean
 + undeafen(User) : boolean

1.6.3 ScreenStream

Fields - upperLayer : Pixel[]
 - lowerLayer : Pixel[]

Methods + show() : void
 + endStream() : void
 + reload() : boolean
 + writeOnScreen(int, int, Color) : boolean
 + eraseOnScreen(int, int) : boolean
 + typeOnScreen(int, int, String) : boolean
 + editScreen(int, int, FileStream) : boolean

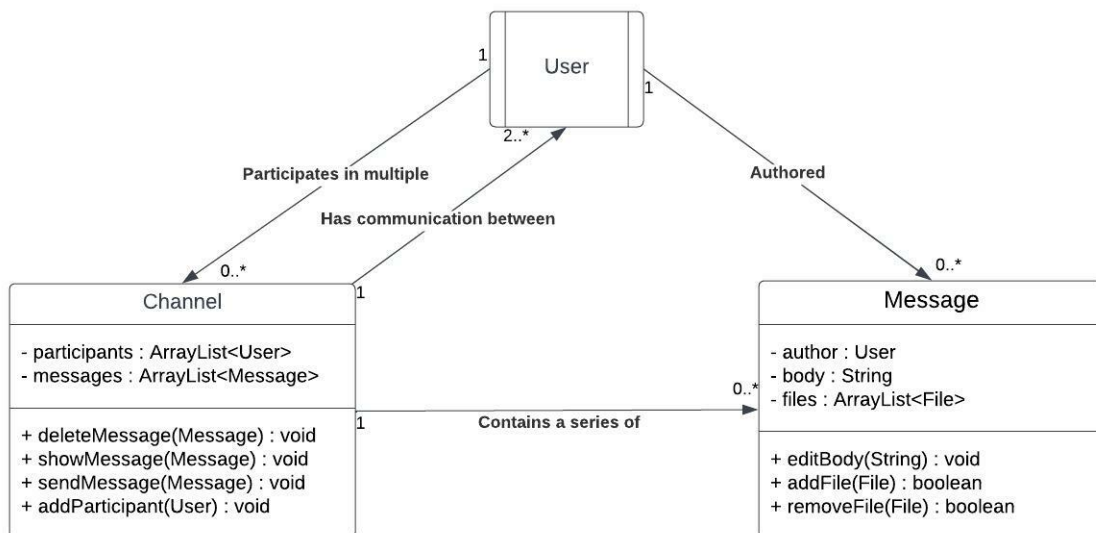
1.6.4 Pixel

Fields - red : short
 - blue : short
 - green : short

Methods + changeColor(short, short, short) : void

1.7 Design Class Diagram: Chat Channels

1.7.1 The Diagram



1.7.2 Channel

Fields - participants : ArrayList<User>
 - messages : ArrayList<Message>

Methods + deleteMessage(Message) : void
 + showMessage(Message) : void
 + sendMessage(Message) : void
 + addParticipant(participant) : void

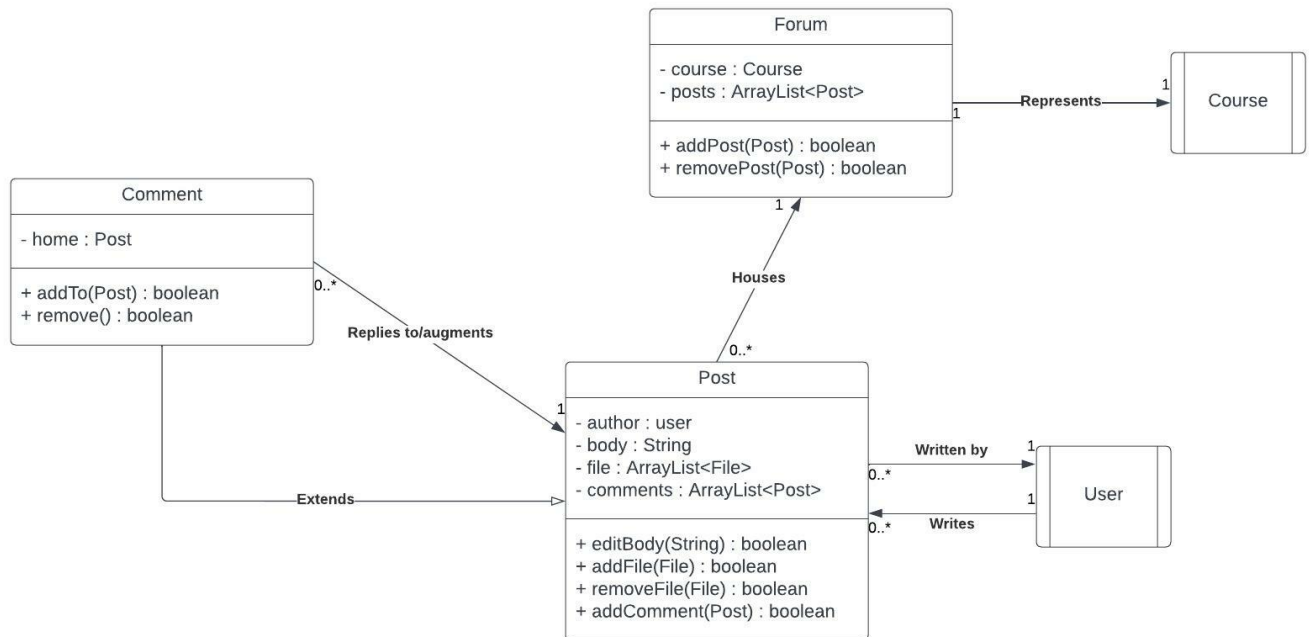
1.7.3 Message

Fields - author : User
 - body : String
 - files : ArrayList<File>

Methods + editBody(String) : void
 + addFile(File) : boolean
 + removeFile(File) : boolean

1.8 Design Class Diagram: Forums

1.8.1 The Diagram



1.8.2 Forum

Fields - course : Course
- posts : ArrayList<Post>

Methods + addPost(Post) : boolean
+ removePost(Post) : boolean

1.8.3 Post

Fields - author : User
- body : String
- files : ArrayList<File>
- comments : ArrayList<Post>

Methods + editBody(String) : boolean
+ addFile(File) : boolean
+ removeFile(File) : boolean
+ addComment(Post) : boolean

1.8.4 Comment

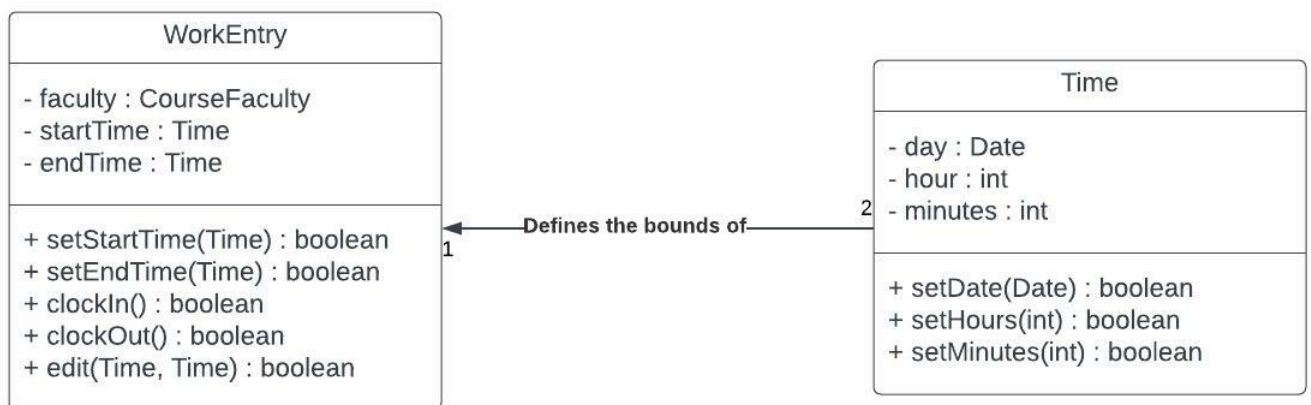
Extends Post

Fields - home : Post

Methods + addTo(Post) : boolean
+ remove() : boolean

1.9 Design Class Diagram: TimeClock

1.9.1 The Diagram



1.9.2 WorkEntry

Fields

- faculty : CourseFaculty
- startTime : Time
- endTime : Time

Methods

- + setStartTime(Time) : boolean
- + setEndTime(Time) : boolean
- + clockIn() : boolean
- + clockOut() : boolean
- + edit(Time, Time) : boolean

1.9.3 Time

Fields

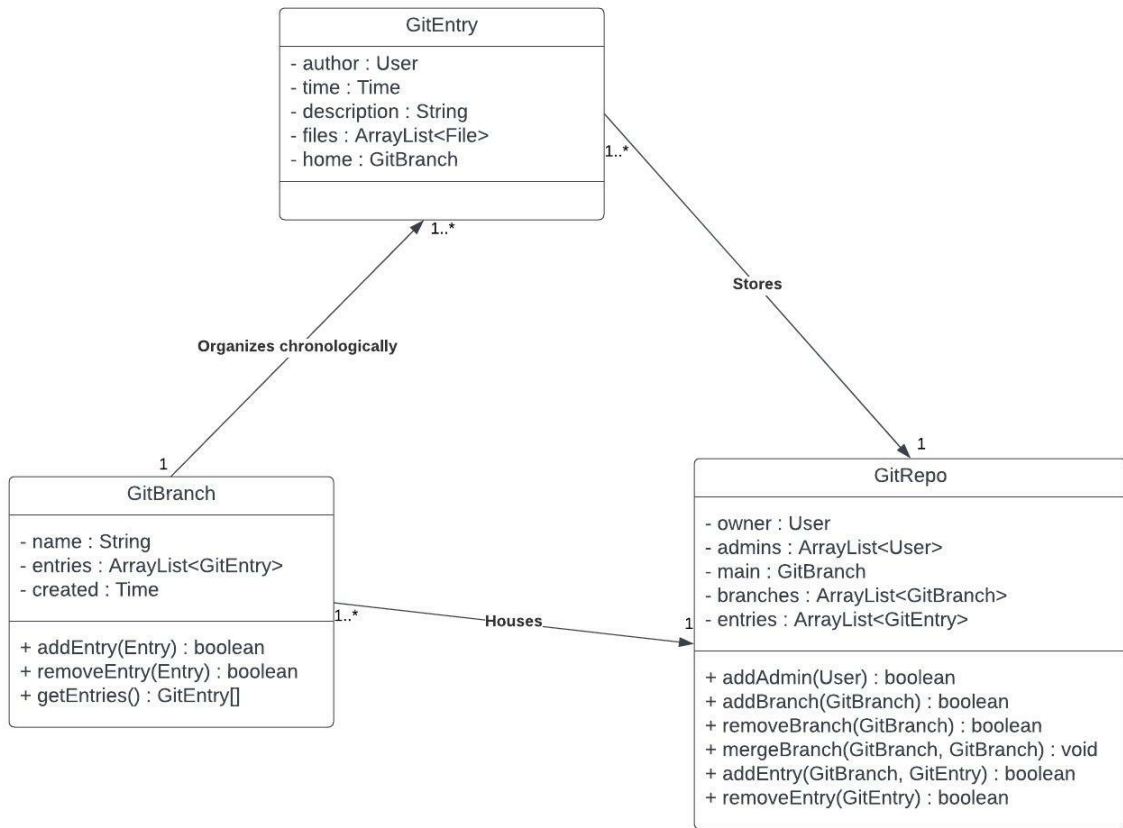
- day : Date
- hour : int
- minutes : int

Methods

- + setDate(Date) : boolean
- + setHours(int) : boolean
- + setMinutes(int) : boolean

1.10 Design Class Diagram: Git

1.10.1 The Diagram



1.10.2 GitRepo

Fields

- owner : User
- admins : ArrayList<User>
- main : GitBranch
- branches : ArrayList<GitBranch>
- entries : ArrayList<GitEntry>

Methods

- + addAdmin(User) : boolean
- + addBranch(GitBranch) : boolean
- + removeBranch(GitBranch) : boolean
- + mergeBranches(GitBranch, GitBranch) : void
- + addEntry(GitBranch, GitEntry) : boolean
- + removeEntry(GitEntry) : boolean

1.10.3 GitBranch

Fields

- name : String
- entries : ArrayList<GitEntry>
- created : Time

Methods

- + addEntry(Entry) : boolean
- + removeEntry(Entry) : boolean
- + getEntries() : GitEntry[]

1.10.4 GitEntry

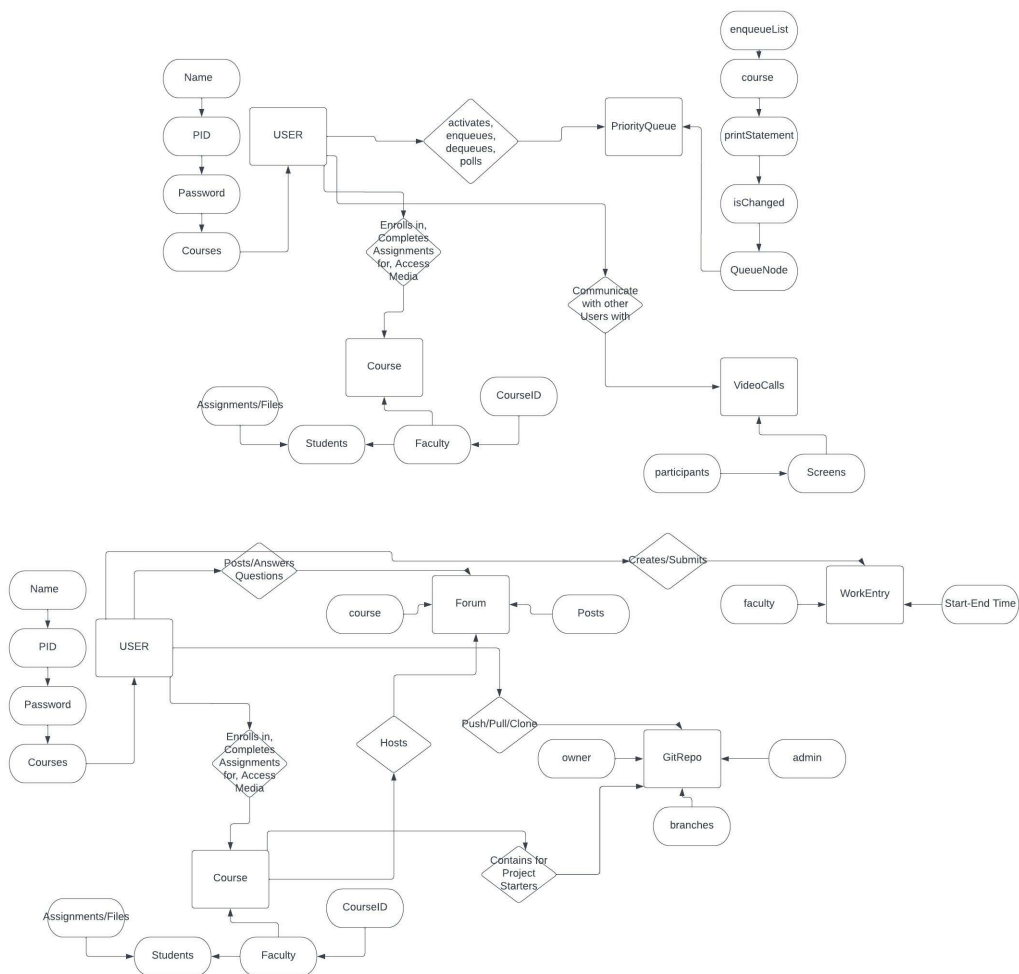
Fields - author : User
 - time : Time
 - description : String
 - files : ArrayList<File>
 - home : GitBranch

Methods

Chapter 2

Entity-Relationship Model

Please note that this was split due to the limitations of LucidChart



Chapter 3

Class Tables

