

Final Deliverable

INSY 3305

Dr. Ganapathiraman Raman

Group #16

Sriya Kasumarthi

Flight School

A) Introduction

The goal of this system is to help automate the process of admission, tracking progress, and issuance of certification for a flight school. This process ensures resources are being maximized while also positively impacting the rate of admission and graduation.

B) System Request

The fundamental components of the system request consist of creating a seamless order of operations that brings the subject, our Flight School, into a coherent organization that has the ability to efficiently adhere to an application process that is smooth and reliable for both workers and applicants. When this project is initiated, the expected value is increased application turnover rates, security threats minimized, and mistakes regarding the current system of using the post office as the primary means of communication, examinations, and billing to be decreased.

Project Sponsor

The primary project sponsor and key management role behind this request who will oversee operations and work with the SDLC team to guarantee improvement, value, and success in the right direction is the owner of the Flight School.

Business Need

From the business point of view, this system should be approved primarily due to the lack of efficiency within the current outdated system. The current system relies on communication with applicants through paper and mail. This contributes to the mistakes regarding billing customers incorrect amounts, not receiving payments on time, and the unforeseeable circumstance of documents getting lost in the mail.

The business goals and objectives of the current system is to seek more applicants, and with this opportunity of creating a more diligent system by solving a problem that will eventually need to be upgraded, the desired outcome of a seamless system will be achieved by expeditiously passing all obstacles.

Business Requirements

Candidates need to be filtered out if they do not meet the basic criteria regarding the Flight School candidate regulations. These items can be as basic as height, weight, education, and citizenship, or as complex as determining whether candidates pass the required examinations through third-party screening.

Additionally, there needs to be a smart forum that requires candidates to fill out every required criterion on the application before submitting it. If candidates apply with missing needed information; they are setting back the entire application process causing valuable time and resources to be reprimanded. Therefore, they must fill out every section before they will be allowed to submit it.

Finally, the current process lacks quality in the time allocated and the workforce needed to compare it to competitors who use fully automated processes. The business requirements listed need to be executed with a fully secure process from beginning to finish for applicants within a fraction of the cost and time that the current system standards adhere to.

Business Value

As mentioned, the tangible and intangible value the system will provide include a significant increase in efficiency by cutting labor costs through the automation process shown in the economic feasibility analysis. Additional value includes the capabilities of receiving more applications that meet the requirements, giving candidates ease of mind knowing all payments will be backed up and recorded, and creating a system that will give the Flight School reputability within the Federal Aviation Administration (FAA) that enables a systematic approach for applicants to continue on to the examination process and leading up to the final phase of issuing the certification.

C) Technical Feasibility

Technology	Risk	Risk Management Tactic
Cloud	Unauthorized access to information	Segregation of duties + document with specified users
Website	Hackers	High quality firewalls
Online Payment System	Lack of integrity with third party	Written agreement regarding accountability with integrity issues
Smart Application	Incompatibility and lack of experience for some users	Training, compatibility tests, and notices for users regarding the most efficient ways to prevent any issues while using the system.
Portal	Hackers, unauthorized users, integrity issues	Strong regulation of maintenance, weekly tests/upgrades, and strong firewalls.

The five factors in the functional area are the Cloud, the website, the online payment system, smart application, and the portal that will be designed. The risks associated with the Cloud would be unauthorized access to information. To manage this, a segregation of duties will be specified and with that a document and specification of who has access to what part of the system.

Regarding the website, hackers breaching the site is the main risk factor. To prevent this, high-quality firewalls will be used to make the website as secure as possible. Similarly, the portal that will be created will have risks such as hacking, management of who can access data, and integrity issues. To ensure the system does not crash at some point, a strong regulation of maintenance will be put in place. Weekly tests and upgrades will be regulated, strong firewalls will be established, and like the website- segregation of duties will be present as well.

For the online payment system, the risks include a lack of integrity with the third party. Confidentiality management will need to be established to prevent any negative impact. The best way to mitigate this would be to have a written agreement that the third party will be held accountable for any integrity issues that may occur at their end.

Lastly, smart applications could present an issue of incompatibility and lack of experience for some users. To help with this, additional training will be needed, as well as a test for compatibility prior to launch. Users will also be notified about the most efficient browser to use to prevent any issues.

D) Organizational Feasibility

Regarding whether the users will accept the system, it would be down to whether they are willing to adopt a substantial shift from the previous ways. The paper tests have been happening since day one, so being able to explain why switching solely online is a better option is the main factor as to whether the new system will be accepted. Undergoing a significant change like this could lead to layoffs and hesitation towards accepting something so new. Learning to work around situations like these will be a major step in experiencing a system that will be faster, more efficient, environmentally friendly, and cost-effective.

E) Designer Combined Functional Requirements:

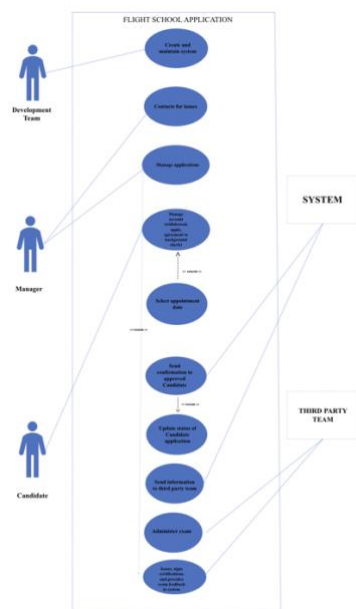
1. Making Account in Portal with Application
 - 1.1. Create account
 - 1.2. Upload resume
 - 1.3. Fill out application
 - 1.4. Confirm compliance with background check
 - 1.5. Dev. Team prepress help email for questions about application form
2. Checking Applicant Status
 - 2.1. Applicants can access their portal to check their status
 - 2.2. Applicants can withdraw applications
3. Contact Applicant
 - 3.1. System contacts applicants if they are cleared to book exam date and update status on portal (sends link to book date)
4. Send Information to Third Party Testing Company

- 4.1. System sends cleared applicants' information and exam scheduled date to third party testing
- 5. Exam Managing
 - 5.1. System shows what exams have been taken and passed or failed by specific individuals
 - 5.2. Managers can remove or advance candidates
 - 5.3. Manager contacts applicants with specific complex concerns
- 6. Issuing Certificate
 - 6.1. Manager signs and issues certificate

F) Non-Functional Requirements

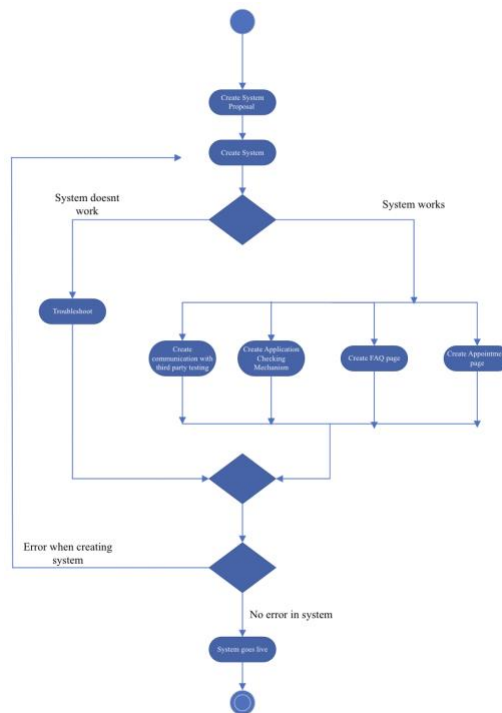
- 1. Scalability
 - 1.1 The bandwidth of systems can expand to accommodate heavy flow of traffic (Ex. many applicants receiving their scores at the same time)
- 2. Profitability
 - 2.1 Reduce costs incurred by manual labor and supplies (i.e. paper)
- 3. Security
 - 3.1 Keeps sensitive information secure
 - 3.2 Only applicants can see their credit card info
 - 3.3 Applicant information only revealed, if necessary, to verify their identity for exams
- 4. Reliability
 - 4.1 Avoid mistakes in exam score as scores will be uploaded automatically
 - 4.2 Avoid incorrect billing to applicants for exams as billing information will be directly connected to applicants' accounts and exams
 - 4.3 The system will be backed up daily, so no information is lost
- 5. Ease of Use
 - 5.1 Internal: Employees need to be easily trained
 - 5.2 External: The system needs to be intuitive for applicants
- 6. Ease of Maintenance
 - 6.1 The system cannot be down for long periods to avoid losing data from applicants or exam scores
 - 6.2 Updates as necessary

G) Use-Case Diagram

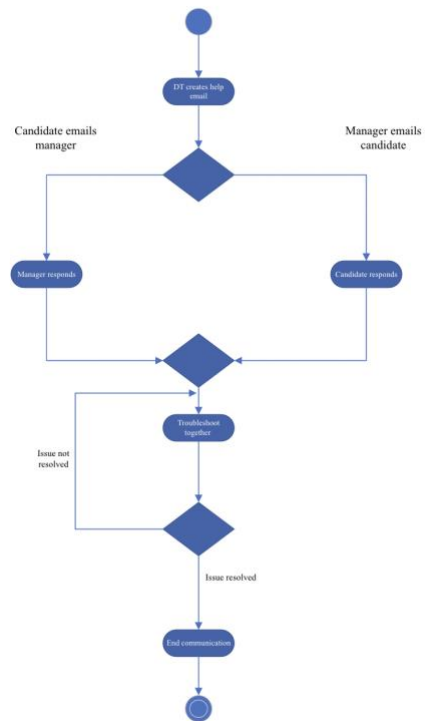


H) Activity Diagrams

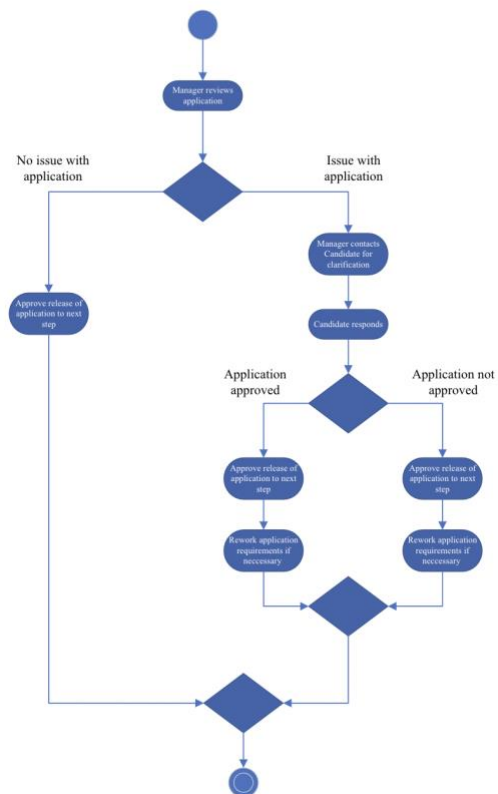
Activity diagram #1:



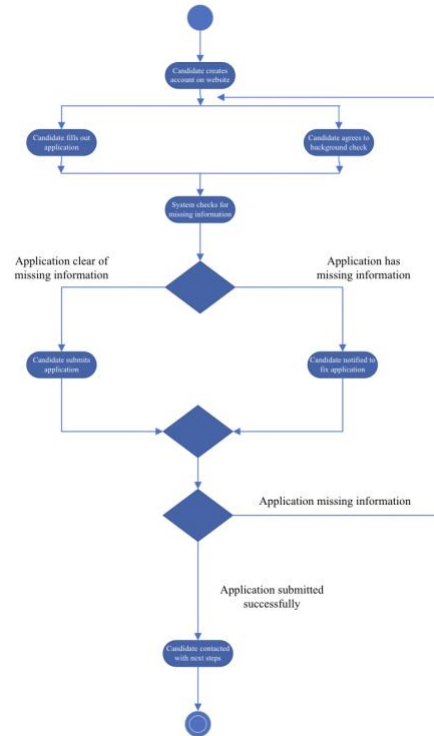
Activity diagram #2:



Activity diagram #3:



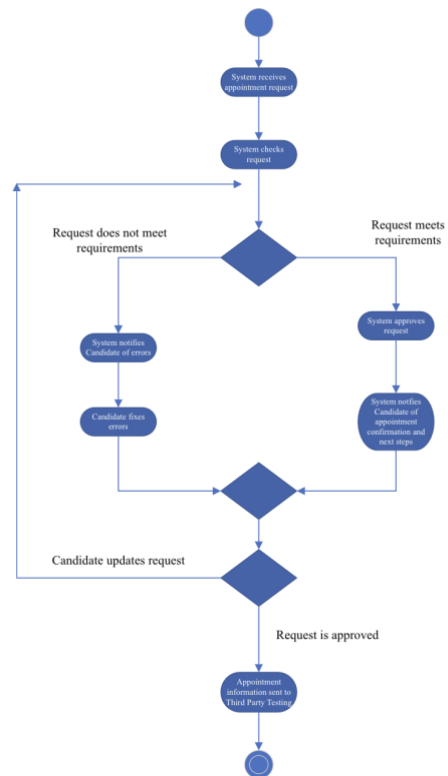
Activity diagram #4:



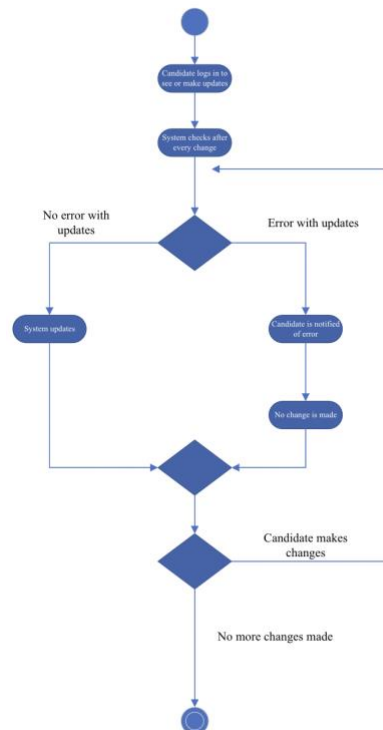
Activity diagram #5:



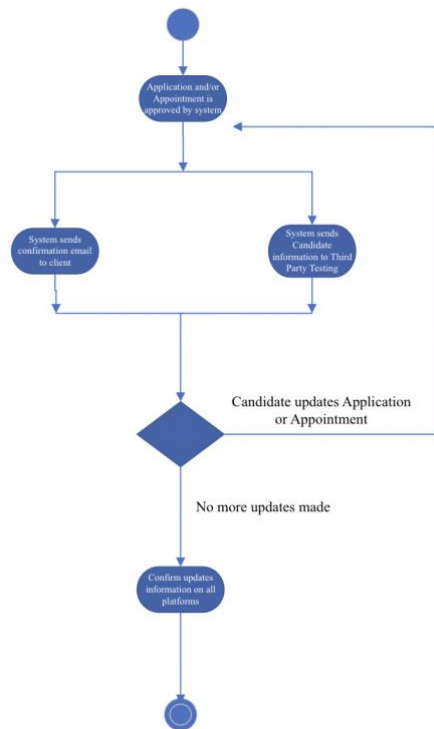
Activity diagram #6:



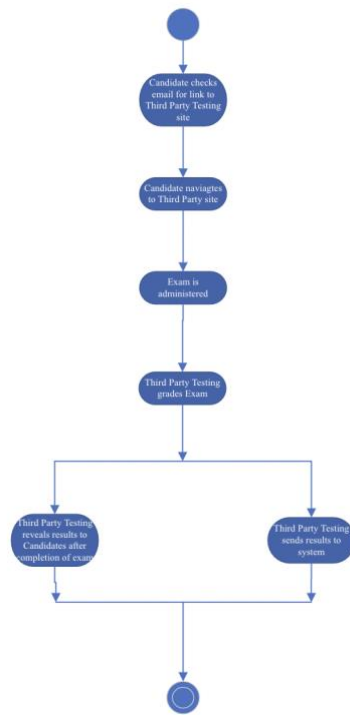
Activity diagram #7:



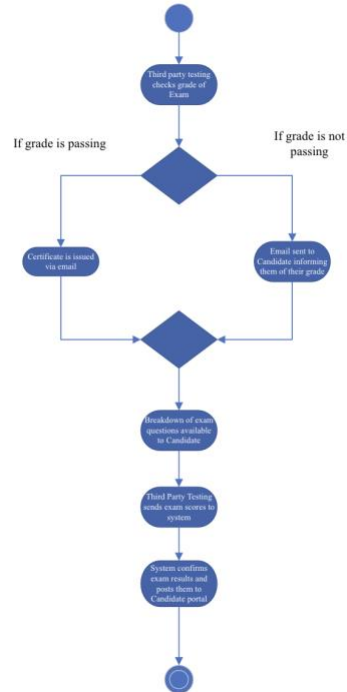
Activity diagram #8:



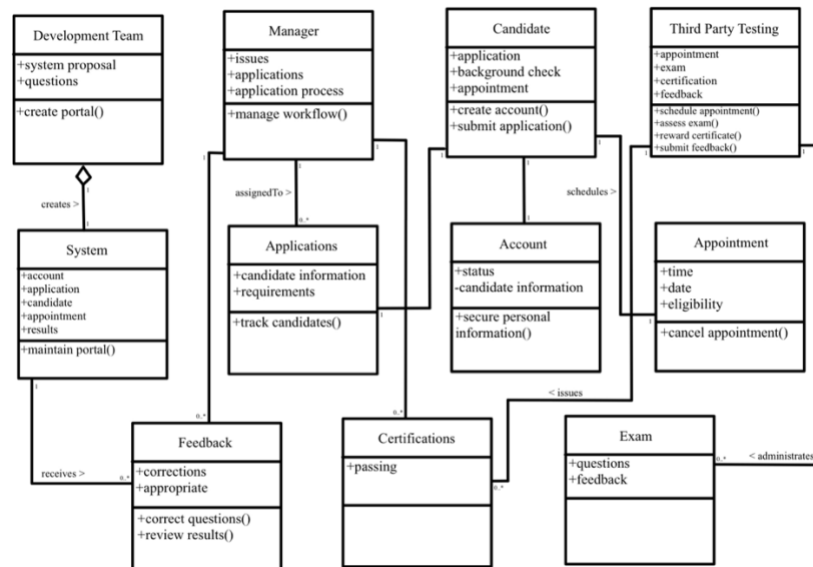
Activity diagram #9:



Activity diagram #10:

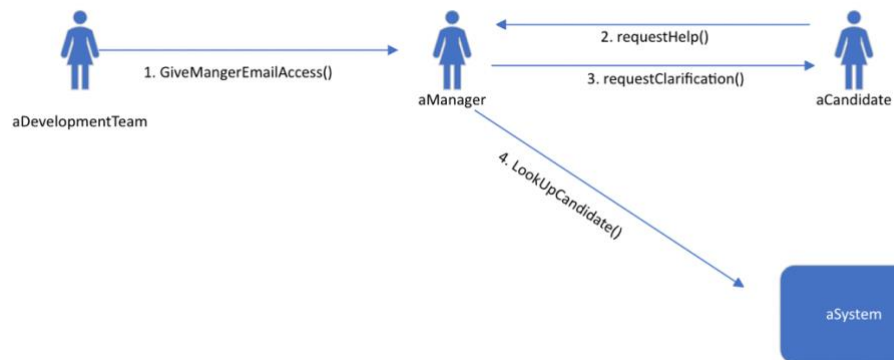


I) Class Diagram:

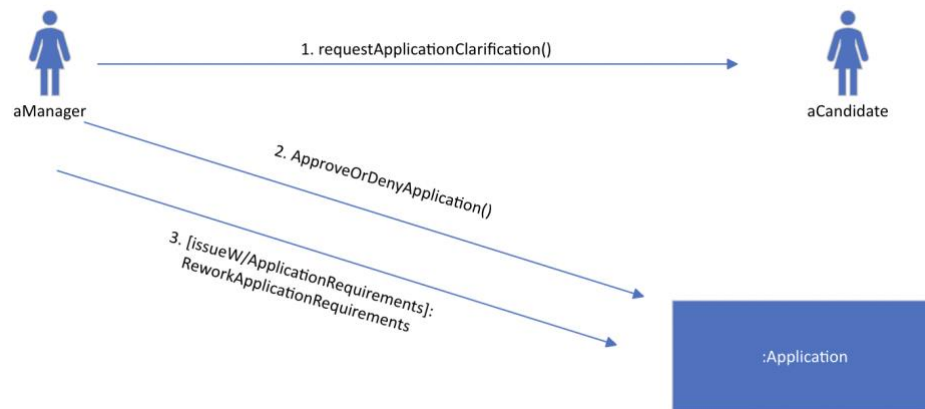


J) mmunication Diagrams

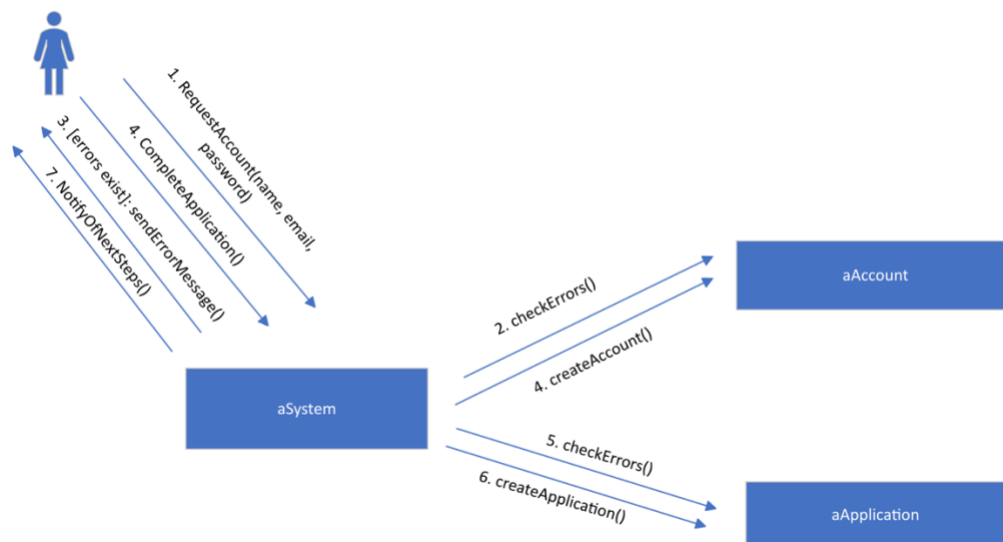
Communication diagram #1:



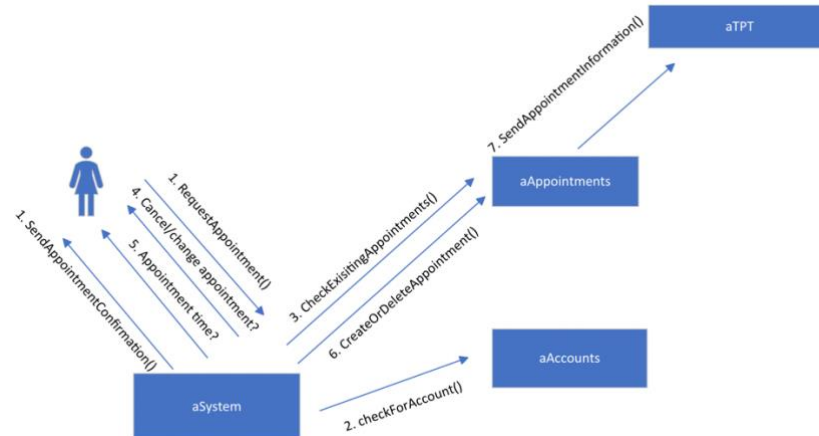
Communication diagram #2:



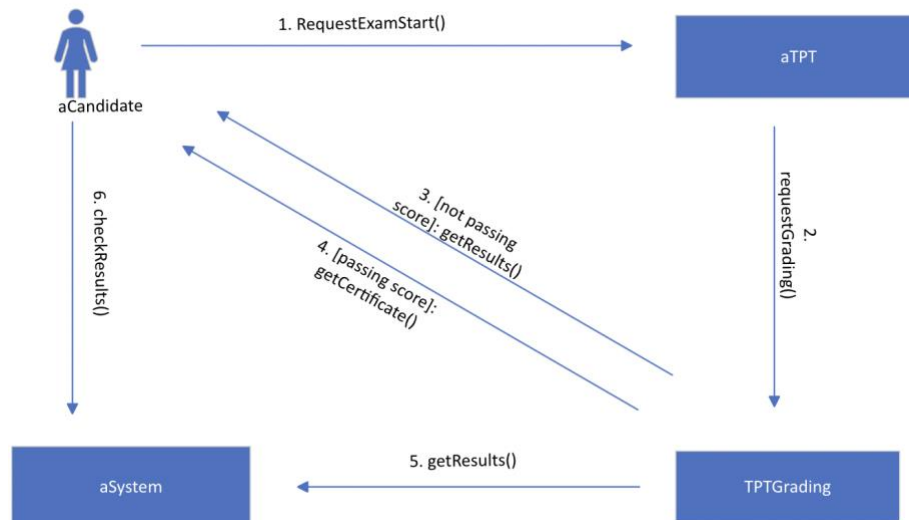
Communication diagram #3:



Communication diagram #4:

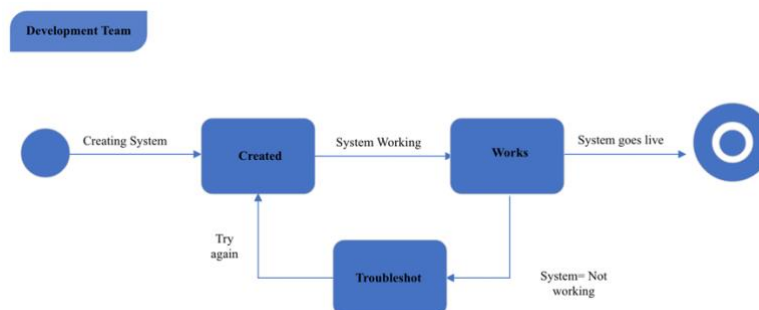


Communication diagram #5:

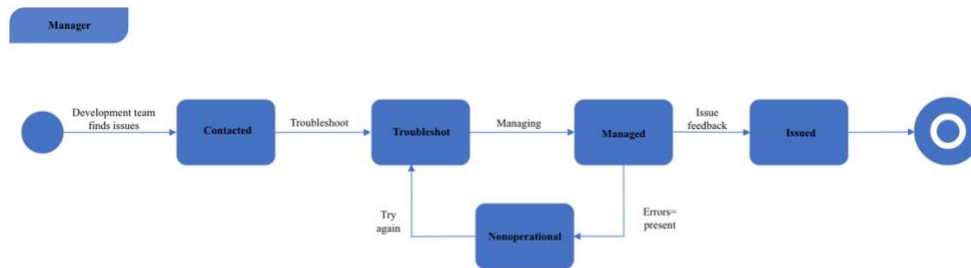


K) Behavioral State Machine Diagrams

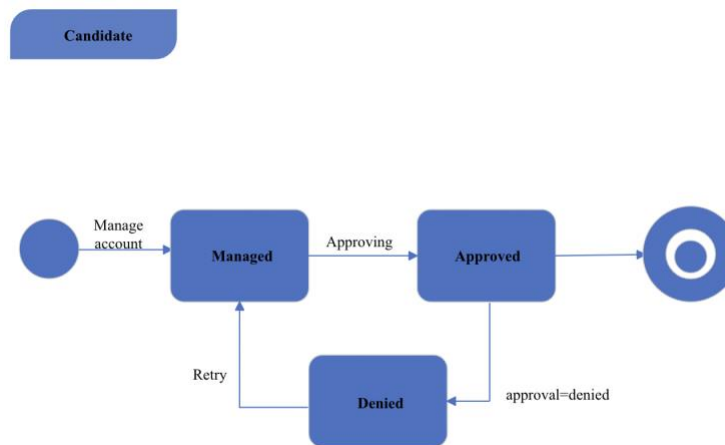
Behavioral State Machine diagram #1:



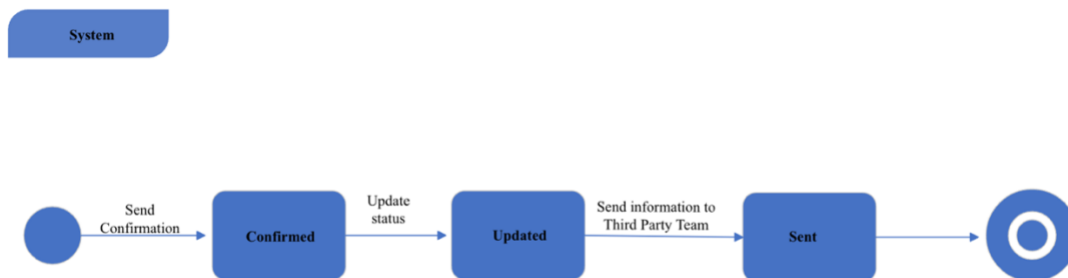
Behavioral State Machine diagram #2:



Behavioral State Machine diagram #3:



Behavioral State Machine diagram #4:



Behavioral State Machine diagram #5:



L) Action on User Recommendations

Our group looked at the Behavioral Verification and Validation sheet provided by our partner user group and reviewed the feedback we received for each diagram.

Starting with sequence diagrams until the CRUDE matrix. We made sure to compare our work, then analyzed how we could adjust it to meet the criteria we were missing or those that needed improvement. Our group also went over the descriptions of all the diagrams in the book in case we were unclear about a particular component.

To make the process more efficient, each member chose a diagram to go over and set aside the criteria mentioned in the textbook to work on individually, then we came together to see how everyone followed the feedback and recommendations.