

AVIONICS DASH

A Pilot Training Application



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GROUP 4

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1. Product Description

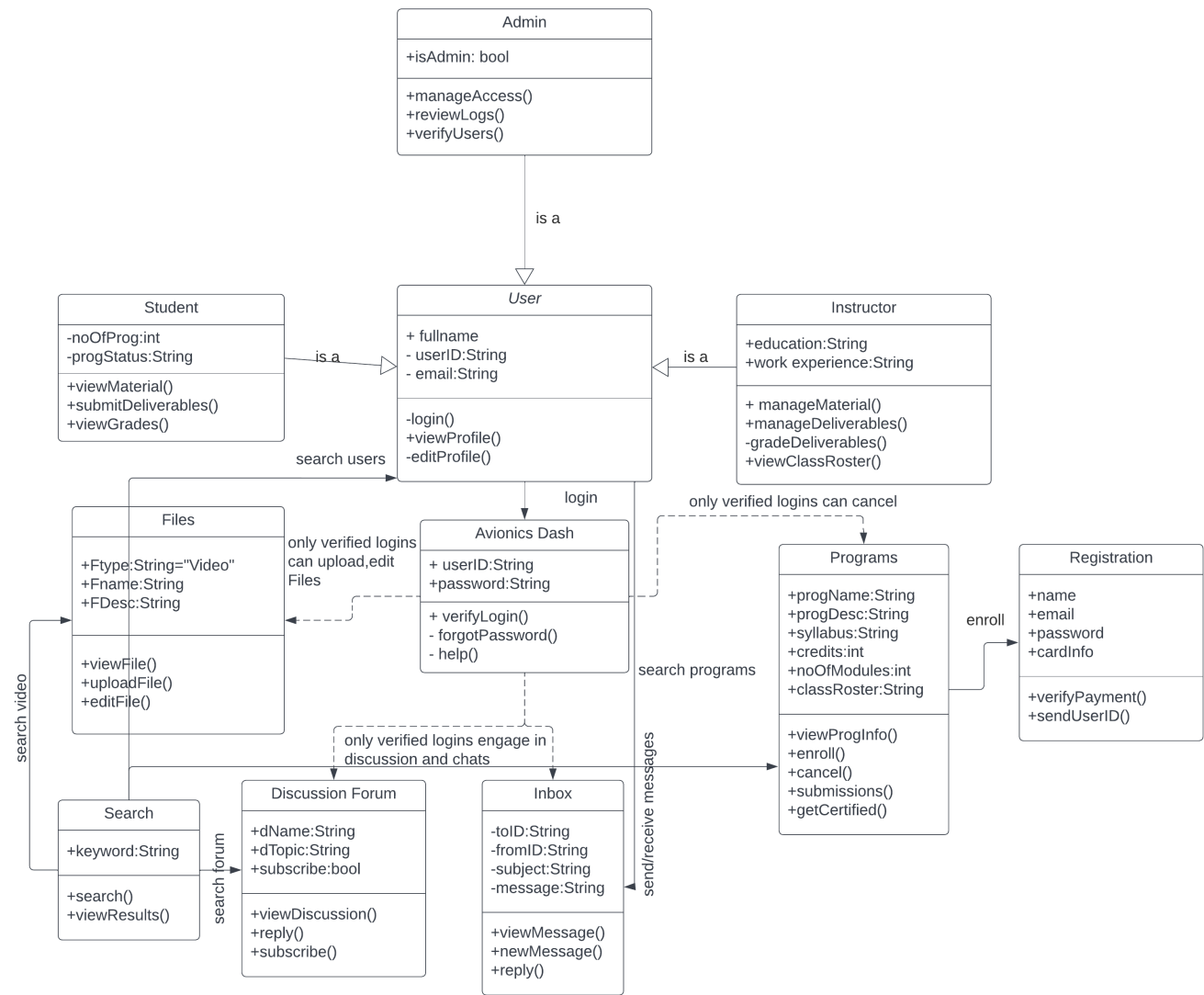
Avionics Dash (AD) is a web-based pilot training application that offers online programs in a variety of aircrafts tailored to satisfy users' training requirements whether it's recurrent and requalification training from the comfort of their home. Avionics Dash will help you get your Private Pilot License and join the Aviate program in as little as two months. Once in the Aviate program, you'll complete training online, build experience at our partners and be on track to become a professional pilot.

Avionics Dash is dedicated to providing students with affordable, quality training in aviation that is tailored to their personal needs. Whether to fly for pleasure or considering a career in aviation, programs at AD are designed to provide students with the skills necessary to fulfill their dreams.

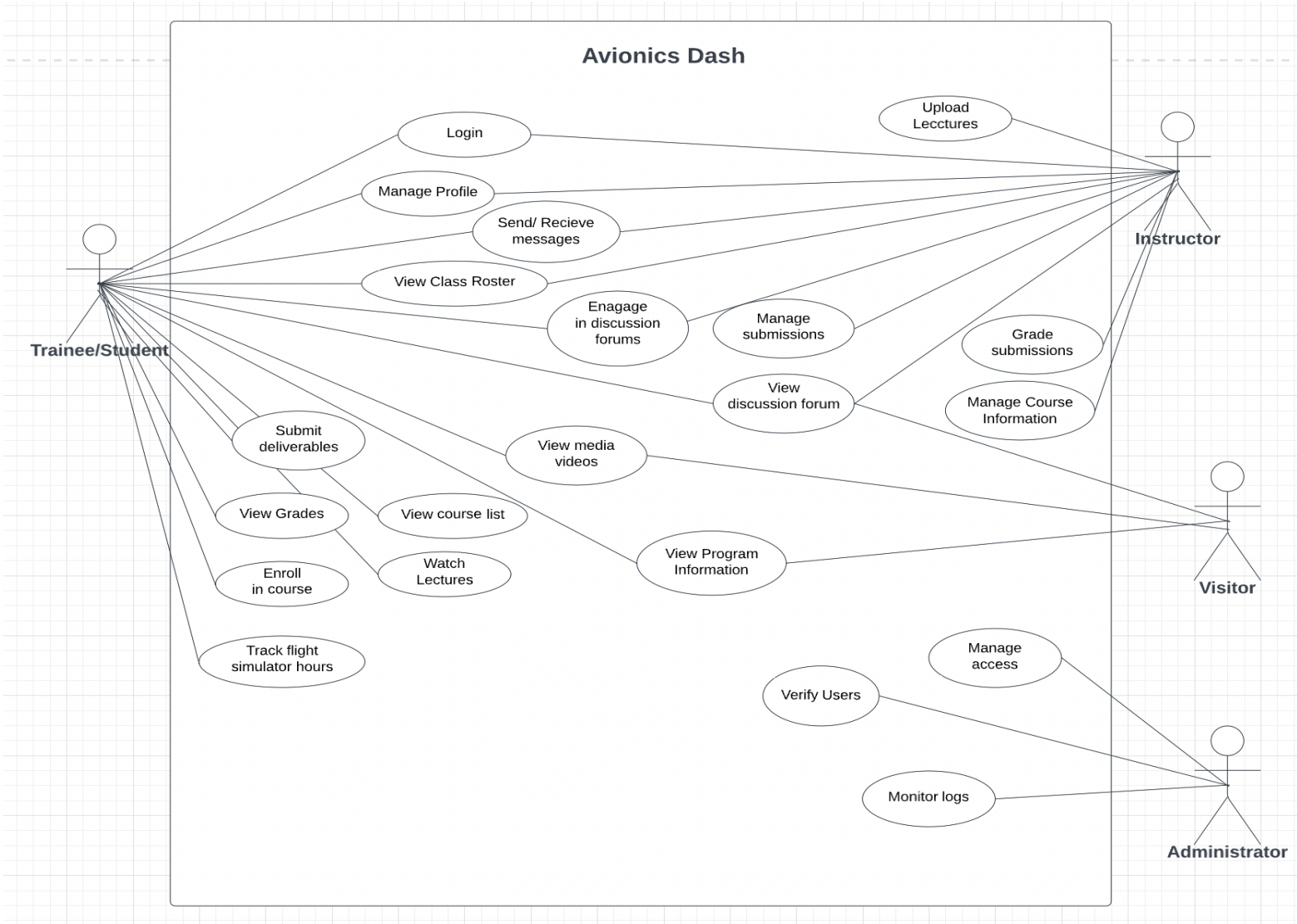
Avionics Dash provides flight programs for the Recreational, Private, and Commercial Pilot Certificates, along with courses for the Instrument and Certified Flight Instructor Ratings. The courses are offered approximately every three months for Private, Commercial and Instrument students.

Instructors at AD set the industry standard for professional airline-oriented flight training. Each instructor shares the passion and is aligned with the student's goal of becoming an airline pilot. The quality and professionalism of AD's instructors have been consistently recognized by AOPA and the National Association of Flight Instructors. Students will receive Pilot Certification through Commercial and Certificated Flight Instructor, Airline-Oriented Procedures and Experience, Airline Transport Pilot Training Bundle and Comprehensive Online Training Courseware, Proprietary online training resources, including a comprehensive training library and interactive ground school webinar sessions.

2. Context Model - [Lucid Chart](#)



3. Use Case Diagram - [Lucid Chart](#)



4. Table of Features, with brief description, utility, difficulty, and priority scores - [Excel File](#)

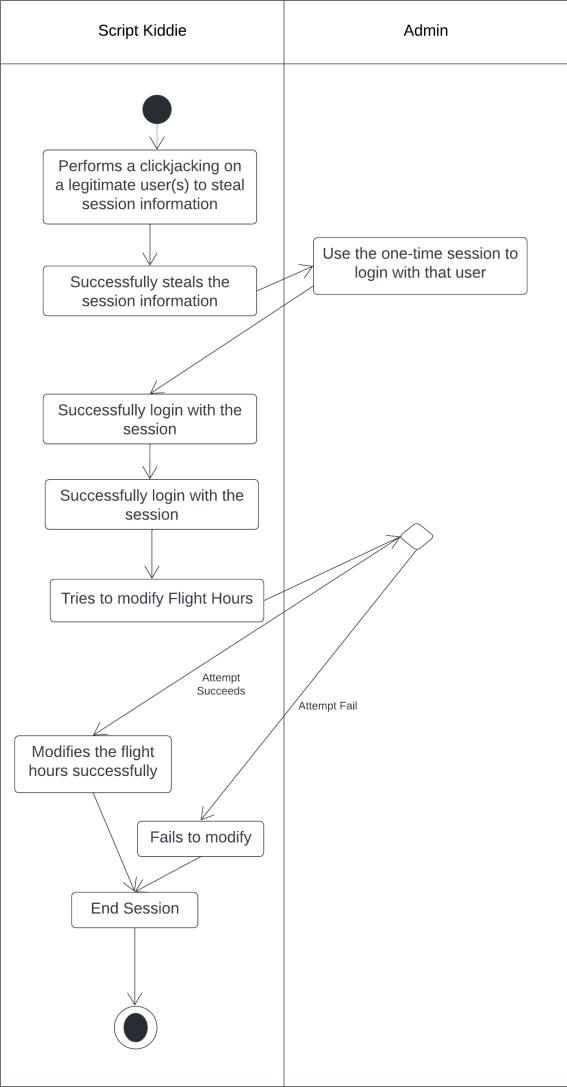
Feature No.	User role/perspective	Feature Name	Feature brief description	Feature utility (importance) to the users (Low = 1, Medium = 2, High = 3)	Estimated Feature development difficulty or risk (Difficult or high risk = 1, Medium difficulty or risk = 2, Rather easy and low risk = 3)	Feature priority score (utility * difficulty)
1	Instructor	Login to PAT	Instructor enters userID and password in the login page and clicks on Login.	2	2	4
2	Instructor	Manage profile picture and information	Instructor can view, add, edit, delete profile picture, education, work experience from Profile page	1	1	1
3	Instructor	Manage course information	Instructor can view, add, edit, delete course information like syllabus, lecture videos, course materials, submission due dates, exam dates, office hours	3	2	6
4	Instructor	Manage submissions	Instructor can view, add, edit, delete course submissions like Quizzes, Assignments, Projects, Exams.	3	3	9
5	Instructor	See and grade student submissions	Instructor can view and grade student's submissions	3	2	6
6	Instructor	View class roster	Instructor can see list of students enrolled for a particular course/certification	1	1	1

7	Instructor	View and engage in discussions	Instructor can view and engage in discussion forums and interact with other members of the community	2	2	4
8	Instructor	View and send messages	Instructor can send group or individual messages to students	2	1	2
9	Instructor	Manage Files	Instructor can add, edit, delete, download files and videos	2	1	2
10	Student	Login to PAT	Student enters userID and password in the login page and clicks on Login.	2	2	4
11	Student	Manage profile picture and view their information	Student can view, add, edit, delete profile picture in the Profile page and view the number of programs they are enrolled in as well the program's status like open, in progress, closed	1	1	1
12	Student	View course information	Student can view course information like syllabus, lecture videos, course materials, submission due dates, exam dates, instructor's office hours	3	1	3
13	Student	View submissions	Student can view submissions like Quizzes, Assignments, Projects, Exams	3	3	9
14	Student	Submit submissions	Student can submit submissions like Quizzes, Assignments, Projects, Exams	3	2	6
15	Student	View Grades	Student can view their grades for each submission	2	1	2
16	Student	View and engage in discussions	Student can view and engage in discussion forums and interact with other members of the community	1	1	1

17	Student	View and send messages	Student can send group or individual messages to instructors and other students	2	1	2
18	Student	Enroll in a course	Student can enroll in a course of choice from program page by paying the course fee	2	1	2
19	Student	Cancel course	Student can cancel course within 3 days of enrollment. On the 4th day, cancel button will be hidden/disabled	1	3	3
20	Student	View and Download Files	Student can view and download files	2	1	2
21	Student	View Class roster	Student can see list of students enrolled for a particular course/certification	1	1	1
22	Visitor	View Home page	Visitor does not have userID and hence login not possible. Can view home page	2	1	2
23	Visitor	View discussion forum	Visitor can have a look at the discussion forum and topics discussed but cannot engage	1	1	1
24	Visitor	View program information	Visitor can view the program information like name, description, syllabus but cannot access course page unless they enroll	3	1	3
25	Visitor	View Files	Visitor can view the videos in the Files page	2	1	2
26	Visitor	Enroll in a course	Visitor can enroll in a course of choice from program page by paying the course fee	2	1	2
27	Admin	Manage access	Admin can view, grant, edit, delete, reject access for app users	3	1	3

[illegible]

6. Abuse Case Diagram - [Lucid Chart](#)



7. Bi-directional traceability matrix between security scenarios and abuse cases

Abuse Case name --> Security scenario name	Access training modules without registration	Try modifying flight hours
Authentication	X	
Integrity		X

8. The description of the two most critical abuse cases (one abuse case described using natural language the template provided in class, and one abuse case described graphically, using UML activity diagram notation)

Abuse Case Description:

Name: Access training modules without registration

Actors: Script Kiddie

Trigger: Script kiddie intends to access sensitive training modules

Preconditions: Script Kiddie has access to a legitimate student's login id but not the password

Postconditions:

Success postconditions: Script Kiddie fails to gain access to the modules

Failure postconditions: Script Kiddie gets access and browses modules

Basic flow

1. The malicious actor uses a brute forcing tool like BurpSuite which provides a dictionary-based substitution over HTTP requests
2. They use the commonly used passwords list called rainbow table
3. They mount the attack which causes a lot of service requests coming from one IP
4. These requests gets recorded in the logs and the attacker is blocked by the admin once a threshold is reached
5. The compromised student account is locked, and they have been notified by the admin
6. The attacker gives up

Alternative flow

- 3.a Script Kiddie uses plain brute force
- 3.b The admin still blocks the request

Exception flow

- 4.a The logs don't record the traffic correctly as the password of the student might be weak
- 4.b They get access to the modules with the weak password of the student that mapped from the rainbow table

9. Quality “utility tree” (it can be in a table format), with scenarios names, brief description, utility, difficulty, and priority scores

Quality attribute	Quality Scenario name	Quality Scenario brief description	Quality Scenario utility (importance) to the users (Low = 1, Medium = 2, High = 3)	Estimated Quality Scenario development difficulty or risk (Difficult or high risk = 1, Medium difficulty or risk = 2, Rather easy and low risk = 3)	Scenario priority score (utility * difficulty)
Performance	Computation Time	The system shall compute grades and return relevant values to the user in <1s	1	3	3
Performance	Load Time	The system shall load videos and other course content in <1s of selecting it	2	3	6
Security	Authentication	The system shall ensure user is authorized to complete requested action	3	2	6
Security	Integrity	The system shall prevent grades from being modified except by the instructor	2	2	4
Usability	Learnability	The system shall allow users to learn system features	3	2	6
Usability	Accessibility	The system shall minimize barriers caused by user disability	3	1	3
Availability	Up Time	The system shall be available 99.9% of the time	2	1	2

Availability	Recovery	The system shall recover in <5min in the event of total system failure	1	1	1
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10. The list of functional features and quality scenarios with high priority that will be further designed and developed

Functional Features:

1. Landing/Home Page
2. Login Page
3. Program/Course Page
 - a. View Program Information
 - b. Edit + Save Information
 - c. Enroll/Cancel + Payment
4. Submissions/Deliverables Page
 - a. View Deliverable
 - b. Submit Deliverable
 - c. Grade Deliverable
5. Discussion Forum
6. Inbox
7. Files Page
 - a. View Files
 - b. Upload + Download Files
 - c. Edit Files

Quality Scenarios:

1. Authentication
2. Learnability
3. Load Time

11. Description of the top three high priority quality scenarios, using the SEI template.

Scenario Name: Authentication

Source: An unauthorized user

Stimulus: User attempts login with invalid credentials

Artifact: System Authorization and Authentication

Environment: Normal operating conditions

Response: User is denied access

Response Measure: Time/effort/resources required to circumvent security

Scenario Name: Learnability

Source: A new user

Stimulus: New user begins using system

Artifact: System

Environment: All operating conditions

Response: User interface is intuitive to use

Response Measure: User satisfaction

Scenario Name: Load Time

Source: Any user

Stimulus: User selects course content

Artifact: System

Environment: All operating conditions

Response: System loads content in <1s of selecting

Response Measure: Time to load content