# SPRINT 1 PLAN

**PROJECT:** TEAM FORMATION

## PROJECT SUMMARY:

The primary objective of this application is to streamline the process of student team formation based on key attributes such as gender, ethnicity, and programming proficiency. The professor requires a platform that enables the creation and management of a customizable form, allowing the collection of student data on these attributes. The application will allow the professor to define the attributes to be included, set weightages to guide the team formation algorithm, and specify a deadline for submission. Additionally, the professor will be able to modify the form and its associated weightages, as well as adjust the submission deadline. Upon closure of the submission period, the system will automatically form student teams while ensuring that diversity, inclusion, and proficiency considerations are met.

Students, as key stakeholders, will have access to the form through a secure login, allowing them to submit and update their responses prior to the deadline. Once submissions are finalized, the application will generate teams of four students, with provisions for smaller teams if necessary. The team formation algorithm will prioritize diversity by promoting balanced gender representation, ensuring that when females are present in a team, the algorithm will strive to include at least two females. It will also aim to avoid isolating students from underrepresented ethnic groups, grouping at least two individuals from these backgrounds within the same team where possible. By automating and optimizing this process, the application effectively addresses the needs of both the professor and students, ensuring fair, inclusive, and well-balanced team formation.

## TEAM ROLES:

**PRODUCT OWNER:** Sahithi Duppati ([sahithi@tamu.edu](mailto:sahithi@tamu.edu))

**SCRUM MASTER:** Phani Jyothi Kurada ([phanijyothi11@tamu.edu](mailto:phanijyothi11@tamu.edu))

**TEAM MEMBERS:** Hitha Magadi Vijayanand, Ramya Reddy Gotika, Raja Karthik Vobugari, Rithika Sapparapu, Sai Jaideep Reddy Mure, Uday Kumar Reddy Mettukuru

**CLIENT MEETING DETAILS:**

**Date:** 23 September 2024
**Time:** 4.30 pm
**Place:** ZACH 424

In the introductory meeting with the client to discuss the project and gather detailed requirements, the team outlined their initial understanding of the project based on the provided project proposal and engaged in discussions to clarify the project scope and objectives.

**DISCUSSION POINTS:**

1. **Project Understanding:**
   ○ The team presented their understanding of the project, which aims to automate the formation of balanced student teams using student information.

2. **Client Requirements:**
   ○ The client highlighted the need to collect student information, including programming experience, gender, and ethnicity, to facilitate team formation.
   ○ The client prefers a system where students can self-identify attributes, which will be used as key criteria to form effective teams, ensuring representation and balance across teams.

3. **Team Formation Logic:**
   ○ **Programming Experience Priority:** The attribute "Programming experience" is to be prioritized to ensure each team has a balanced mix of experienced and inexperienced students.
   ○ **Gender and Ethnicity Conditions:** The client requires that underrepresented groups, both in terms of gender and ethnicity, are not isolated within teams. If females or members of certain ethnicities are considered underrepresented, the team formation logic must ensure that no individual from these groups is placed alone in a team; they must be paired with at least one other member from the same category to avoid isolation.
   ○ **Balancing Act:** The client emphasized a process where programming skills are distributed first, followed by balancing gender and ethnicity to ensure that each team is well-rounded in terms of technical skills and representation.
   ○ **Handling Missing Information:** For students who do not fill out their details or leave certain fields blank, the client mentioned that these students will not be prioritized in the team formation process. They will be assigned last, and efforts will be made to integrate them into appropriate teams.

4. **Other Considerations:**
   ○ The client has offered to provide historical data from the manual team formation process used over the past eight semesters. This data can be leveraged for

testing and refining the team formation algorithm, ensuring its accuracy and effectiveness in meeting the project's objectives.
- The client mentioned that each team ideally consists of four members, and teams of three can be accommodated based on the class strength.
- The client expressed interest in downloadable reports in formats such as CSV to upload team assignments into learning platforms like Canvas.
- Flexibility in downloading reports before the project's end was also discussed.

**Regular Weekly Meeting Schedule:**
The product owner has discussed with the client and has scheduled a recurring weekly meeting every Monday at approximately 4:15 PM in room ZACH 424.
Meeting Link : https://meet.google.com/rue-uyno-swr

# USER STORIES

```
Feature: Login with Username and Password
  As a professor,
  So that I can securely access my account,
  I want to log in using my college-issued username and password.
```

```
Scenario: Successful login with valid credentials
  Given I am on the login page
  When I enter my username (college email ID) and password
  And I click "Login"
  Then I should be authenticated using the college SSO
  And I should be redirected to the platform's dashboard
  And I should see the message "Welcome, [User Name]!"
```

```
Scenario: Failed login due to incorrect credentials
  Given I am on the login page
  When I enter incorrect credentials
  And I click "Login"
  Then I should see the error message "Invalid username or password"
  And I should remain on the login page to try again
```

```
Feature: Create New Form
  As a professor,
  So that I can collect student information for team formation,
  I want to create a new form.
```

```
Scenario: Professor creates a new form
  Given I am logged in as a professor
  When I navigate to the form management page
  And I click on "Create New Form"
  Then I should see a blank form template
  And I should see options to add questions and attributes
```

```
Feature: Add Question Types
  As a professor,
  So that I can gather various types of student information,
  I want to add different types of questions to the form.
```

```
Scenario: Professor adds a multiple-choice question
  Given I am editing a form
  When I select "Add Question"
  And I choose "Multiple Choice" as the question type
  And I enter the question text and answer options
  Then the multiple-choice question should be added to the form
```

```
Scenario: Professor adds a text input question
  Given I am editing a form
  When I select "Add Question"
  And I choose "Text Input" as the question type
  And I enter the question text
  Then the text input question should be added to the form
```

```
Feature: Add Specific Attributes
  As a professor,
  So that I can collect relevant information for team formation,
  I want to add specific attributes to the form.
```

```
Scenario: Professor adds a specific attribute
  Given I am editing a form
```

```
    When I select "Add Attribute"
    And I enter "Programming Proficiency" as the attribute name
    And I select "Scale 1-8" as the attribute type
    Then "Programming Proficiency" should be added as an attribute to the form
```

```
Feature: Set Attribute Weightage
    As a professor,
    So that the team formation algorithm can prioritize certain factors,
    I want to set weightage for each attribute in the form.
```

```
Scenario: Professor sets attribute weightage
    Given I am editing a form with attributes
    When I select the "Programming Proficiency" attribute
    And I set its weightage to 0.8
    Then the weightage for "Programming Proficiency" should be saved as 0.8
```

```
Feature: Preview Form
    As a professor,
    So that I can ensure all questions and attributes are correct,
    I want to preview the form before finalizing it.
```

```
Scenario: Professor previews the form
    Given I am editing a form
    When I click on "Preview Form"
    Then I should see the form as it will appear to students
    And I should be able to interact with the form elements
```

```
Feature: Save Form as Draft
    As a professor,
    So that I can come back and finish it later if needed,
    I want to save the form as a draft.
```

```
Scenario: Professor saves form as draft
    Given I am editing a new form
    When I click on "Save as Draft"
    Then the form should be saved with a "Draft" status
    And I should see a confirmation message
```

```
Feature: Publish Form
    As a professor,
    So that students can start filling it out,
    I want to publish the form and make it accessible to students.
```

```
Scenario: Professor publishes a form
    Given I have a completed form
    When I click on "Publish Form"
    Then the form status should change to "Published"
    And students should be able to access and fill out the form
```

```
Feature: Edit Existing Form
    As a professor,
    So that I can make changes or improvements after initial creation,
    I want to edit an existing form.
```

```
Scenario: Professor edits an existing form
    Given I am on the form management page
    When I select an existing form
    And I click "Edit Form"
    Then I should see the form's current content
    And I should be able to modify questions and attributes
```

```
Feature: Add New Attributes/Questions
  As a professor,
  So that I can collect additional information if needed,
  I want to add new attributes or questions to an existing form.
```

```
Scenario: Professor adds a new question to an existing form
  Given I am editing an existing form
  When I click "Add Question"
  And I enter the new question details
  Then the new question should be added to the form
```

```
Scenario: Professor adds a new attribute to an existing form
  Given I am editing an existing form
  When I click "Add Attribute"
  And I enter the new attribute details
  Then the new attribute should be added to the form
```

```
Feature: Remove Attributes/Questions
  As a professor,
  So that I can streamline the information collection process,
  I want to remove attributes or questions from an existing form.
```

```
Scenario: Professor removes a question from an existing form
  Given I am editing an existing form
  When I select a question
  And I click "Remove Question"
  Then the selected question should be removed from the form
```

```
Scenario: Professor removes an attribute from an existing form
  Given I am editing an existing form
  When I select an attribute
  And I click "Remove Attribute"
  Then the selected attribute should be removed from the form
```

```
Feature: Modify Attribute Weightage
  As a professor,
  So that I can adjust the priority of factors for team formation,
  I want to modify the weightage of attributes in an existing form.
```

```
Scenario: Professor modifies attribute weightage
  Given I am editing an existing form with attributes
  When I select the "Communication Skills" attribute
  And I change its weightage from 0.6 to 0.8
  Then the weightage for "Communication Skills" should be updated to 0.8
```

```
Feature: Close Form Access
  As a professor,
  So that I can make edits without students accessing it,
  I want to temporarily close access to a published form.
```

```
Scenario: Professor closes form access
  Given I have a published form
  When I click on "Close Form Access"
  Then the form status should change to "Closed"
  And students should not be able to access the form
```

```
Feature: Reopen Form
  As a professor,
  So that students can continue submitting or editing their responses,
  I want to reopen a form after editing.
```

```
Scenario: Professor reopens a closed form
  Given I have a closed form
  When I click on "Reopen Form"
  Then the form status should change to "Open"
  And students should be able to access and fill out the form again
```

```
Feature: View Change Summary
  As a professor,
  So that I can keep track of modifications over time,
  I want to view a summary of changes made to a form.
```

```
Scenario: Professor views form change summary
  Given I am on the form management page
  When I select an existing form
  And I click on "View Change History"
  Then I should see a list of all modifications made to the form
  And each modification should show the date, time, and type of change
```

```
Feature: Duplicate Form
  As a professor,
  So that I can create a similar form for a different class or semester without starting
      from scratch,
  I want to duplicate an existing form.
```

```
Scenario: Professor duplicates an existing form
  Given I am on the form management page
  When I select an existing form
  And I click on "Duplicate Form"
  Then a new form should be created with the same content as the selected form
  And I should be prompted to enter a new name for the duplicated form
```

```
Feature: Set Deadline for Form Submission
  As a professor
  So that I can enforce timely submission of student information
  I want to set a deadline for the form submission
```

```
Scenario: Professor sets a deadline for the form submission
  Given I am editing a form
  When I select the "Set Deadline" button
  And I choose a date and time from the deadline picker
  Then the selected deadline should be added to the form
  And students should not be able to submit the form after the deadline has passed
```

```
Feature: Update Deadline for Form Submission
  As a professor
  So that I can extend or adjust the submission window
  I want to update the deadline for the form submission
```

```
Scenario: Professor updates the deadline for the form submission
  Given I am editing a form with a previously set deadline
  When I click on the "Edit Deadline" button
  And I choose a new date and time from the deadline picker
  Then the updated deadline should be saved
  And students should see the new deadline when accessing the form
```

```
Feature: Deadline Error Handling
  As a professor
  So that I do not accidentally set an invalid deadline
  I want to receive an error message when selecting a past date for the deadline
```

```
Scenario: Professor attempts to set an invalid deadline
  Given I am editing a form
  When I attempt to set a past date and time in the deadline picker
  And I click "Save"
  Then I should receive an error message indicating that the deadline cannot be set in the
      past
  And the form should not save the invalid deadline
```

```
Feature: Block Submissions After Deadline
  As a professor
  So that I can ensure fairness
  I want to block students from submitting the form after the deadline has passed
```

```
Scenario: Submissions are blocked after the deadline
  Given I have set a deadline for the form
  And the deadline has passed
  When a student attempts to submit the form
  Then they should see a message indicating the deadline has passed
  And they should not be able to submit their responses
```

```
Feature: Automatically Close Form After Deadline
  As a professor
  So that I can ensure submissions stop after the deadline
  I want the form to automatically close when the deadline passes
```

```
Scenario: Form is automatically closed after the deadline
  Given I have set a deadline for the form
  And the deadline has passed
  When the deadline time is reached
  Then the form should automatically become unavailable for students to submit
  And students should see a message indicating that the form is closed
```

```
Feature: Reopen Form After Deadline
  As a professor
  So that I can allow late submissions, if necessary
  I want the ability to manually reopen the form after the deadline
```

```
Scenario: Professor reopens form after the deadline
  Given a form has been automatically closed after the deadline
  When I click on the "Reopen Form" button
  And I confirm the action
  Then the form should become available again for student submissions
  And students should receive a notification that the form has been reopened
```

```
Feature: Add Students
  As a professor,
  So that I can add the students,
  I want to upload an Excel file with student details.
```

```
Scenario: Professor uploads an Excel file with student information in the correct format
  Given I am logged into the system as a professor
  When I navigate to the form management page
  And I click on "Create New Form"
  Then I should see "Add Students" on top
  And I upload an Excel file and click "Upload"
  Then each student's email and class ID should be stored in the database
  And a success message "Upload successful" should be shown to the professor
```

```
Scenario: Professor uploads an Excel file with missing Email column
  Given I am logged into the system as a professor
  When I navigate to the form management page
  And I click on "Create New Form"
  Then I should see "Add Students" on top
  Then I should see a window to upload the file
  And I upload an Excel file with no "email" column and click on "Upload"
  Then the system should reject the upload with an error message "Email column is required"
```

```
Scenario: Professor uploads an Excel file with missing UIN column
  Given I am logged into the system as a professor
  When I navigate to the form management page
  And I click on "Create New Form"
  Then I should see "Add Students" on top
  Then I should see a window to upload the file
  And I upload an Excel file with no "UIN" column and click on "Upload"
  Then the system should reject the upload with an error message "UIN column is required"
```

```
Scenario: Professor uploads a file which has unsupported format
  Given I am logged into the system as a professor
  When I navigate to the form management page
  And I click on "Create New Form"
  Then I should see "Add Students" on top
  Then I should see a window to upload the file
  And I upload a .pdf file and click on "Upload"
  Then the system should reject the upload with an error message "Unsupported file format"
```

```
Scenario: Professor uploads an empty Excel file
  Given I am logged into the system as a professor
  When I navigate to the form management page
  And I click on "Create New Form"
  Then I should see "Add Students" on top
  Then I should see a window to upload the file
  And I upload an empty Excel file
  And an error message "The file is empty" should be displayed
  And no data should be stored in the database
```

```
Feature: View Current Courses
  As a professor
  So that I can see all the courses I am currently teaching
  I want to view a list of my courses on the courses page
```

```
Scenario: Viewing Existing Courses
  Given I am logged in as a professor
  And I have existing courses assigned to me
  When I navigate to the courses page
  Then I should see a list of all my current courses
  And each course should display its name and course code
```

```
Scenario: No Courses Available
  Given I am logged in as a professor
  And I have not added any courses yet
  When I navigate to the courses page
  Then I should see a prominent "Add Your First Course" button
  And I should see a brief description encouraging me to add a course to get started
```

```
Feature: Add a New Course
  As a professor
  So that I can organize and track my courses effectively
  I want to add a new course to my list of courses
```

```
Scenario: Successfully Adding a New Course
  Given I am on the courses page
```

```
When I click on the "Add New Course" button
And I fill in "Course Name" with "Introduction to Artificial Intelligence"
And I fill in "Course Code" with "AI81"
And I press the "Save" button
Then I should be redirected to the courses page
And I should see "Introduction to Artificial Intelligence (AI81)" listed among my courses
```

```
Scenario: Attempting to Add a Course Without Required Fields
  Given I am on the courses page
  When I click on the "Add New Course" button
  And I leave the "Course Name" field empty
  And I fill in "Course Code" with "AI82"
  And I press the "Save" button
  Then I should see an error message indicating that "Course Name is required"
  And the course should not be added to my list
```

```
Scenario: Attempting to Add a Course Without Course Code
  Given I am on the courses page
  When I click on the "Add New Course" button
  And I fill in "Course Name" with "Introduction to Machine Learning"
  And I leave the "Course Code" field empty
  And I press the "Save" button
  Then I should see an error message indicating that "Course Code is required"
  And the course should not be added to my list
```

```
Scenario: Adding a Course with Duplicate Course Code
  Given I am on the courses page
  And I already have a course with the course code "AI81"
  When I click on the "Add New Course" button
  And I fill in "Course Name" with "Advanced AI Techniques"
  And I fill in "Course Code" with "AI81"
  And I press the "Save" button
  Then I should see an error message indicating that "Course Code must be unique"
  And the duplicate course should not be added to my list
```

```
Feature: Navigate to Course Details
  As a professor
  So that I can manage specific course settings and forms
  I want to navigate to a course's detail page by clicking on it from the courses list
```

```
Scenario: Navigating to an Existing Course's Detail Page
  Given I am on the courses page
  And I have a course named "Introduction to Artificial Intelligence (AI81)"
  When I click on the course "Introduction to Artificial Intelligence (AI81)"
  Then I should be redirected to the form management page for that specific course
```

```
Feature: Search and Filter Courses
  As a professor
  So that I can quickly find specific courses among many
  I want to search and filter my list of courses
```

```
Scenario: Searching for a Course by Name
  Given I am on the courses page
  And I have multiple courses listed
  When I enter "Artificial Intelligence" into the search bar
  And I press "Search"
  Then I should see only the courses that include "Artificial Intelligence" in their name
```

```
Scenario: Filtering Courses by Semester
  Given I am on the courses page
  And my courses are spread across different semesters
  When I select "Fall 2024" from the semester filter dropdown
  Then I should see only the courses that are being taught in Fall 2024
```
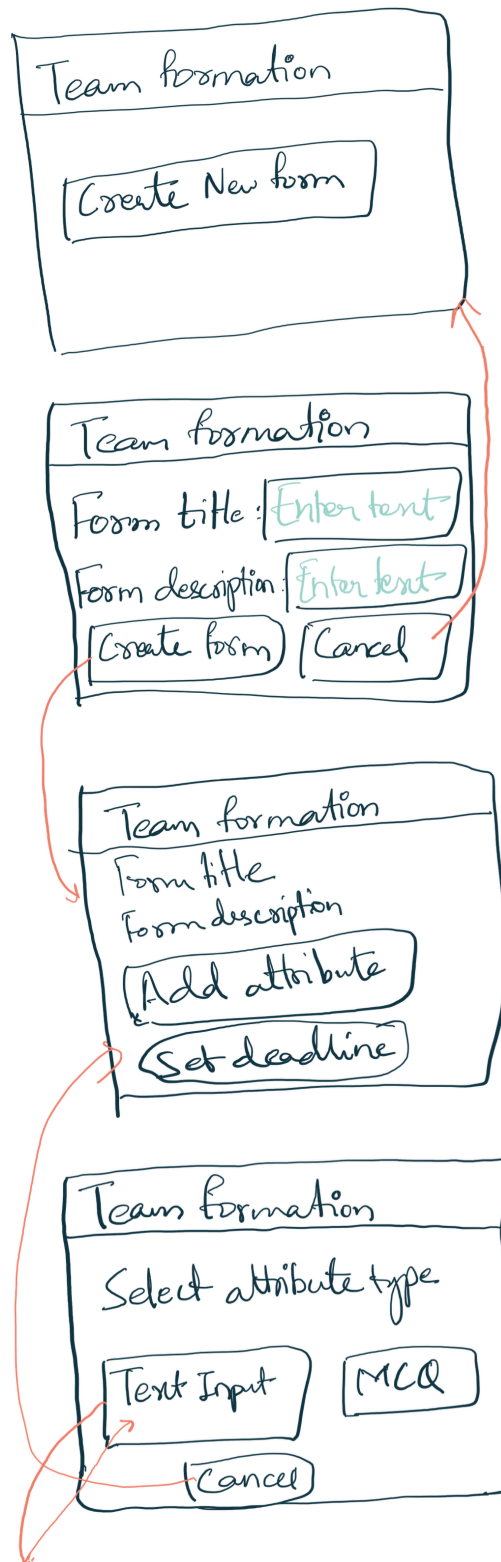
```gherkin
Feature: Sort Courses Alphabetically or by Date Added
  As a professor
  So that I can organize my course list according to my preference
  I want to sort my courses alphabetically or by the date they were added
```

```gherkin
Scenario: Sorting Courses Alphabetically
  Given I am on the courses page
  And I have multiple courses listed
  When I select the "Sort Alphabetically" option
  Then my courses should be reordered in ascending alphabetical order based on their names
```

```gherkin
Scenario: Sorting Courses by Date Added
  Given I am on the courses page
  And I have multiple courses added at different times
  When I select the "Sort by Date Added" option
  Then my courses should be reordered with the most recently added courses appearing first
```

**STORYBOARD:**

Team formation

Create New form

---

Team formation

Form title : Enter text

Form description : Enter text

Create form    Cancel

---

Team formation

Form title
Form description

Add attribute

Set deadline

---

Team formation

Select attribute type

Text Input    MCQ

Cancel

## Team formation

question : Enter text

[Add attribute]

[Cancel]

---

## Team formation

Form title

Form description

| Attributes | Options | weightage |
|---|---|---|
| Gender | - - - - - | [set weightage] |
| Ethnicity | [____] | [set weightage] |
| ⋮ | ⋮ | ⋮ |

---

Form title

Form description

| Attributes | Options | weightage |
|---|---|---|
| Gender | - - - - - | [input] [set] |

---
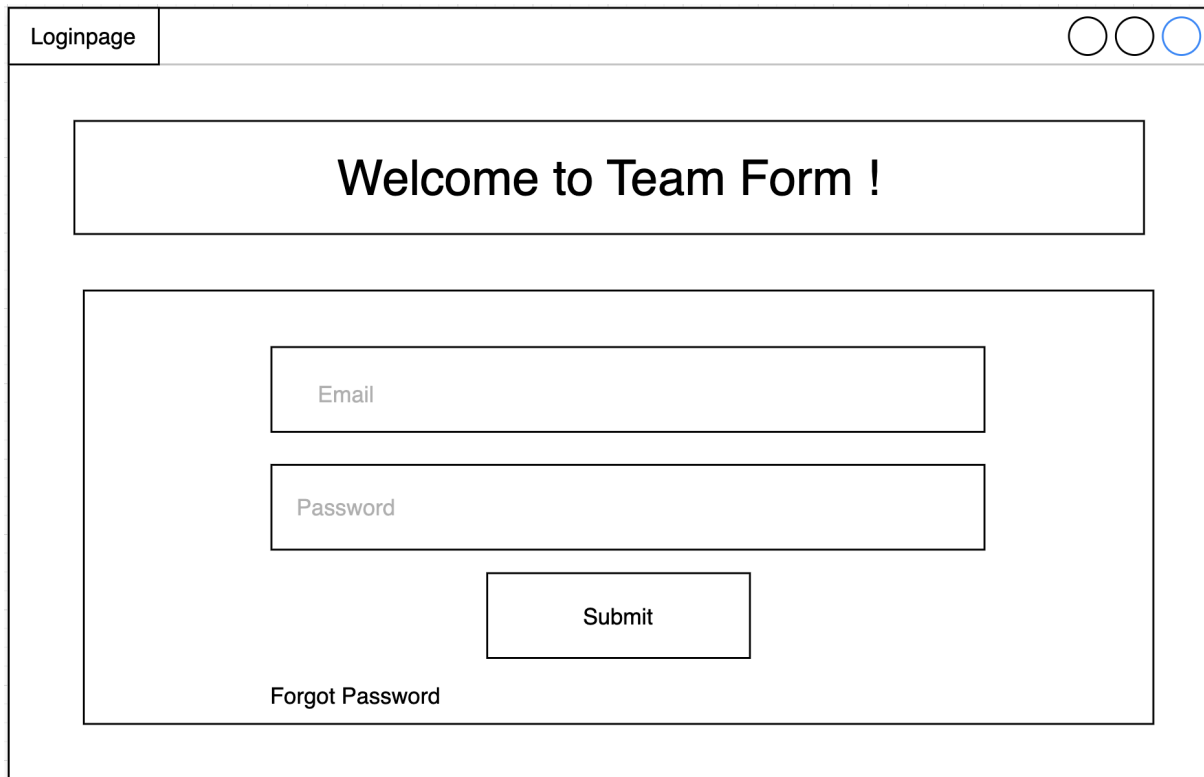
Form title

Form description

| Attributes | options | weightage |
|---|---|---|
| Gender | - - - | 0.3 [Reset] |

[Set deadline]

**USER INTERFACE (UI) MOCKUPS:**

1. Login page:

2. Form Page:

Add Students

**NEW FORM**

Form Title                         Enter your text here

Instruction Text (Optional)        Enter your text here

**Attributes**

Attribute Name                     Enter your text here

Scale                              ▼

Weightage                          Enter your text here

                                   + Add Attribute

Set Form Deadline                  MM DD YYYY

Preview Form          Save Form          Cancel

**SPRINT BACKLOG :**

**Sprint Goal:**

The goal for this sprint is to develop and implement functionalities for professors when logged into the application. This includes creating a secure login page that allows professors to authenticate using their Tamu credentials. Once logged in, professors will be able to create and customize a student data collection form, define and add specific attributes to the form, and set deadlines for the project. Additionally, they will have the capability to modify these settings as needed. By the end of this sprint, professors should have a fully functional interface that enables them to effectively manage team formation criteria.

**Stories pulled into the sprint, assigned developers and story points:**

| Team Members | Assigned User Stories | Story Points and Time Estimates |
|---|---|---|
| Hitha Magadi Vijayanand | Professor previews the form | 3 points (up to 2 days) |
| | Professor saves form as draft | 3 points (up to 2 days) |
| Phani Jyothi Kurada | Heroku deployment | 1 point (up to half a day) |
| Ramya Reddy Gotika | Professor sets a deadline for the form submission | 3 points (up to 2 days) |
| | Professor updates the deadline for the form submission | 3 points (up to 2 days) |
| Raja Karthik Vobugari | Professor uploads an Excel file with student information in the correct format | 3 points (up to 2 days) |
| | Scenario: Professor uploads an Excel with missing Email column | 1 point (up to half a day) |
| | Scenario: Professor uploads an Excel with missing UIN column | 1 point (up to half a day) |
| | Scenario: Professor uploads a file which has unsupported format | 1 point (up to half a day) |
| | Scenario: Professor uploads an empty excel | 1 point (up to half a day) |
| Rithika Sapparapu | Professor adds a text input question | 3 points (up to 2 days) |

| | Professor removes a question from an existing form | 3 points (up to 2 days) |
| --- | --- | --- |
| Sahithi Duppati | Professor sets attribute weightage | 3 points (up to 2 days) |
| Sai Jaideep Reddy Mure | Successful login with valid credentials | 3 points (up to 2 days) |
| | Failed login due to incorrect credentials | 3 points (up to 2 days) |
| Uday Kumar Reddy Mettukuru | Professor creates a new form | 3 points (up to 2 days) |
| | Professor adds a specific attribute | 3 points (up to 2 days) |

**PROJECT RESOURCES:**

**Heroku : https://fathomless-anchorage-60590-5aba8fd6be02.herokuapp.com/**

**GitHub Repo : https://github.com/phanijyothi11-tamu/team-formation.git**

**Project Management page : https://github.com/users/phanijyothi11-tamu/projects/1**

**Slack workspace : https://app.slack.com/client/T07PN8XD8D7/C07P6NWELCD**