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Project Title:

Enhancing the STARS Online Assistants App for Automation and Data Analytics Education

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Abstract

This document presents the work completed by the Summer 2024 Capstone II group with Dr. Patricia McDermott-Wells. The group worked to develop a system to automate and facilitate the administration of the FIU STARS Tutoring service. This system builds upon a pre-existing system created by a previous Capstone II group in Spring 2024. The system is hosted in Microsoft 365 and consists of an Admin App built in Canvas, automated workflows built in Power Automate, data storage in the form of Excel files stored on Teams, and other Microsoft services.

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INTRODUCTION

STARS (Students in Technology, Academia, Research and Service) is an organization run by Dr. Patricia McDermott-Wells, an Associate Teaching Professor at FIU. While STARS runs services dedicated to mentoring and leadership, the most complex service – and perhaps the most well-known – is their tutoring. The STARS tutoring service collects and organizes students desiring tutoring in different CS courses and connects them through group chats to volunteer tutors.

The screenshot shows the homepage of STARS.cs.fiu.edu. At the top, there's a navigation bar with 'Homepage' and 'Services'. Below that, a banner says 'We strive to help you achieve academic success.' The main content area has four main sections:

- Tutoring:** Shows two students working together. Below it is a 'Tutor Schedule' section with text about free peer tutoring for various courses and a 'Read more' link.
- Services:** Shows a person working at a desk. Below it is a 'Read more' link.
- Mentoring:** Features the word 'mentoring' in large orange letters, with 'mentor' in purple, 'creative' in blue, 'transformative' in green, 'advice' in orange, 'support' in red, 'trust' in blue, 'invaluable' in green, 'expert' in orange, 'benefits' in red, and 'growth' in green. Below it is a 'Read more' link.
- Leadership:** Shows a row of blue blocks with the word 'LEADERSHIP' in white. Below it is a 'Read more' link.

Figure 1. A screenshot of the homepage of STARS.cs.fiu.edu

Currently, Dr. Wells manually performs the majority of labor needed to coordinate and administer this tutoring. This includes tasks such as gathering and organizing student's requests for tutoring,

approving and denying requests, creating WhatsApp chats for each course, identifying and recruiting tutors to volunteer, and keeping documentation of these activities. Many of these tasks are repetitive and are good candidates for automation.

Performing this labor is time-intensive and costs Dr. Wells hundreds of hours each semester in productivity. Furthermore, Dr. Wells intends to pass on the responsibility of administering STARS – a service that has helped hundreds of students – and finding a willing volunteer has proven difficult for obvious reasons. Creating a system to facilitate the administration of STARS tutoring may be the best way to ensure that FIU does not lose this vital resource for future students, and if done well may even help the organization grow.

STARS Tutor Groups – Spring 2024

Link to Registration form: <https://forms.office.com/r/D1Fhng1kFP>

CAP 4104	HCI for CS	https://chat.whatsapp.com/Dh7EbSBK1E19f1zuhfjk6u
CAP 4453	Robot Vision	NO COVERAGE THIS SEMESTER
CAP 4506	Intro to Game Theory	https://chat.whatsapp.com/Hi5n1xbqiuGDMobzZuFTut
CAP 4612	Intro to Machine Learning	NO COVERAGE THIS SEMESTER
CAP 4630	Artificial Intelligence	https://chat.whatsapp.com/GsT9qe3tN6w0diGdCLFW9N
CAP 4641	Natural Language Processing	NO COVERAGE THIS SEMESTER
CAP 4710	Principles of Computer Graphics	NO COVERAGE THIS SEMESTER
CAP 4770	Intro to Data Mining	https://chat.whatsapp.com/I0whOoPXDeXEzuwSf03hMB
CAP 4830	Modeling & Simulations	https://chat.whatsapp.com/LugAWed869a3gVmmJdaark
CDA 3102	Computer Architecture	https://chat.whatsapp.com/G7UGdbtvGtd6Vtovy3BCCJ
CEN 3721	Human Computer Interaction (IT)	https://chat.whatsapp.com/B9V1iBScAZwCVgfUYq7m2M
CEN 4010	Software Engineering	https://chat.whatsapp.com/Ji3sEvyztW2Ftdi88XDvr
CEN 4021	Software Engineering 2	https://chat.whatsapp.com/CGlfjUiFryNLsiUgFOuLXV
CEN 4072	Fundamentals of Software Testing	NO COVERAGE THIS SEMESTER
CGS 1540	Intro to Database for ALL	https://chat.whatsapp.com/JdWrLX6hTfB2pLIg5vEorb
CGS 2060	Intro to Microcomputers (Word & Excel)	https://chat.whatsapp.com/FxgU0kzX4uBFK14Oakglrl
CGS 2100	Microcomputer Apps for Business (Access & Excel)	https://chat.whatsapp.com/FenZmxWEqaN54tdzWlNu
CGS 2518	Computer Data Analysis (Excel)	https://chat.whatsapp.com/GQHz4bZS6Q22T7tOhfXfQ
CGS 3767	Computer OS (IT)	https://chat.whatsapp.com/BKo0b4M2uAu9a95aCN9fTs
CGS 4285	Applied Computer Networking	https://chat.whatsapp.com/GsfqFDTRWz25Gozsp8wyuv
CGS 4854	Website Construction & Maint	https://chat.whatsapp.com/K1TVcTHhPXq97rOmMq4FCg
CIS 4365	Enterprise Security	https://chat.whatsapp.com/BheQ4kPCEwoFzFMEMwD0al
CIS 4203	Digital Forensics	https://chat.whatsapp.com/EAI0Gno64eJ7ekBjeogg
CIS 4431	IT Automation	https://chat.whatsapp.com/Edap08bgXUd8h8A4iGrtKV
CIS 4731	Intro to Blockchain	https://chat.whatsapp.com/Jda1HWi0kOT1Ew9FJzXqAW
CNT 4182	Mobile & IoT Security	NO COVERAGE THIS SEMESTER
CNT 4403	Intro to Computer Security	https://chat.whatsapp.com/JA18Ln8i7voAwaY3BXMQsP
CNT 4513	Data Communications	
CNT 4713	Net-Centric Computing	NO COVERAGE THIS SEMESTER
COP 2210 & 2250	First Java course (IT/CS)	https://chat.whatsapp.com/ERgXI5J3ZrDF81QoNbqtl
COP 3337 & 3804	Second Java course (IT/CS)	https://chat.whatsapp.com/Bqlrk1gXkf286mxSDu4KTY
COP 3530	Data Structures	https://chat.whatsapp.com/l6t7F5zhCkR59OoHr630xr
COP 3835	Designing Web Pages	https://chat.whatsapp.com/FgqWMvVLKc4FaFHwJ2gVHZ
COP 4005	Windows Programming for IT	https://chat.whatsapp.com/EA7VVB1LdBn2cn9RytQSvB

Figure 2. A screenshot of some of the STARS tutoring groups manually created for Spring 2024.

Starting last semester in Spring 2024, a Capstone II group created an initial application intended to begin creating a system to perform and facilitate these tasks. In this section, we learn the work

done by the Spring 2024 group which represents the starting state of my team's work this semester, and the purpose of the new system.

Current System

The system created in Spring 2024 represented a solid first step at implementing a system to automate as much of STARS tutoring as possible. The system is hosted in Microsoft 365 and leverages Microsoft's Power Apps, a platform designed to allow users to rapidly develop custom applications for a wide variety of business needs.

The center of the system is an admin GUI created in Microsoft's application creator, Canvas, along with the data it works with, which is a series of Excel files stored on Teams. Task automation is introduced by Power Automate, a service that allows users to create workflows that are triggered by pre-defined events and can perform an impressive variety of actions. See Figure 3 below to begin understanding how these components interact in the system:

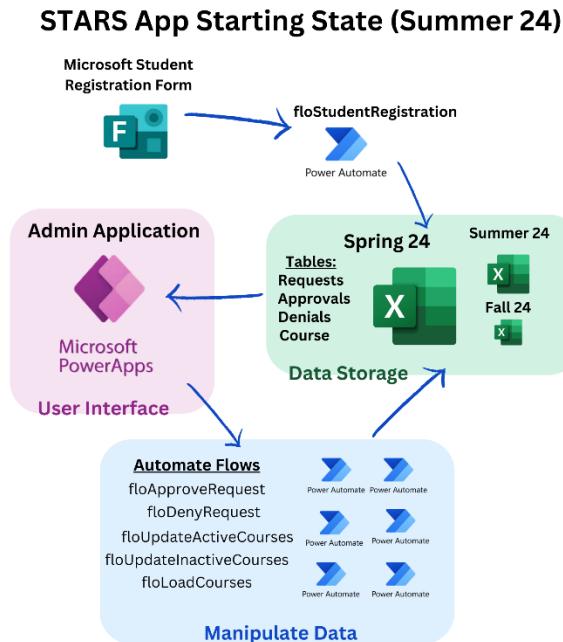


Figure 3. The system architecture of the application created in Spring 2024, which was the starting state for our work in Summer 2024.

In the system envisioned and implemented by the Spring 2024 team, the process is as follows: The submission of a new Student Registration Form triggers the first Power Automate Flow, *floStudentRegistration*, which adds the student's information into the Requests table in the Excel file of the appropriate semester. From the Admin App, the Admin can manipulate data stored in a series of Excel files. Each excel file represents a different semester, which introduced difficulties into the system (more on this in following sections). On the “backend”, the app manipulates the data using the flows created by the development team. Such actions include approving and denying student tutoring requests.

Purpose of New System

The purpose of the new system, in short, is to identify the simplest implementation for the STARS App that will allow the Product Owner to automate as many processes as possible in administering the STARS tutoring program (we designate this desired state as “STARS App V1.0”), while balancing the need to create a maintainable app and use the functionalities that Microsoft Power Apps currently offer.

The system implemented by the Spring 24 team, although not deployed, was capable of automating several of the functions that were manually performed by Dr. Wells. These functions include organizing and gathering student requests into an Excel, keeping track of active/inactive courses, and approving/denying student requests from a convenient interface (along with sending the student an email).

However, the system was not perfect, and there were still tasks that needed automation (luckily for us, or we would not have a Capstone II project!).

Firstly, the system implemented for starting the semester attempted to use a series of switch statements in Power Automate to switch between Excel files representing each semester that had to be pre-created and hard-coded. This is partially because data sources for Canvas Apps and Automate Flows cannot currently be dynamically found or chosen – they must already exist and be coded into the system.

Likely because of how burdensome coordinating these flows was, the ability to choose a semester was not uniformly implemented throughout the App or Flows. Where it was implemented – in the Student Registration subsystem – it was only partially implemented. Very basically, the current app appeared to give the user a choice of what semester to work with, while under the hood the ability to do so created the need for very complicated maintenance and was not actually implemented.

I state this not to speak unfavorably of my predecessors, rather to help the reader understand this report and the history of the user stories and work done this semester. There were no common developers between Spring and Summer, (although we owe a great thanks to one member from Spring 2024 who volunteered to help us on multiple occasions, Corey Slayton), and this incompletely implemented state was not clearly indicated in the materials given to us from the previous semester. Therefore, our tasks changed as we learned enough about the system to understand how to improve it.

Eventually, we identified this data storage system (the use of multiple Excel files for each semester) as one key area that required improving.

Secondly, the areas left that had not begun to be automated included creating tutoring channels for each course, and adding approved students to each channel. Moreover, Dr. Wells requested some improvements to the usability, including the ability to sort the Approval and Denial tables. She also requested the ability to approve student requests either via email or using the app, an option which was not trivial and not previously attempted.

USER STORIES

It was in late June that the Summer 2024 development team understood enough about Microsoft Power Apps and about the current system to propose a clear vision for implementing “V1.0”. This proposal is documented in a short report by Kristy Hamlin, *STARS App V1.0 Proposal (06.30.24).docx*, which will be included in the deliverable files.

The following section provides the detailed user stories that were implemented in this iteration of the STARS project. These user stories served as the basis for the implementation of the project’s features. This section also shows the user stories that are to be considered for future development.

In each subsection, we separate the user stories into 3 subsystems: Student Registrations, the Start Semester Process, and the End Semester Process.

Implemented User Stories

Table 1: User Stories and Tasks to that were Completed this Semester

STUDENT REGISTRATION	
<ul style="list-style-type: none">• Task: Create new Master Excel file and reconfigure all flows and galleries to connect to this file. It would not be intuitive to keep the “Spring24” Excel as the master for all future semesters, and unfortunately changing the name would break all the connections. (5 story points)– Kristy Hamlin• As a STARS admin, I would like to be able to approve student requests via an Outlook emails in addition to being able to approve them in the STARS App. – (12 story points) Kristy• As a STARS admin, I would like a student to be automatically added to a Microsoft Teams channel when their request for tutoring is approved. (15 story points) – Roberto & Frank (Bryan backup) PARTIALLY IMPLEMENTED – Power Automate Flow partially functional.• As a STARS admin, I would like to be able to view the Approvals and Denials tables in the App as sorted based on any column. – (6 story points) Kristy	
START SEMESTER	

EPIC: As a STARS admin, I would like the App to guide me through the process needed to Start a Semester using a series of related pages with clear instructions where I can navigate from one step to the next. (The user stories below contribute to this Epic)

- As a STARS admin, I would like to be able to choose an initial set of courses that will be offered for tutoring when starting a new semester.
 - What courses can be chosen should be clear
 - The offered status should be updated to the Master Excel
- (12 story points) – Bryan A Cruz
- As a STARS admin, I would like the channels to be automatically created in Teams based on the courses that are approved each semester.
- (10 story points) – Bryan A Cruz

END SEMESTER

EPIC: As a STARS admin, I would like the App to guide me through the process needed to End a Semester using a series of related pages with clear instructions where I can navigate from one step to the next. (The user stories below contribute to this Epic)

- As a STARS admin, I would like the end semester process to have a feature to make a copy of the semester's Master Excel with an appropriate name indicating the semester that has just finished.
 - Furzaan Khan (10 story points)
- As a STARS admin, I would like the App to make it clear to me that I have ended the current semester and to restrict my ability to interact with the app until a new semester is begun. – Bryan A Cruz

Pending User Stories

Table 2: User Stories and Tasks to Implement STARS V1.0

STUDENT REGISTRATION	
<ul style="list-style-type: none"> As a STARS admin, I would like a tutor to be automatically added to a Microsoft Teams channel when they are approved to tutor it. (10 story points) – Roberto & Frank (Bryan backup) 	
START SEMESTER	
<ul style="list-style-type: none"> As a STARS admin, I would like the system to allow me to add courses to the roster after the initial startup, because sometimes tutors join late and add new courses to the tutoring schedule. As a STARS admin, I would like the system to help me to update the Microsoft Form used for Student Registrations based on what courses are available for tutoring. Microsoft Forms cannot dynamically draw choices currently, so the Application should offer a link to edit the Microsoft Form and provide a reminder to the Admin of what courses they have added/deleted so that when students register, they only see courses that are available. As a STARS admin, I would like the Start Semester Process to prompt me to ensure that a copy of the Master Excel has been made before offering me a button connected to a Flow that will clear the Master Excel and prepare it for a new semester (test using an Excel that is NOT the Master Excel but has the same format?). <ul style="list-style-type: none"> Create the popup/confirmation button for the Admin to acknowledge that a copy exists Create the flow to clear the Master Excel ("floResetMasterExcel") 	
END SEMESTER	
<ul style="list-style-type: none"> As a STARS admin, I would like channels to be automatically archived at the end of the semester and no longer active. (10 story points) As a STARS Admin, I would like the App to generate and present some statistics about the semester when I "end" the semester. 	

PROJECT PLAN

This section describes the planning that went into the realization of this project. This project incorporated the agile development techniques and as such required the sprints to be planned. These sprint plannings are detailed in the section. This section also describes the components, both software and hardware, chosen for this project.

Hardware and Software Resources

The entire STARS Administration solution is contained within the Microsoft 365 suite. This ideal for functionality and simplicity. The only hardware necessary to interact with or develop the system is a personal desktop or laptop computer of the user's preference, which has internet access.

It is important for the reader to understand

The components are listed below:

Table 3: Hardware and Software Resources used in Development of the STARS Administration System

HARDWARE:	
A personal desktop or laptop computer with internet access	
SOFTWARE:	
Software Name	Description/Purpose
 Microsoft 365	(This suite is a subscription service that includes all apps below)
 Microsoft Teams	Used by the system to host student tutoring channels. Used by the development team to host files used by the application.

 Power Apps	Power Apps itself a suite (also from Microsoft) that includes the Canvas Application creator. The Canvas creator is used to develop the STARS Admin App/GUI.
 Power Automate	Used to build workflows in the STARS solution that can interact with the Excel data sources and be triggered by many sources, including by admin actions within the STARS Admin App.
 MICROSOFT FORMS	Used to create the Student Registration form, by which students request STARS tutoring.
 Excel	Used as a pseudo-database by the system. These files are stored in Teams (mentioned above).

Sprints Plan

The Summer Semester is approximately 4 weeks shorter than the standard Spring and Fall school semesters (12 weeks versus 16 weeks). For this reason, this Capstone II project contains only 5 Sprints of 2-weeks, along with the 1-week period at the beginning of the semester for forming groups, and the 1-week period at the end of the semester for creating the final deliverables.

Additionally, the Sprint Planning, Daily Scrum, Sprint Review, and Sprint Retrospective minutes are included in the final deliverable zip file.

With this important detail in mind, the overall plan which was followed for each of the 5 sprints is given below:

Sprint 1

Planned Tasks	Status
• Each team member individually must complete the Microsoft Power Apps Training	• COMPLETE
• The team must schedule and attends a training session with Corey Slaton (a previous Cap II student) to understand an overview of the current status of the app.	• COMPLETE
• The team must review the documentation left by the previous Cap II team.	• INCOMPLETE
• The team should at minimum log into the STARS Canvas App and understand the setup	• INCOMPLETE

Sprint 2

Planned Tasks	Status
<ul style="list-style-type: none"> Team members must continue learning about Power Apps and the setup of the current app The team must review the documentation left by the previous Cap II team. <p>The Team assigns user stories as follows:</p> <ul style="list-style-type: none"> As a STARS admin, I would like the channels to be automatically created in Teams based on the courses that are approved each semester. (10 story points) – Frank & Furzaan As a STARS admin, I would like a student to be automatically added to a Microsoft Teams channel when their request for tutoring is approved. (15 story points) – Roberto & Bryan As a STARS admin, I would like a tutor to be automatically added to a Microsoft Teams channel when they are approved to tutor it. (10 story points) – Roberto & Bryan Deploy current app to start understanding deployment process and updating process. - KRISTY As a STARS admin, I would like the Approvals Page to be sortable based on any column. - KRISTY (10 story points) 	<ul style="list-style-type: none"> NEVER FINISHED (lol) COMPLETE PLANNING PLANNING PLANNING PLANNING PLANNING

Sprint 3

Planned Tasks	Status
<p>The Team continues work on user stories as follows:</p> <ul style="list-style-type: none"> • As a STARS admin, I would like the channels to be automatically created in Teams based on the courses that are approved each semester. (10 story points) – Reassigned to Bryan A Cruz • As a STARS admin, I would like the channels to be automatically created in Teams based on the courses that are approved each semester. (Bryan) (20 story points) • As a STARS admin, I would like a student to be automatically added to a Microsoft Teams channel when their request for tutoring is approved. (15 story points) – Roberto & Bryan • As a STARS admin, I would like a tutor to be automatically added to a Microsoft Teams channel when they are approved to tutor it. (10 story points) – Roberto & Bryan • Deploy current app to start understanding deployment process and updating process. - KRISTY • As a STARS admin, I would like the Approvals Page to be sortable based on any column. - KRISTY (10 story points) 	<ul style="list-style-type: none"> • COMPLETE • COMPLETE • PLANNING • PLANNING • PLANNING • COMPLETE

Sprint 4

**It was during this sprint that our team realized that the STARS App had not fully implemented the ability to choose a semester, which appeared functional in the GUI. On the backend, investigation led us to realize the Automate Flows did not have the alternate data sources for each semester's Excel fully coded.*

For this reason there was a shift this sprint in our focus and user stories.

Planned Tasks	Status
Propose most basic "Version 1.0" of STARS and plan for implementation. Perform GAP Analysis – current state versus desired final state. – Kristy Hamlin	<ul style="list-style-type: none"> • COMPLETE
The Team meets to discuss the project proposal by Kristy and gives input and volunteers for updated User Stories. – whole team	<ul style="list-style-type: none"> • COMPLETE
The Team continues work on user stories as follows:	
<ul style="list-style-type: none"> • As a STARS admin, I would like a student to be automatically added to a Microsoft Teams channel when their request for tutoring is approved. (15 story points) – Roberto & Frank (Bryan backup) 	<ul style="list-style-type: none"> • PLANNING
<ul style="list-style-type: none"> • As a STARS admin, I would like a tutor to be automatically added to a Microsoft Teams channel when they are approved to tutor it. (10 story points) – Roberto & Frank (Bryan backup) 	<ul style="list-style-type: none"> • PLANNING
<ul style="list-style-type: none"> • Deploy current app to start understanding deployment process and updating process. - KRISTY 	<ul style="list-style-type: none"> • PLANNING
<ul style="list-style-type: none"> • As a STARS admin, I would like channels to be automatically archived at the end of the semester and no longer active. - Furzaan (10 story points) 	<ul style="list-style-type: none"> • PLANNING

<ul style="list-style-type: none"> Task: Create new Master Excel file and reconfigure all flows and galleries to connect to this file. It would not be intuitive to keep the “Spring24” Excel as the master for all future semesters, and unfortunately changing the name would break all the connections. - Kristy 	<ul style="list-style-type: none"> IN PROGRESS
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Sprint 5

**This sprint, due to the change in the data storage and organization of the system, some user stories that had previously been implemented needed to be implemented again. For this reason, the reader will note that some user stories re-appear.*

Planned Tasks	Status
<p>The Team continues work on user stories as follows:</p> <ul style="list-style-type: none"> As a STARS admin, I would like to be able to approve student requests via an Outlook emails in addition to being able to approve them in the STARS App. – (12 story points) Kristy Hamlin Task: Create new Master Excel file and reconfigure all flows and galleries to connect to this file. - Kristy Hamlin As a STARS admin, I would like to be able to choose an initial set of courses that will be offered for tutoring when starting a new semester. (New V1.0 system) Bryan A Cruz As a STARS admin, I would like the channels to be automatically created in Teams based on the courses that are approved each 	<ul style="list-style-type: none"> COMPLETE COMPLETE COMPLETE COMPLETE

<p>semester. (New V1.0 System) Bryan A Cruz</p> <ul style="list-style-type: none"> • As a STARS admin, I would like the App to make it clear to me that I have ended the current semester and to restrict my ability to interact with the app until a new semester is begun— Bryan A Cruz (6 story points) • As a STARS admin, I would like a student to be automatically added to a Microsoft Teams channel when their request for tutoring is approved. (15 story points) – Roberto & Frank (Bryan backup) • As a STARS admin, I would like a tutor to be automatically added to a Microsoft Teams channel when they are approved to tutor it. (10 story points) – Roberto & Frank (Bryan backup) • Deploy current app to start understanding deployment process and updating process. – Kristy Hamlin • As a STARS admin, I would like channels to be automatically archived at the end of the semester and no longer active. - Furzaan (10 story points) • As a STARS admin, I would like the end semester process to have a feature to make a copy of the semester's Master Excel with an appropriate name indicating the semester that has just finished. – Furzaan Khan 	<ul style="list-style-type: none"> • COMPLETE • PARTIALLY IMPLEMENTED • PLANNING • PLANNING • PLANNING • COMPLETE
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SYSTEM DESIGN

This section contains information on the design decisions that went into this project. The architecture patterns are outlined and explained. The entire system is shown in a package diagram and the subsystems are explained. Finally, the design patterns used in the project are discussed.

Architectural Patterns

The overall architecture of the STARS Administration system is shown in Figure 4 below. The reader will notice that, as previously, the center of the system consists of the Admin Application and the data storage. The various subsystems – which will be discussed in greater detail in the following section – surround this central hub.

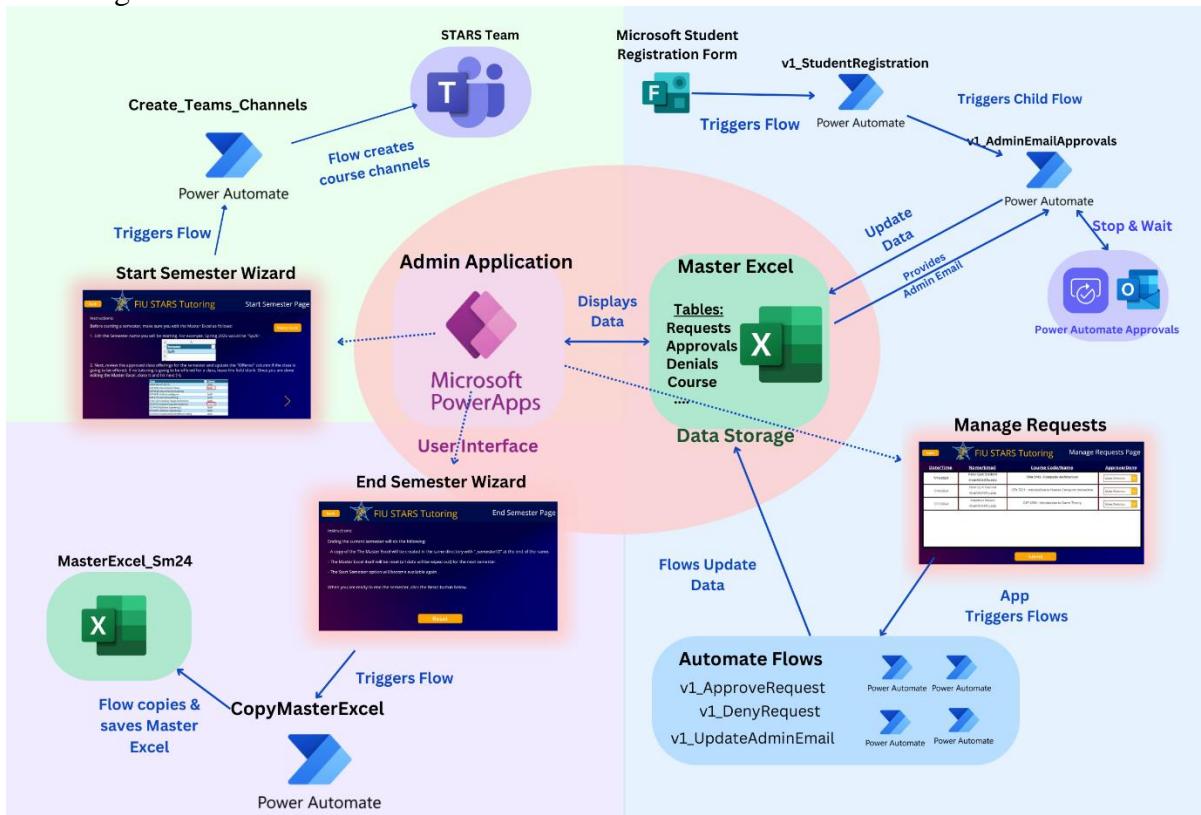


Figure 4. System Architecture of the STARS Application as of the end of the semester of Summer 2024.

Compared to the start state of the semester (Figure 3), some of the additional features added by the Summer 2024 team become more apparent. Moreover, now the data storage has been simplified, using one Master Excel that is copied at the end of each semester for record keeping. This simple change vastly simplifies the backend workings of the application and we will dedicate the next paragraph to explaining how:

In Microsoft Power Apps currently, data sources must be hard coded into the application interface and flows. It is not possible for a data source to be chosen at runtime, as it is when coding a Java program, for example. Because of this restriction, the initial system design attempted (and it was a logical decision, with disastrous consequences) to separate semesters into different Excel files. But for the app and flows to work with these different Excel files, the files had to be pre-created, and there had to be separate branches within all of the Automate Flows to handle the workflows for the different Excels, causing duplication of actions that is difficult to manage. Moreover, when these pre-created Excel files run out, developers would need to understand the system well enough to add new branches, data sources, etc, to the system. In short, the use of multiple Excel files in the system created a very complex backend, which is probably why the system was not completely implemented and only appeared to be working in the GUI.

In addition, this meant that the flows needed to know what semester it currently is, in order to show the correct galleries and add data to the correct Excel files. An example of how this change simplifies the Student Registration flow is shown in Figure 5 below:

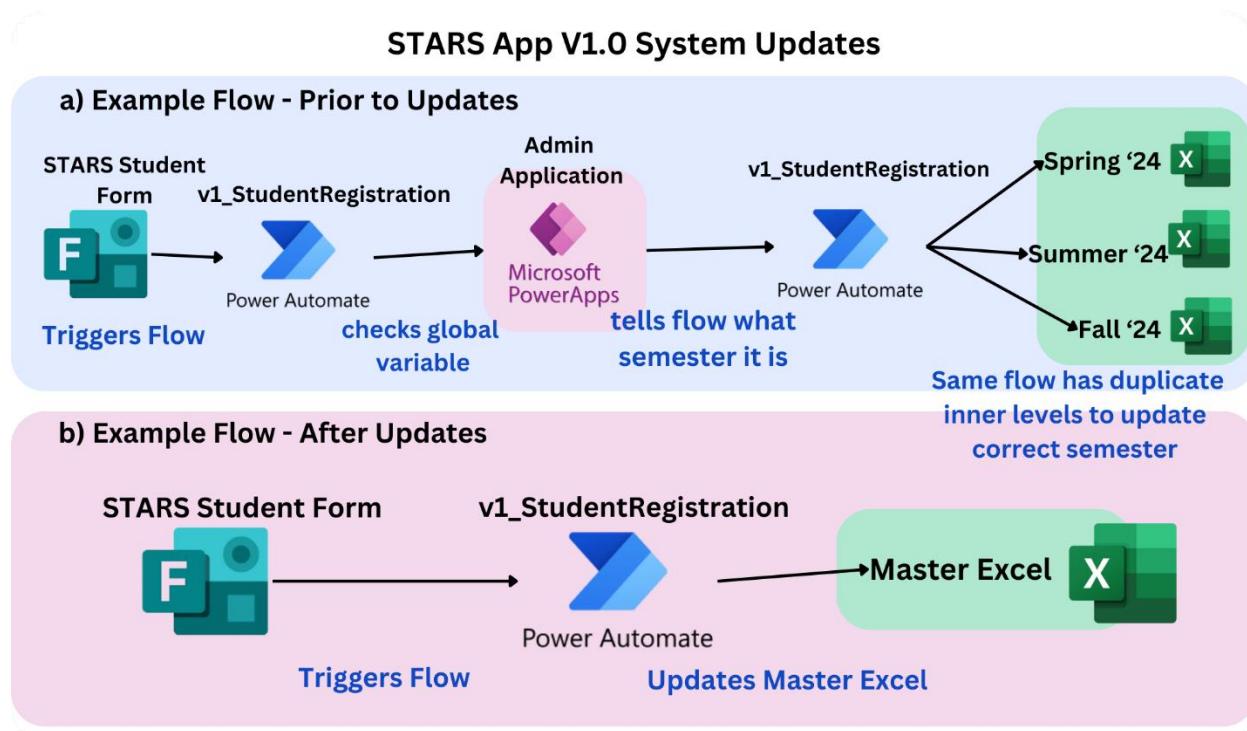


Figure 5: Comparing the previous STARS System implementation to “V1.0”, which uses one Master Excel as a data source instead of a different Excel for each semester.

System and Subsystem Decomposition

In this section, we will examine the subsystems of the current application in detail.

1. Student Registration System

The Student Registration subsystem is depicted in the left half of Figure 4 above, with a blue background. The components are discussed in detail below:

COMPONENTS:

- Admin Application – presents the interface that the Admin uses to “manage requests” – ie, to approve or deny multiple requests. Also presents the interface that the Admin can use to view previously approved or denied requests.
- Master Excel – holds the data from new student requests in the Requests table. When the Admin approves a student request, the row is deleted from the Requests table and moved to the Approvals table. Likewise, when a student request is denied, the row is moved to the Denials table.
- Microsoft Form “Student Registration” – a form using the Microsoft Forms platform that students use to request tutoring. When they request tutoring
- V1_StudentRegistration Flow – a Power Automate flow that is triggered when a new student submits a Form. It adds the request information to the Requests table in the Master Excel.
- V1_AdminEmailApprovals – this is the child flow that allows the admin to approve student requests using email. It uses the Stop and Wait Automate Approval feature to allow the admin to approve or deny a request from Outlook, and it moves the student’s information from a row in Requests to a row in Approvals or Denials accordingly.
- V1_ApproveRequest – this flow is triggered when the Admin approves one or more requests from the App using the “Manage Requests” page. It moves one or more requests from the Request table to the Approvals table.
- V1_DenyRequest – likewise, this flow is triggered from the app and moves rows from the Request table to the Denials table.

2. Start Semester System

The Start Semester System is shown at the upper left quarter of Figure 4 above, with a green background. The components are discussed in detail here:

COMPONENTS:

- Admin Application – presents the Admin with the series of pages referred to as the “Start Semester Wizard”. These pages contain instructions to help the Admin start a new semester. Some steps, such as updating the Microsoft Form, must be performed manually, because Microsoft Forms cannot currently present dynamic content to survey-takers.
- Create_Teams_Channels – this Power Automate Flow uses the courses that the Admin has indicated are active and creates appropriately named Teams channels.

- STARS Team – the team name in Microsoft Teams where the tutoring groups are hosted. Each tutoring group for each semester corresponds to a course.

3. End Semester System

The End Semester System is shown in the lower left quarter of Figure 4 above, with a purple background. The components are discussed in details below:

COMPONENTS:

- Admin Application – presents the Admin with a series of related pages referred to as the “End Semester Wizard” which guides the admin through the process of ending a semester. In the future, we would like this Wizard to also present the Admin with a data summary of the semester and the ability to export such data.
- CopyMasterExcel – an Automate Flow which copies the Master Excel and names it after the semester which has just finished. This allows the Master Excel to be cleared and ready for the following semester, bypassing the need to pre-create Excel files and have complicated switch statements in all the flows.
- MasterExcel_copy – the copy generated by the previous flow. It will not communicate with the system after being created.

Deployment Diagram

This system is completely hosted within the Microsoft 365 Suite. Using Microsoft Power App’s convenient platform for developing custom applications, it was not necessary for the development team to consider the physical layout of the STARS Application system.

Design Patterns

SYSTEM DESIGN:

When implementing the updated “V1.0” system, we used the flowcharts below to envision the three main subsystems. These flowcharts served as an initial blueprint to begin development.

FIU STARS App V1.0 Desired State: Student Registration

NOTES: The screenshots below are from the current setup although the words describe the desired final state.

1. Microsoft Forms

Students register for tutoring using a Microsoft Form stored on SharePoint.

This Form will need to be manually updated whenever the available courses change.

2. floStudentRegistration

The Power Automate flow "floStudentRegistration" adds a new row to the "Requests" table of the Master Excel for each course/student request submitted to the Microsoft Form.

If one student requests tutoring in two courses, that becomes 2 rows, etc.

3. Master Excel

Course	Active
CAP 4104 - HCI for CS	Yes
CAP 4556 - Intro to Game Theory	Yes
CAP 4612 - Intro to Machine Learning	Yes
CAP 4630 - Artificial Intelligence	Yes
CAP 4770 - Intro to Data Mining	Yes
CDA 3102 - Computer Design Architecture	Yes
CEN 3721 - Foundations of Computer Interaction	Yes
CEN 4001 - Software Engineering 1	Yes
CEN 4021 - Software Engineering 2	No
CEN 4072 - Fundamentals of Software Testing	Yes
CGS 1580 - Intro to Databases	Yes
CGS 2060 - Intro to Microcomputers	Yes
CGS 2100 - Microcomputer Apps for Business	Yes
CGS 2518 - Computer Data Analysis	Yes
CGS 3767 - Computer Operating Systems	Yes
CGS 4285 - Applied Computer Networking	Yes
ITPC 4842 - Windows Event/Retention Monitor	No

The Master Excel represents the CURRENT semester. V1.0 of the app can only be used to work with the current semester.

The Master Excel contains tabs for:

1. Student requests
2. Approved requests
3. Denied Requests
4. Courses - shows present active/inactive status of each course.

At the end of every Semester, the "End Semester" process creates a COPY of the Master Excel with the name of the current semester. (implementation pending)

At the beginning of every Semester, the "Start Semester" process prompts the admin to ensure a copy of the Master Excel has been made for the previous semester, then clears/resets the Excel so that it is ready for new Student Requests.

Final Deliverable

Enhancing the STARS Online Assistants App for Automation and Data Analytics Education

4. Manage Requests Page

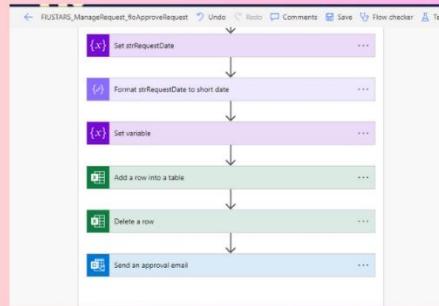
Date/Time	Name/Email	Course Code/Name	Approve/Deny
4/12/2024	George Washington	COP 3337 - Computer Programming II	[Approve] [Deny]
4/12/2024	William Wilson	COP 3339 - Designing Web Pages	[Approve] [Deny]
4/12/2024	Carin Corridge	CAP 4704 - Human Computer Interaction	[Approve] [Deny]
4/12/2024	Carin Corridge	CAP 4830 - Artificial Intelligence	[Approve] [Deny]
4/12/2024	Carin Corridge	CDS 2518 - Computer Data Analysis	[Approve] [Deny]
4/12/2024	Priscilla Rosewell	CSE 6767 - Computer Operating Systems	[Approve] [Deny]

The Manage Requests page has a gallery showing requests from the "Requests" table of the Master Excel.

The STARS Admin can approve or deny each request by using the dropdown menu on the right for each request, and then clicking "Submit".

When the "submit" button is clicked, the app creates a collection of the rows that are "approved" and another collection of the rows that are "denied."

5. Flow ManageRequest_floApproveRequest

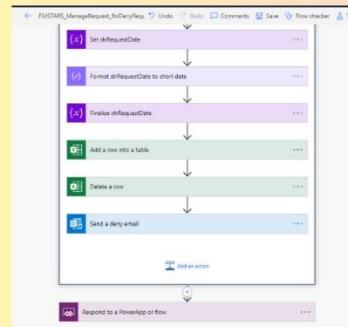


When the STARS Admin clicks "Submit", if there are any "approved" rows, the collection of Approved rows is passed to the floApproveRequests.

This flow

1. Removes the row from the "Request" table in the Master Excel
2. Adds a row to the "approved" table in the Master Excel
3. Sends an approval email to the student email in the request
4. Either adds the student to the correct Teams channel OR includes a join link in the email in step 3. (this could be implemented separately if it is easier)

6. Flow ManageRequest_floDenyRequest



When the STARS Admin clicks "Submit", if there are any "denied" rows, the collection of Denied rows is passed to the floDenyRequests.

This flow

1. Removes the row from the "Request" table in the Master Excel
2. Adds a row to the "Denied" table in the Master Excel
3. Sends a denial email to the student email in the request

7. View Approvals & View Denials Pages

REQUEST_ID	LAST_NAME	FIRST_NAME	COURSE	TERM	APPROVAL_DATE
					APPROVAL_DATE
1000001	George	Washington	COP 3337@flu.edu	CAP 4704-HD for CS	4/12/2024
1000001	George	Washington	COP 3339@flu.edu	CAP 4830 - Intro to Data Theory	4/12/2024
1000002	John	Adams	CAP 4704@flu.edu	CAP 4704 - HD for CS	4/12/2024
1000003	John	Adams	COP 3337@flu.edu	CSE 2721 - Human-Computer Interaction	4/12/2024
1000004	Thomas	Jefferson	COP 3339@flu.edu	CAP 4704 - HD for CS	4/12/2024
1000005	Thomas	Jefferson	COP 3339@flu.edu	CSE 2883 - Enterprise Security	4/12/2024
1000006	James	Madison	COP 3339@flu.edu	CSE 2721 - Human-Computer Interaction	4/12/2024
1000007	Andrew	Jackson	COP 3339@flu.edu	CAP 4830 - Artificial Intelligence	4/12/2024
1000008	Abraham	Lincoln	COP 3339@flu.edu	CAP 4830 - Artificial Intelligence	4/12/2024
1000009	Abraham	Lincoln	COP 3339@flu.edu	CAP 4704 - Human Computer Interaction	4/12/2024
1000010	Ulysses	Grant	COP 3339@flu.edu	COP 4704 - Foundations of Data Science Team	4/12/2024
1000011	Ulysses	Grant	COP 3339@flu.edu	COP 4704 - Foundations of Data Science Team	4/12/2024
1000012	Ulysses	Grant	COP 3339@flu.edu	COP 4704 - Database Management	4/12/2024

The STARS Admin can view approved and denied requests for the CURRENT semester from the View Approvals and View Denials pages. These pages have galleries that read from the "Approval" and "Denials" tables in the Master Excel, respectively.

Future versions may find a way to implement the ability to view past semesters. However, adding multiple data sources makes maintaining the app much harder, and it may be better to go the Excel copy of a previous semester should the Admin need to view information from a previous semester.

This Student Registration process continues as long as the STARS Admin chooses to continue approving requests.

FIU STARS App V1.0

Desired State: Starting New Semester

NOTES: The screenshots below are from the current setup although the words describe the desired final state.

1. Start New Semester Wizard

Using the Start New Semester page(s), the STARS admin follows clear instructions - either on the app or on a separate admin manual- to start the semester:



Note - this process may be more intuitive and easy to follow if we create a series of "Start Semester" pages (wizard) with instructions where the Admin navigates to the next page using a "next" button.

1. The app prompts the Admin to ensure that a copy of the Master Excel has been created from the previous semester (this copy should be created during the "end semester" process).
2. If the Admin confirms that the copy exists, the app should include a new Flow (floResetMasterExcel) that clears the tables in the Master Excel, preparing it for a new semester.
3. Next the App allows the Admin to choose initially what courses are Active for tutoring this semester. When the Admin selects "Go", the flow "Create_Teams_Channels" creates a private Teams channel with a unique name including the semester and year for each active course. Does this flow also need to add a "join" link to the appropriate class's row in the Master Excel?
4. The App prompts the Admin to manually update the what classes are available for tutoring in the Microsoft Form. The App reminds the Admin what classes were added/deleted and displays a link to the Microsoft Form on SharePoint.

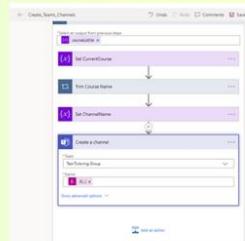
Question for Bryan - how can the Admin add a course that is not currently displayed in "Active Courses"?

2. floResetMasterExcel - New



A new flow, the "reset Master" Excel, will clear the tables of the Master Excel and set all courses to either Active or Inactive, preparing the excel for a new semester.

3. Flow Create_Teams_Channels



The "Create_Teams_Channels" flow creates a Teams Channel for each active course during the "Start Semester".

New - so that courses can be added after the initial setup, the flow needs to check if a class already has a teams' channel before creating it.

New - the flow needs to add a link to join the class on the class's row in the Master Excel, so that this link can be included in approval emails. If this is NOT possible, instructions to add this link to the Master Excel need to be given to the Admin by the App.

4. Add Courses to Current Semester - New



Perhaps it would be clearest if a separate page was used to add courses to a current semester. This can also be included in the same pages as the "Start Semester" form as long as it works and is clear to the Admin what they need to do.

If the team thinks it is clearest/easiest to have a separate form, this form needs to display what classes the Admin can add to the current semester, allow them to add them, Create the Teams channels, and prompt the Admin to update the Microsoft Form.

FIU STARS App V1.0

Desired State: End Semester

NOTES: The screenshots below are from the current setup although the words describe the desired final state.

1. End Semester Page

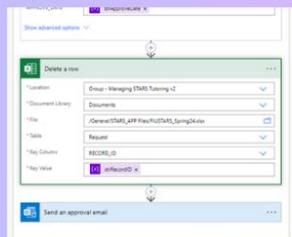


The End Semester Page(s) allow the STARS Admin to finish a semester. If it is easier for this process to encompass multiple pages where the Admin navigates using a "next" button and follows clear instructions, it does not all need to fit on one page.

The End Semester page/form should include the following:

1. A button that initiates a new Flow that will create a copy of the Master Excel with an appropriate name indicating the semester. Perhaps there should be a "success" feedback that reminds the Admin of the location/name of this new Excel.
2. A button that initiates a new Flow that expels members from all the current Teams Channels and archives them.
3. Wishlist - generate statistics about semester. Not a priority for V1.0

2. floCopyMasterExcel - New



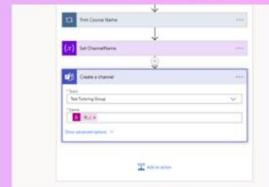
A new flow, floCopyMasterExcel, will create a copy of the Master Excel with an appropriate name indicating the semester.

Implementing this will probably require you to decide how to get the name of the semester.

3. Flow Archive_Teams_Channels - New

A new flow, Archive_Teams_Channels, needs to expel students from the current semester's channels and archive the conversation for future reference.

Implementing this will require the programmer to research how this can be done and ensure that the conversations remain accessible to the STARS Admin after expelling the students, etc.



DATA STORAGE DESIGN

Below, the data model of the tables used in the STARS system are shown:

	A	B	C	D	E	F	G	H
1	RECORD_ID	SURVEY_ID	PANTHER_ID	LAST_NAME	FIRST_NAME	EMAIL	COURSE	REQUEST_DATE
2	28 55	1000028	Wilson	Woodrow	cslay001@fiu.edu	COP 3337 - Computer Programming II	4/12/2024	
3	29 55	1000028	Wilson	Woodrow	cslay001@fiu.edu	COP 3835 - Designing Web Pages	4/12/2024	
4	30 56	1000030	Coolidge	Calvin	cslay001@fiu.edu	CAP 4104 - Human Computer Interaction	4/12/2024	
5	31 56	1000030	Coolidge	Calvin	cslay001@fiu.edu	CAP 4630 - Artificial Intelligence	4/12/2024	
6	32 56	1000030	Coolidge	Calvin	cslay001@fiu.edu	CGS 2518 - Computer Data Analysis	4/12/2024	
7	35 57	1000032	Roosevelt	Franklin	cslay001@fiu.edu	CGS 3767 - Computer Operating Systems	4/12/2024	
8	36 57	1000032	Roosevelt	Franklin	cslay001@fiu.edu	CIS 4203 - Digital Forensics	4/12/2024	
9	37 57	1000032	Roosevelt	Franklin	cslay001@fiu.edu	COP 4005 - Windows Programming	4/12/2024	
10	39 60	1000034	Eisenhower	Dwight	cslay001@fiu.edu	CEN 3721 - Introduction to Human-Computer Interaction	4/12/2024	
11	40 60	1000034	Eisenhower	Dwight	cslay001@fiu.edu	CIS 4365 - Enterprise Cybersecurity Policies and Practices	4/12/2024	
12	41 63	6099816	Slayton	Corey	cslay001@fiu.edu	CAP 4104 - Human Computer Interaction	4/13/2024	
13	42 63	6099816	Slayton	Corey	cslay001@fiu.edu	CAP 4770 - Introduction to Data Mining	4/13/2024	
14	43 63	6099816	Slayton	Corey	cslay001@fiu.edu	CEN 3721 - Introduction to Human-Computer Interaction	4/13/2024	
15	44 63	6099816	Slayton	Corey	cslay001@fiu.edu	CGS 2100 - Intro to Microcomputer Applications for Business	4/13/2024	
16	45 102	1234567	Apple	Kristy	cslay001@fiu.edu	CAP 4630 - Artificial Intelligence	5/15/2024	
17	46 102	1234567	Apple	Kristy	cslay001@fiu.edu	CEN 3721 - Introduction to Human-Computer Interaction	5/15/2024	
18	47 103	2233445	Springville	Tiffany	khaml004@fiu.edu	COP 4005 - Windows Programming	7/7/2024	

Figure 6. Data Model of the Requests table in the Master Excel

	A	B	C	D	E	F	G	H
1	RECORD_ID	PANTHER_ID	FIRST_NAME	LAST_NAME	EMAIL	COURSE	REQUEST_DATE	APPROVE_DATE
2	2	1234566 Black	Widow	khaml004@fiu.edu	COP 3530 - Data Structures	7/14/2024	7/14/2024	
3	5	1234566 Black	Widow	khaml004@fiu.edu	COP 4005 - Windows Programming	7/14/2024	7/14/2024	
4	2	987654 Hawk	Eye	khaml004@fiu.edu	CAP 4104 - Human Computer Interaction	7/14/2024	7/14/2024	
5	3	987654 Hawk	Eye	khaml004@fiu.edu	CAP 4506 - Introduction to Game Theory	7/14/2024	7/14/2024	
6	2	987654 Hawk	Eye	khaml004@fiu.edu	CAP 4104 - Human Computer Interaction	7/14/2024	7/14/2024	
7	2	10101010 Peter Quill	Starlord	khaml004@fiu.edu	CAP 4830 - Fundamentals of Modeling & Simulations	7/14/2024	7/14/2024	
8	1	6666666 Ludwin	Tenorio	khaml004@fiu.edu	CAP 4830 - Fundamentals of Modeling & Simulations	7/13/2024	7/17/2024	
9	6	754321 Amadeus	Mozart	khaml004@fiu.edu	CAP 4104 - Human Computer Interaction	7/17/2024	7/17/2024	

Figure 7. Data Model of the Approvals table in the Master Excel

	A	B	C	D	E	F	G	H
1	RECORD_ID	PANTHER_ID	FIRST_NAME	LAST_NAME	EMAIL	COURSE	REQUEST_DATE	DENY_DATE
2	3	1234566 Black	Widow	khaml004@fiu.edu	COP 3804 - Intermediate Java Programming	7/14/2024	7/14/2024	
3	4	1234566 Black	Widow	khaml004@fiu.edu	COP 3835 - Designing Web Pages	7/14/2024	7/14/2024	
4	4	987654 Hawk	Eye	khaml004@fiu.edu	CAP 4630 - Artificial Intelligence	7/14/2024	7/14/2024	
5	3	10101010 Peter Quill	Starlord	khaml004@fiu.edu	CAP 4770 - Introduction to Data Mining	7/14/2024	7/14/2024	

Figure 8. Data Model of the Denials table in the Master Excel

A	B
1 Course	Offered
2 CAP 4104 - HCI for CS	
3 CAP 4506 - Intro to Game Theory	
4 CAP 4612 - Intro to Machine Learning	
5 CAP 4630 - Artificial Intelligence	Su24
6 CAP 4770 - Intro to Data Mining	11111111111111111111
7 CDA 3102 - Computer Design Architecture	111111111111
8 CEN 3721 - Human-Computer Interaction	111111111111
9 CEN 4010 - Software Engineering 1	
10 CEN 4021 - Software Engineering 2	
11 CEN 4072 - Fundamentals of Software Testing	
12 CGS 1540 - Intro to Database	
13 CGS 2060 - Intro to Microcomputers	
14 CGS 2100 - Microcomputer Apps for Business	
15 CGS 2518 - Computer Data Analysis	
16 CGS 3767 - Computer Operating Systems	
17 CGS 4285 - Applied Computer Networking	
18 CGS 4854 - Website Construction Mgmt	
19 CIS 4203 - Digital Forensics	
20 CIS 4365 - Enterprise Security	
21 CIS 4431 - IT Automation	
22 CIS 4731 - Intro to Blockchain	
23 CNT 4403 - Intro to Computer Security	
24 CNT 4513 - Data Communications	
25 COP 2210 OR COP 2250 - 1st Java course	
26 COP 3337 OR COP 3804 - 2nd Java course	

Figure 9. Data Model of the Courses table in the Master Excel. Looks like someone was testing the character limits for Teams Channels!

A	B	C	D
1 Row ID	Admin 1 Email	Admin 2 Email	Admin 3 Email
2 0	khaml004@fiu.edu		khaml004@fiu.edu
3			

Figure 10. Data Model of the Admin Email table in the Master Excel.

SYSTEM VALIDATION

This software system is being developed using the iterative cycle, whereby every semester a new team of Capstone II students improves upon the same project. System verification takes place throughout every phase of process development, and crucially starting from the system design (Snoderly, et al). According to Snoderly and Faisandier in *The Guide to the Systems Engineering Body of Knowledge*, “Verification is the confirmation, through the provision of objective evidence, that specified requirements have been fulfilled”.

With this in mind, testing of various subsystems was performed by submitting test data to the system and comparing the effects versus the anticipated effects. In our system, this was generally done by running the created flows and seeing the side effects. For example, to test the flow Create_Teams_Channels, developers would provide the system with the source of the channel names in the Master Excel, trigger the flow from the Admin app, and go to Microsoft Teams to verify if the expected Teams Channels had been created.

For a more detailed example, we will take a closer look at Student Registration subsystem. This subsystem is more typical of the system, as the majority of the Automate Flows center more around the Master Excel and the student’s data. Figure 11 below shows the different stages of execution of the Student Registration subsystem, and the corresponding output used for verification.

Student Registration Subsystem Verification

SOFTWARE STAGE	OBJECTIVE EVIDENCE
Student Request for Tutoring 	<ul style="list-style-type: none"> 1. For every course a student requests tutoring in, a row is added to the Requests table in the Master Excel. 2. For every course a student requests tutoring in, an email approval is sent to the Admin email listed in the Master Excel.
Email Approvals & Denials  Power Automate Approvals	<ul style="list-style-type: none"> 1. When the admin approves a student request using the email approval, the corresponding row is removed from the Requests table and added to the Approvals table in the Master Excel. 2. When the admin denies a student request using the email approval, the corresponding row is removed from the Requests table and added to the Denials table in the Master Excel. 3. The v1_AdminEmailApprovals flow shows a successful run log entry for all requests.
In-App Approvals & Denials Admin Application  Microsoft PowerApps	<ul style="list-style-type: none"> 1. When the admin approves a student request from the App, the corresponding row is removed from the Requests table and added to the Approvals table in the Master Excel. 2. When the admin denies a student request from the App, the corresponding row is removed from the Requests table and added to the Denials table in the Master Excel. 3. The v1_floApproveRequest and v1_floDenyRequest flows show successful run log entries for the respective student requests.

Figure 11. System Verification and Validation for the Student Registration Subsystem

GLOSSARY

Below, we define for the reader some of the lesser-known terms in this system. We assume the reader is familiar with programs such as Microsoft Teams, Excel, etc.

- **Microsoft 365** – A wide-ranging suite of software and services offered by Microsoft. It includes the well-known Office applications such as Microsoft Word, Excel, etc, with cloud services, security, and other collaboration tools such as Teams and Outlook and storage solutions such as Sharepoint. It also includes Microsoft Power Apps.
- **Microsoft Power Apps** – A platform designed to allow rapid development of custom business applications. It includes a GUI creator/editor called Canvas, with a tool that allows the automation of a large variety of tasks (including connecting to services outside of Microsoft) called Power Automate.
- **Power Automate** – A cloud-based tool within Microsoft Power Apps that allows a user to create and automate workflows between different apps and services. These workflows are often referred to simply as “flows”.
- **Canvas** – The GUI creator/editor offered within Power Apps.

APPENDIX

Appendix A - UML Diagrams

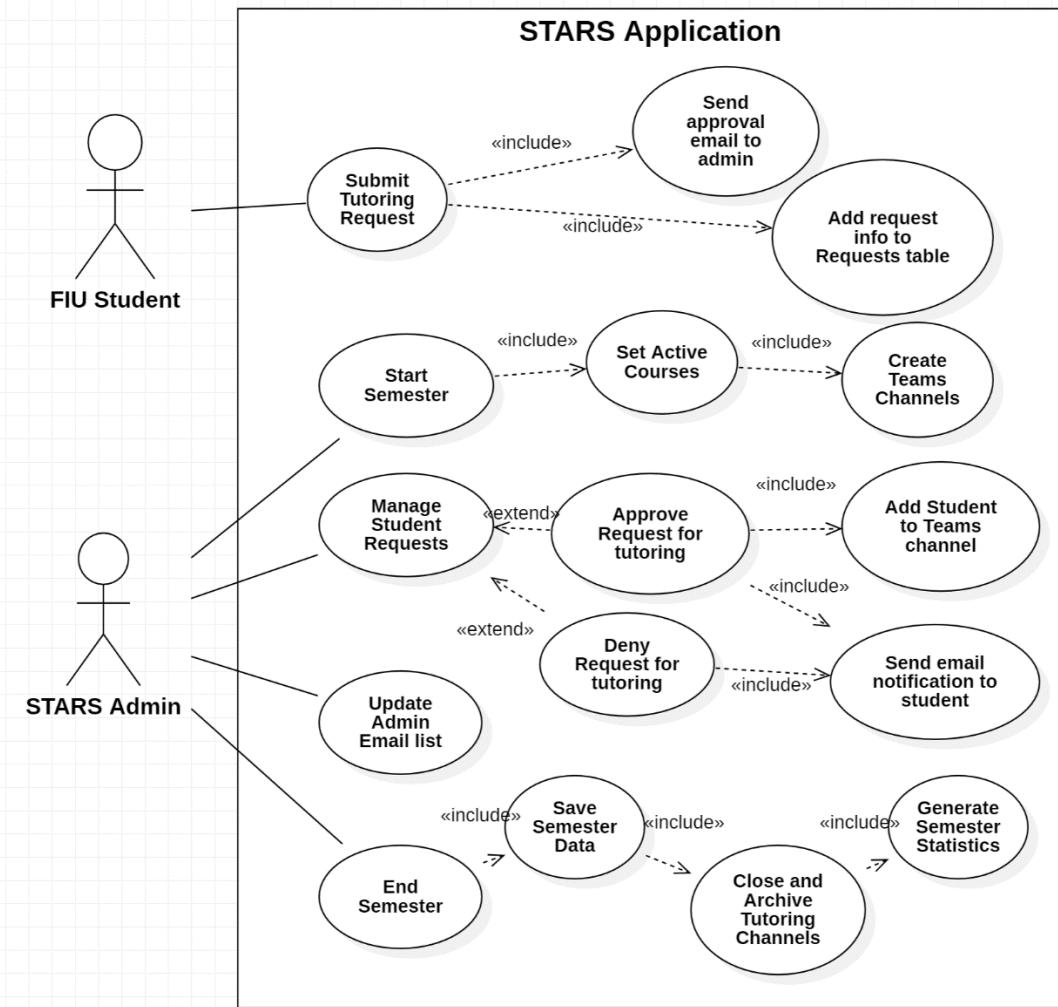


Figure 12. Use Case Diagram of the STARS Application System

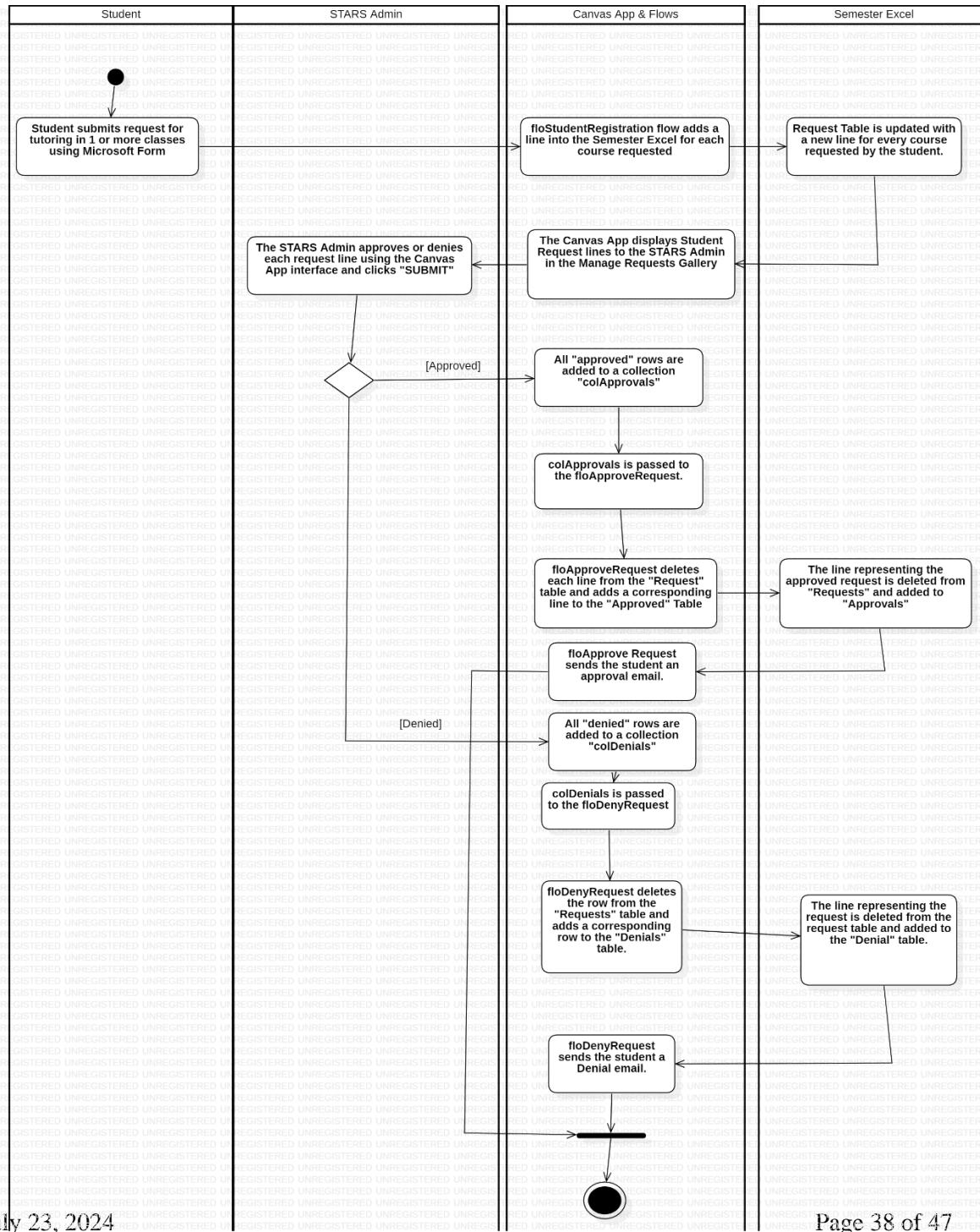
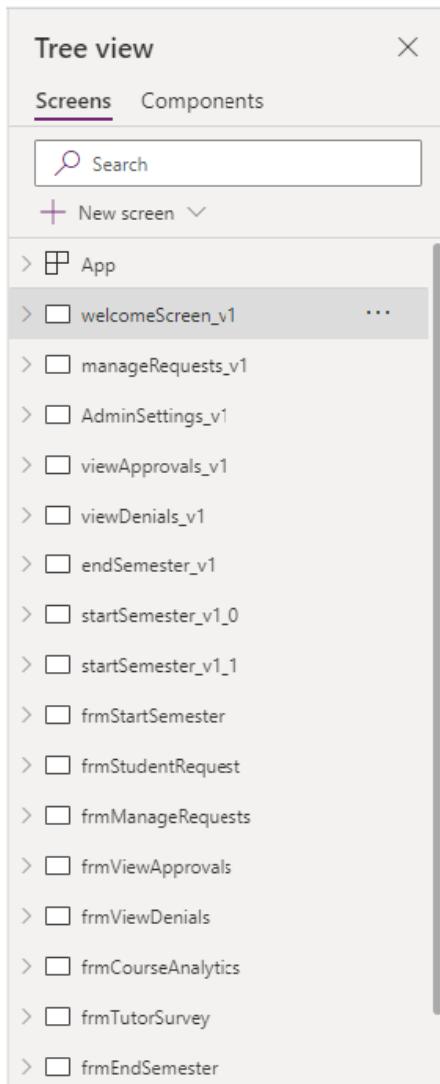


Figure 13. An Activity Diagram of the Student Registration subsystem, not including the email approvals feature.

Appendix B - User Interface Design

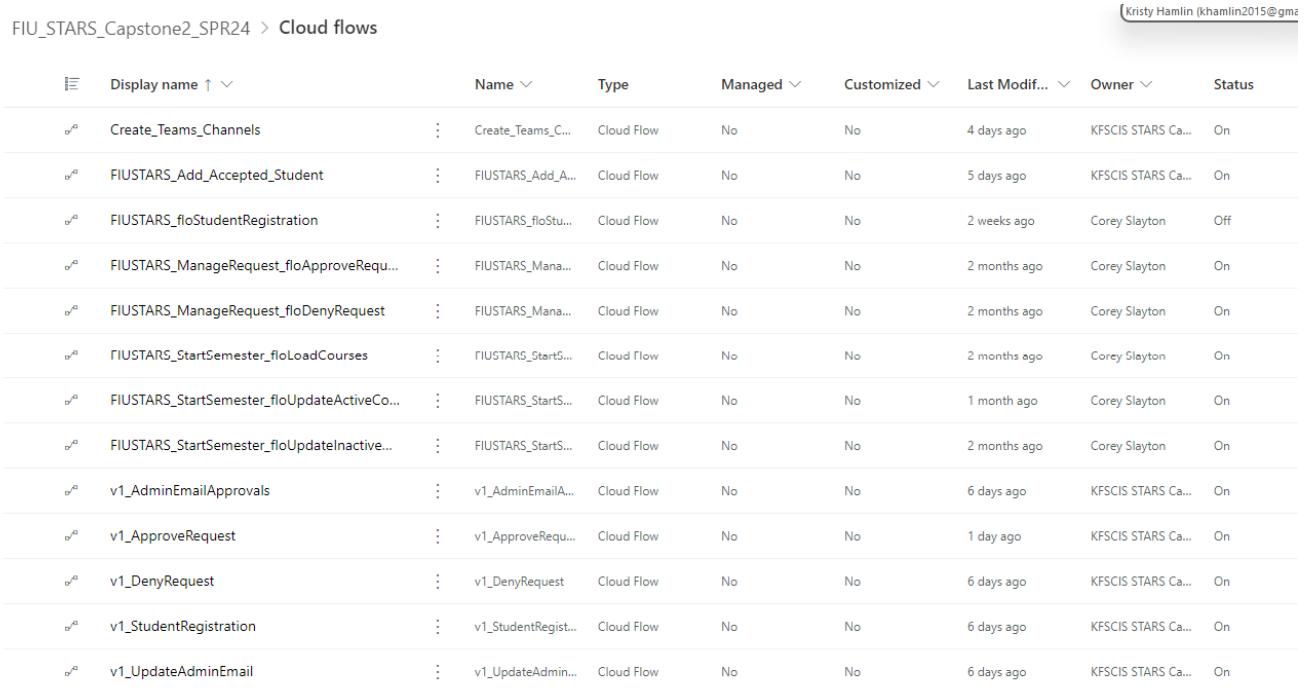


Before showing images of the updated user interface, I wish to leave an important note to the Fall 2024 development team and the reader;

When implementing the updated “V1.0” STARS System, the development team did not directly edit the pre-existing system. In order to preserve and refer to the extensive work done by the Spring 2024 – for as much as my complaining about the Excel storage system may mislead you, the Spring 2024’s work was excellent and fundamental for starting the application – the Summer 2024 development team created copies of the application pages in Canvas and added the suffix “_v1” (see Figure 14 on left).

Deeply regrettfully, no such naming convention was uniformly followed for creating Cloud Flows (except in the Student Registration subsystem, where all new Cloud Flows received the prefix “v1_”). However, the Cloud Flows initially developed in Spring 2024 and connected to the legacy pages of the app are those whose owner is identified in Figure 15 as Corey Slayton.

Figure 14. A screenshot of all of the user pages included in Canvas in the current GUI developed by this Capstone and the previous capstone group. As noted in the text, pages developed this semester are designated by the suffix “_v1”.



The screenshot shows a table titled "Cloud flows" from the FIU STARS Capstone2 SPR24 application. The table has columns for Display name, Name, Type, Managed, Customized, Last Modif..., Owner, and Status. There are 15 rows listed, each representing a different cloud flow. The rows include: Create_Teams_Channels, FIUSTARS_Add_Accepted_Student, FIUSTARS_floStudentRegistration, FIUSTARS_ManageRequest_floApproveRequ..., FIUSTARS_ManageRequest_floDenyRequest, FIUSTARS_StartSemester_floLoadCourses, FIUSTARS_StartSemester_floUpdateActiveCo..., FIUSTARS_StartSemester_floUpdateInactive..., v1_AdminEmailApprovals, v1_ApproveRequest, v1_DenyRequest, v1_StudentRegistration, and v1_UpdateAdminEmail.

	Display name ↑ ↴	Name ↴	Type	Managed ↴	Customized ↴	Last Modif... ↴	Owner ↴	Status
» ^a	Create_Teams_Channels	Create_Teams_C...	Cloud Flow	No	No	4 days ago	KFSCIS STARS Ca...	On
» ^a	FIUSTARS_Add_Accepted_Student	FIUSTARS_Add_A...	Cloud Flow	No	No	5 days ago	KFSCIS STARS Ca...	On
» ^a	FIUSTARS_floStudentRegistration	FIUSTARS_floStu...	Cloud Flow	No	No	2 weeks ago	Corey Slayton	Off
» ^a	FIUSTARS_ManageRequest_floApproveRequ...	FIUSTARS_Mana...	Cloud Flow	No	No	2 months ago	Corey Slayton	On
» ^a	FIUSTARS_ManageRequest_floDenyRequest	FIUSTARS_Mana...	Cloud Flow	No	No	2 months ago	Corey Slayton	On
» ^a	FIUSTARS_StartSemester_floLoadCourses	FIUSTARS_StartS...	Cloud Flow	No	No	2 months ago	Corey Slayton	On
» ^a	FIUSTARS_StartSemester_floUpdateActiveCo...	FIUSTARS_StartS...	Cloud Flow	No	No	1 month ago	Corey Slayton	On
» ^a	FIUSTARS_StartSemester_floUpdateInactive...	FIUSTARS_StartS...	Cloud Flow	No	No	2 months ago	Corey Slayton	On
» ^a	v1_AdminEmailApprovals	v1_AdminEmailA...	Cloud Flow	No	No	6 days ago	KFSCIS STARS Ca...	On
» ^a	v1_ApproveRequest	v1_ApproveRequ...	Cloud Flow	No	No	1 day ago	KFSCIS STARS Ca...	On
» ^a	v1_DenyRequest	v1_DenyRequest	Cloud Flow	No	No	6 days ago	KFSCIS STARS Ca...	On
» ^a	v1_StudentRegistration	v1_StudentRegist...	Cloud Flow	No	No	6 days ago	KFSCIS STARS Ca...	On
» ^a	v1_UpdateAdminEmail	v1_UpdateAdmin...	Cloud Flow	No	No	6 days ago	KFSCIS STARS Ca...	On

Figure 15. All Cloud Flows included in the STARS System as of the end of Summer 2024.

With these notes regarding the GUI components that future developers will find, we present some of the GUI developed this semester. We followed the style set forth previously, but made what we hope are enhancements to the organization. For example, the Home page features buttons that we anticipate will be used most frequently toward the top, instead of the chronological choice of “Start Semester”, which was the case in the previous app.



Figure 16. The Updated Home Screen of the Admin App

Back FIU STARS Tutoring Manage Requests Page

Date/Time	Name/Email	Course Code/Name	Approve/Deny
7/14/2024	Peter Quill Starlord kham004@fiu.edu	CDA 3102 - Computer Architecture	<input type="button" value="Make Selection"/>
7/14/2024	Peter Quill Starlord kham004@fiu.edu	CEN 3721 - Introduction to Human-Computer Interaction	<input type="button" value="Make Selection"/>
7/17/2024	Amadeus Mozart kham004@fiu.edu	CAP 4506 - Introduction to Game Theory	<input type="button" value="Make Selection"/>

Submit

Figure 17. The Updated Manage Requests Page, which draws data from the Master Excel's Requests Table.



FIU STARS Tutoring

Update Admin Settings

Current Admin Emails

Admin 1 Email	Admin 2 Email	Admin 3 Email
khami004@fiu.edu		khami004@fiu.edu

These emails will receive new student tutoring requests. Use this page to update the emails to receive requests. Requests can be approved from the "Manage Requests" page of this app, or directly from the request email. Up to 3 admin email addresses may simultaneously receive approval emails.

Add or Overwrite an Admin Email

Admin 1 Email Enter Email Address

Use the above menu and text box to provide a new admin email or overwrite an existing admin email. The email chosen in the dropdown (Admin 1, 2, or 3) will be overwritten by the value provided when you click "Submit". If you do not immediately see your change, try refreshing the table after the flow has had time to complete using the "Refresh Table" button below.

Submit **Refresh Table**

Figure 18. The “Update Admin Settings” page, which is new as of this semester and allows the admin to enter emails to be used for the email approval feature.



View Approvals Page

Sort Column PANTHER_ID **Course Count:** 19 **Student Count:** 18

PANTHER_ID	FIRST_NAME	LAST_NAME	EMAIL	COURSE	APPROVE_DATE
10101010	Peter	Quill	khami004@fiu.edu	CAP 4830 - Fundamentals of Modeling & Sim...	7/14/2024
1234566	Black	Widow	khami004@fiu.edu	COP 3530 - Data Structures	7/14/2024
1234566	Black	Widow	khami004@fiu.edu	COP 4005 - Windows Programming	7/14/2024
6666666	Ludwin	Tenorio	khami004@fiu.edu	CAP 4830 - Fundamentals of Modeling & Sim...	7/17/2024
754321	Amadeus	Mozart	khami004@fiu.edu	CAP 4104 - Human Computer Interaction	7/17/2024
987654	Hawk	Eye	khami004@fiu.edu	CAP 4104 - Human Computer Interaction	7/14/2024
987654	Hawk	Eye	khami004@fiu.edu	CAP 4506 - Introduction to Game Theory	7/14/2024
987654	Hawk	Eye	khami004@fiu.edu	CAP 4104 - Human Computer Interaction	7/14/2024

Figure 19. The “View Approvals” page, which allows the Admin to sort by any column (a new feature) and draw data from the Approvals table in the Master Excel.



FIU STARS Tutoring

View Denials Page

Sort Column: PANTHER_ID Course Count: 21 Student Count: 14

PANTHER_ID	FIRST_NAME	LAST_NAME	EMAIL	COURSE	DENY_DATE
10101010	Peter	Quill	kham1004@fiu.edu	CAP 4770 - Introduction to Data Mining	7/14/2024
1234566	Black	Widow	kham1004@fiu.edu	COP 3804 - Intermediate Java Programming	7/14/2024
1234566	Black	Widow	kham1004@fiu.edu	COP 3835 - Designing Web Pages	7/14/2024
987654	Hawk	Eye	kham1004@fiu.edu	CAP 4630 - Artificial Intelligence	7/14/2024

Figure 20. The “View Denials” Page, similar to the previous page.



FIU STARS Tutoring

Start Semester Page

Instructions:
Before starting a semester, make sure you edit the Master Excel as follows:

Master Excel

1. Edit the Semester name you will be starting. For example, Spring 2026 would be "Sp26".

A screenshot of a dropdown menu showing options: Semester, Sp26, and another option partially visible.

2. Next, review the approved class offerings for the semester and update the "Offered" column if the class is going to be offered. If no tutoring is going to be offered for a class, leave the field blank. Once you are done editing the Master Excel, close it and hit next (>).

A screenshot of a table titled "Offered" showing course offerings for the semester. The "Offered" column contains values like "Sp26" or "Sp26" with a red box around it, indicating a manual update. A yellow arrow points to the right, labeled "Next >".

Figure 21. The first page of the “Start Semester” Wizard, which contains clear instructions leading the Admin through the process needed to start a new semester.



Figure 22. The second page of the “Start Semester” Wizard, where the Admin can view the courses that the system detects are active from the Master Excel Courses table.



Figure 23. The “End Semester” Wizard, which currently is only one page, informing the Admin the clicking the “Reset” button will create a copy of the Master Excel and clear it for the next semester.

Appendix C - Sprint Review Reports

The Sprint Reviews documents, Daily Scrum documents, Sprint Planning documents, and Sprint Retrospective documents are provided in the final zip file as per the Announcements on Canvas.

**Appendix D - User Manuals, Installation/Maintenance Document,
Shortcomings/Wishlist Document and other documents**

The User Manual, Installation/Maintenance Document, Shortcomings, etc, will be provided in the final zip deliverable as per the Announcements on Canvas.

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