AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH
FACULTY OF SCIENCE AND TECHNOLOGY

Assignment Title:	FoodSavvy: A Digital Solution for Efficient Food Waste Management		
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Course Title:	Software Engineering		
Course Code:	CSC 3112	Section:	I
Semester:	**Spring 2023-24**	Course Teacher:	Tonny Shekha Kar

* *Student(s) must complete all details except the faculty use part.*
** Please submit all assignments to your course teacher or the office of the concerned teacher.

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Faculty use only

FACULTY COMMENTS		
	Marks Obtained	
	Total Marks	

Functional Requirements for FoodSavvy: A Digital Solution for Efficient Food Waste Management:

1. **User Registration**
   1.1. The system will allow users to register with their email address and create a password.
   1.2. Upon registration, the system will send a verification email to the user for account activation.
   1.3. Users will provide basic information such as name, contact details, and location during registration.
   1.4. The system will validate the uniqueness of email addresses to prevent duplicate registrations.

Priority Level: High

2. **Software login**
   2.1. The software will allow users to login with their given username and password.
   2.2. The login credentials (username and password) will be verified from database records.
   2.3. If the login is successful, the home page of the application will be displayed.
   2.4. If the username or password has been inserted wrong or both has been inserted wrong, a message will be displayed on the screen to retry login.
   2.5. To reset the password, the system will generate a set of personal security questions previously set by the user during registration.

Priority level: High
Precondition: User must have valid user id and password

3. **Forgot Password:**
   3.1. The software will provide a "Forgot Password" functionality on the login page.
   3.2. After clicking the "Forgot Password" button, the system will prompt the user to enter their registered email address.
   3.3. After entering the email address, the system will validate it and check if it exists in the database.
   3.4. If the email address is valid, the system will generate a set of personal security questions previously set by the user during registration.
   3.5. The user will be prompted to answer the security questions to verify their identity.
   3.6. If the user answers the security questions correctly, the system will allow them to reset their password.
   3.7. The system will take the user to another page to change, or a temporary password will be sent to the user's registered email address.

Priority Level: High

4. **Food Inventory Management**
   4.1. Users will be able to add food items to their inventory with details such as name, quantity, expiration date, and category.
   4.2. The system will send notifications to users about expiring food items based on specified thresholds.
   4.3. Users will have the ability to update, delete, or mark items as consumed in their inventory.
   4.4. The system will generate reports on food inventory levels and consumption patterns for users.

Priority Level: High

5. **Donation and Sharing**
   5.1. Users will have the option to donate excess or unused food items to charitable organizations or other users.
   5.2. The system will facilitate the sharing of surplus food among users within a designated community or network.
   5.3. Users will be able to specify preferences and dietary restrictions for donated or shared food items.

Priority Level: High

6. **Analytics and Insights**
   6.1. The system will provide analytics on food wastage trends, including types of food wasted and reasons for disposal.
   6.2. Users will have access to insights and recommendations for reducing food waste based on their consumption patterns.
   6.3. The system will support data visualization tools to present analytics in an easily understandable format.

   Priority Level: Medium

7. **User Feedback and Ratings**
   7.1. Users will have the ability to provide feedback on donated or shared food items, including ratings and comments.
   7.2. The system will aggregate user feedback to help improve the quality and reliability of donated or shared items.
   7.3. Users will be able to rate the overall experience of using the food waste management system and provide suggestions for enhancements.

Priority Level: High

Non-Functional Requirements for FoodSavvy: A Digital Solution for Efficient Food Waste Management:

1. **Usability**
   - 1.1 Users will be able to navigate the system easily and perform tasks without extensive training.
   - 1.2 The system interface will be intuitive and user-friendly, with clear instructions and prompts.
   - 1.3 The average time for users to add, update, or remove items from their inventory will not exceed two minutes.

   Priority Level: High

2. **Performance**
   - 2.1 The system will be responsive and capable of handling concurrent user interactions without significant delays.
   - 2.2 Response time for critical functions such as login, inventory management, and donation processing will be less than two seconds.
   - 2.3 The system will be scalable to accommodate increasing user activity and data volume over time.

   Priority Level: High

3. **Security**
   - 3.1 User authentication and authorization will be implemented to ensure secure access to the system.
   - 3.2 The system will encrypt sensitive user data such as passwords and personal information to prevent unauthorized access.
   - 3.3 Regular security audits and vulnerability assessments will be conducted to identify and address potential security risks.

   Priority Level: High

4. **Reliability**
   - 4.1 The system will have a high level of reliability, with minimal downtime and consistent performance under normal operating conditions.
   - 4.2 Automated backup and recovery mechanisms will be implemented to ensure data integrity and availability in the event of system failures.
   - 4.3 The system will have failover capabilities to redirect traffic to backup servers or alternative resources in case of hardware or network failures.

   Priority Level: Medium

5. **Accessibility**
   5.1 The system will comply with accessibility standards such as WCAG (Web Content Accessibility Guidelines) to ensure equal access for users with disabilities.
   5.2 Features such as screen reader compatibility and keyboard navigation will be provided to support users with visual or motor impairments.
   5.3 User interfaces will be designed with consideration for color contrast, font size, and other factors to enhance usability for all users.

   Priority Level: High

Project Requirements for FoodSavvy: A Digital Solution for Efficient Food Waste Management:

1. **Development Tools**
   1.1 The development team will use agile project management tools such as Jira or Trello to track project progress and manage tasks.
   1.2 Version control systems such as Git will be utilized for collaborative development and code management.
   1.3 The development environment will include IDEs like Visual Studio Code or IntelliJ IDEA for coding and debugging purposes.

2. **Testing**
   2.1 Automated testing tools will be employed for functional and regression testing of the system.
   2.2 The testing team will create comprehensive test cases and scenarios to ensure thorough coverage of system functionality.
   2.3 Performance testing tools such as Apache JMeter will be used to assess system scalability and responsiveness underload.

3. **Deployment**
   3.1 The system will be deployed on a secure and reliable hosting infrastructure, such as AWS or Azure.
   3.2 Deployment will follow a continuous integration/continuous deployment (CI/CD) pipeline to streamline the release process.
   3.3 The deployment team will conduct thorough testing in a staging environment before deploying updates to the production environment.

4. **Documentation**
   4.1 Comprehensive documentation will be provided for system architecture, design decisions, and technical specifications.
   4.2 User manuals and guides will be created to assist users in navigating the system and performing common tasks.

4.3 API documentation will be available for developers to integrate with the system and build custom applications or extensions.

5. Training and Support

5.1 Training materials and sessions will be conducted for users to familiarize them with system features and functionalities.

5.2 Helpdesk or support channels will be established to provide assistance and address user inquiries or issues in a timely manner.

5.3 Knowledge transfer sessions will be organized for internal teams to ensure continuity of system maintenance and support beyond the project lifecycle.

6. Compliance

6.1 The system will comply with relevant data protection regulations such as GDPR (General Data Protection Regulation) to ensure the privacy and security of user data.

6.2 Regulatory compliance checks will be performed to verify adherence to industry standards and best practices in food management and waste reduction.

6.3 The development process will follow ethical guidelines and principles to promote sustainability and social responsibility in food waste management practices.