

# AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH

Faculty of Science and Technology



Project Name:	Government Regulated Price Hike Control Application		
Assignment No:	Date of Submission: 24 September, 2024		
Course Title:	Software Engineering		
Course Code:	CSC3112	Section:	H
Semester:	Summer	2023-24	Course Teacher: TONNY SHEKHA KAR

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Group Name/No.: 01

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2	TRIDIB SARKAR	22-46444-1	BSc [CSE]	
3	CHAYAN ADHIKARY	22-47112-1	BSc [CSE]	
4	PROGGA PAROMITA DAS	22-47138-1	BSc [CSE]	
5	MD. YASIR ARAFAT TAMIM	22-47231-1	BSc [CSE]	

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FACULTY COMMENTS	Marks Obtained	
	Total Marks	

## 1. Test Cases:

Project Name: Government Regulated Price Hike Control Application.		Test Designed by: MD. MEHEDI HASAN POLASH		
Test Case ID: GRPHCA_01		Test Designed date: 9/9/2024		
Test Priority (Low, Medium, High): High		Test Executed by: MD. MEHEDI HASAN POLASH		
Module Name: Registration		Test Execution date: 9/9/2024		
Test Title: Register with username, email address, contact number, NID number, company name, address, user type, birth date, gender, password, confirm password, payment.				
Description: This test validates the registration process on the software's signup page.				
Precondition (If any): The user is required to submit all necessary information, ensuring uniqueness and proper validation.				
Test Steps	Test Data	Expected Results	Actual Results	Status
1. Launch the software  2. Provide details for each section  3.Check all the required section  4. Enter signup button	Username: polash  Email: polash@gmail.com  Password: #55Srb  Confirm Password: #55Srb  Contact number: +88 01452369752  NID number: *****  Company name: ***  Address: ****  User type: Reseller or Producer or Wholesaler  Birth date: ***  Gender: Male or Female  Payment: ****	The user should successfully complete the registration process, and all submitted information must be stored in the database for future validation.	As expected,	Pass
Post Condition: All data is saved in the database for future validation.				

Project Name: Government Regulated Price Hike Control Application.		Test Designed by: MD. MEHEDI HASAN POLASH		
Test Case ID: GRPHCA_ 02		Test Designed date: 9/9/2024		
Test Priority (Low, Medium, High): High		Test Executed by: MD. MEHEDI HASAN POLASH		
Module Name: Registration		Test Execution date: 9/9/2024		
Test Title: Register with username, email address, contact number, NID number, company name, address, user type, birth date, gender, password, confirm password, payment.				
Description: This test validates the registration process on the software's signup page.				
Precondition (If any): The user is required to submit all necessary information, ensuring uniqueness and proper validation.				
Test Steps	Test Data	Expected Results	Actual Results	Status
1. Launch the software  2. Provide details for each section  3.Check all the required section  4. Enter signup button	Username: polash  Email: polash@gmail.com  Password: #55Srb  Confirm Password: #55Srb  Contact number: +88 014552  NID number: *****  Company name: ***  Address: ****  User type: Reseller or Producer or Wholesaler  Birth date: ***  Gender: Male or Female  Payment: ****	The user should successfully complete the registration process, and all submitted information must be stored in the database for future validation.	Not as expected (Contact number invalid)	Fail
Post Condition: The user is not registered, remains on the registration page, and is prompted with an error message to correct the invalid contact number. The dashboard is not accessible until the issue is resolved and registration is completed successfully.				

Project Name: Government Regulated Price Hike Control Application.		Test Designed by: TRIDIB SARKAR		
Test Case ID: GRPHCA_03		Test Designed date: 9/9/2024		
Test Priority (Low, Medium, High): High		Test Executed by: TRIDIB SARKAR		
Module Name: Login		Test Execution date: 9/9/2024		
Test Title: Login with user type, user id and password				
Description: This test checks that the software's login functionality works correctly with valid credentials.				
Precondition (If any): To access this, users need to be registered and have valid login credentials.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Open the software  2. Select login/signup  3. Select user type  4. Enter user id  5. Enter password	User type: Reseller or Producer or Wholesaler  User id: 753159  Password: 45dwta\$	The user should log in successfully and gain access to the dashboard.	As expected,	Pass
Post Condition: The user is logged in and has successfully accessed the dashboard.				

Project Name: Government Regulated Price Hike Control Application.		Test Designed by: TRIDIB SARKAR		
Test Case ID: GRPHCA_04		Test Designed date: 9/9/2024		
Test Priority (Low, Medium, High): High		Test Executed by: TRIDIB SARKAR		
Module Name: Login		Test Execution date: 9/9/2024		
Test Title: Login with user type, user id and password				
Description: This test validates the software's login functionality with correct credentials				
Precondition (If any): The user must be registered and possess valid login credentials				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1.Open the software  2. Select login/signup  3. Select user type  4. Enter user id  5. Enter password	User type: Reseller or Producer or Wholesaler  User id: 75159  Password: 45wta\$	The user should log in successfully and gain access to the dashboard.	Not as expected (invalid user id or password)	Fail
Post Condition: The user is not logged in successfully in the dashboard because of invalid user id or password.				

Project Name: Government Regulated Price Hike Control Application.		Test Designed by: MD. YASIR ARAFAT TAMIM		
Test Case ID: GRPHCA_05		Test Designed date: 9/9/2024		
Test Priority (Low, Medium, High): High		Test Executed by: MD. YASIR ARAFAT TAMIM		
Module Name: Forgot password		Test Execution date: 10/9/2024		
Test Title: Password reset				
Description: Test software forgot password page				
Precondition (If any): User must fill-up all the requirements with uniqueness and validation				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the software  2. Click forgot password  3. Enter mail address  4.Enter code form mail  5.Click Continue  6.Enter new password  7.Reenter new password  8. Click update password	Email: tamim@gmail.com  Enter code: 1234  Password: @1259t  Confirm Password: @1259t	User should be able to reset password.	As expected,	Pass
Post Condition: All information is recorded in the database for future verification.				

Project Name: Government Regulated Price Hike Control Application.		Test Designed by: CHAYAN ADHIKARY		
Test Case ID: GRPHCA_ 06		Test Designed date: 09/11/2024		
Test Priority (Low, Medium, High): High		Test Executed by: CHAYAN ADHIKARY		
Module Name: New Product Entry		Test Execution date: 09/11/2024		
Test Title: Test the functionality of New Product Add				
Description: This test verifies the functionality of the new product add with product ID, price, stock, entry date etc.				
Precondition (If any): User must be logged in to their own Dashboard.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
Test Steps: 1. Log in to the Reseller Dashboard. 2. Enter Product ID: GR2232 3. Enter Product Name: Sugar 4.Enter Product Price: 60 tk/kg 5.Enter Category: Grocery 6.Enter Brand Name: TCB 7.Enter Current Stock: 100000 ton 8.Click Add button 9. Confirm smooth product entry.	Shown on the side table: GR2232  Sugar 60 tk/kg  Grocery TCB 100000 ton 9/11/2024	Product info should be entered on the side table and home page.	As expected,	Pass
Post Condition: The user successfully added product information to the information table which will be shown on the side and also in the home page. Product entry date will be shown automatically.				

Project Name: Government Regulated Price Hike Control Application.		Test Designed by: CHAYAN ADHIKARY		
Test Case ID: GRPHCA_07		Test Designed date: 09/11/2024		
Test Priority (Low, Medium, High): High		Test Executed by: CHAYAN ADHIKARY		
Module Name: New Product Entry		Test Execution date: 09/11/2024		
Test Title: Test the functionality of New Product Add				
Description: This test verifies the functionality of the New Product Add with product ID, price, stock, entry date etc. If there is any missing information, the product should not be listed in the table.				
Precondition (If any): User must be logged in to their own Dashboard.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
Test Steps: 1. Log in to the Reseller Dashboard. 2. Enter Product ID: GR2232 3. Enter Product Name: Sugar 4. Enter Product Price: Leave Empty 5. Enter Category: Grocery 6. Enter Brand Name: TCB 7. Enter Current Stock: 1037727 ton	Error Message: Fill all blanks	Product info shouldn't show in the table with an empty cell. Also, a pop-up error message should be shown.	As expected,	Pass
Post Condition: The user will not successfully add product information to the information table and a pop up shown.				

Project Name: Government Regulated Price Hike Control Application.		Test Designed by: PROGGA PAROMITA DAS		
Test Case ID: GRPHCA_08		Test Designed date: 09/11/2024		
Test Priority (Low, Medium, High): High		Test Executed by: PROGGA PAROMITA DAS		
Module Name: Previous Product Update		Test Execution date: 10/11/2024		
Test Title: Test the functionality of Previous Product Update				
Description: This test verifies the functionality of the Previous Product Update with product ID, price, stock. Entry date will be automatically updated				
Precondition (If any): User must be logged in to their own Dashboard.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
Test Steps: 1. Log in to the Reseller Dashboard. 2. Enter Product ID: GR2232 3. Enter Updated Price: 65 4. Enter Updated Stock: 1000027 ton 5. Click Update button 6. Confirm smooth product update.	Shown on the side table: GR2232 Sugar 65 tk/kg Grocery TCB 1000027 ton 10/11/2024	Product info updated in a new row with auto date update.	As expected,	Pass
Post Condition: The user successfully see an update on the table.				

Project Name: Government Regulated Price Hike Control Application.		Test Designed by: PROGGA PAROMITA DAS		
Test Case ID: GRPHCA_09		Test Designed date: 09/11/2024		
Test Priority (Low, Medium, High): High		Test Executed by: PROGGA PAROMITA DAS		
Module Name: Previous Product Update		Test Execution date: 10/11/2024		
Test Title: Test the functionality of Previous Product Update				
Description: This test verifies the functionality of the Previous Product Update with product ID, price, stock. Entry date will be automatically updated. In this test a product will be deleted totally.				
Precondition (If any): User must be logged in to their own Dashboard.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
Test Steps: 1. Log in to the Reseller Dashboard. 2. Enter Product ID: GR2232  2. Click Delete button  3. Confirm smooth product remove	GR2232 Row will be deleted	One row deletes	As expected,	Pass
Post Condition: The user will not see the sugar row in the data table.				

## 2. UI Design:



# Price Hike Control



# Color Palette:



**Due to Government Projects color palette  
chosen as Green Shade.**



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**PHCBD**  
Price Hike Control-Bangladesh



Login/Signup



Price Update



Membership Plan



BSTI Certified

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Wednesday 18 Sep, 2024



### Recent Price Update

Soyabean oil	90/lt	17 sep, 24
Sugar	60/kg	17 sep, 24
Onion	45/kg	16 sep, 24
Garlic	180/kg	15 sep, 24
Chicken[B]	130/kg	13 sep, 24

### Recent BSTI Approved



AKU FOOD & BEVERAGE LTD.



SQUARE  
Food and Beverage Ltd.



ISPAHANI  
IMPORTERS & EXPORTERS LTD.



ACI Foods Limited

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**GET 25% OFF**

### Recent News



Onion price jumps up to Tk 120 a kg

Source: The Daily Star

[Click to Read](#)



Govt to buy 8,000 tonnes of lentil...

Source: The Daily Star

[Click to Read](#)



Soybean oil price cut to Tk174/litre, sugar ..

Source: TBS news

[Click to Read](#)



Broiler chicken price to go down...

Source: The Daily Star

[Click to Read](#)



12kg LPG cylinder price increased

Source: Dhakatribune

[Click to Read](#)



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# Membership



**Entrepreneur**  
1000/BDT



**Wholesaler**  
1000/BDT



**Reseller**  
1000/BDT

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Price Hike Control-Bangladesh



# Signup

Choose User type



Enter your brand name

Full Name

Enter TIN Number

Enter your email

Enter your Birth Date

Enter your phone number

Gender



Enter your full address

Password

Enter your NID

Confirm Password

**Total: 0.00 BDT**

**Payment Method:**

bKash



**Signup**

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# Login

Choose User type 

Username/ Phone Number

Password

Login

Don't have any account? [Signup](#)  
[Forgot password?](#)

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Login/Signup



Price Update



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Wednesday 18 Sep, 2024



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Source: TBS news

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Broiler chicken price to go down...

Source: The Daily Star

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12kg LPG cylinder price increased

Source: Dhakatribune

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# Product Search



## Recent Update

Soyabean oil	90/lt	18 sep, 24	500000/ltr	TCB
Sugar	60/kg	18 sep, 24	400000/mton	Teer
Onion	45/kg	16 sep, 24	100000/mton	TCB
Garlic	180/kg	15 sep, 24	923400/mton	Sawpno
Chicken[B]	130/kg	13 sep, 24	700000/mton	Sawpno
Soyabean oil	90/lt	17 sep, 24	500000/ltr	TCB
Sugar	55/kg	17 sep, 24	400000/mton	Fresh
Onion	45/kg	16 sep, 24	100000/mton	TCB
Garlic	180/kg	15 sep, 24	923400/mton	Sawpno
Chicken[B]	130/kg	13 sep, 24	700000/mton	Sawpno

## Previous Record

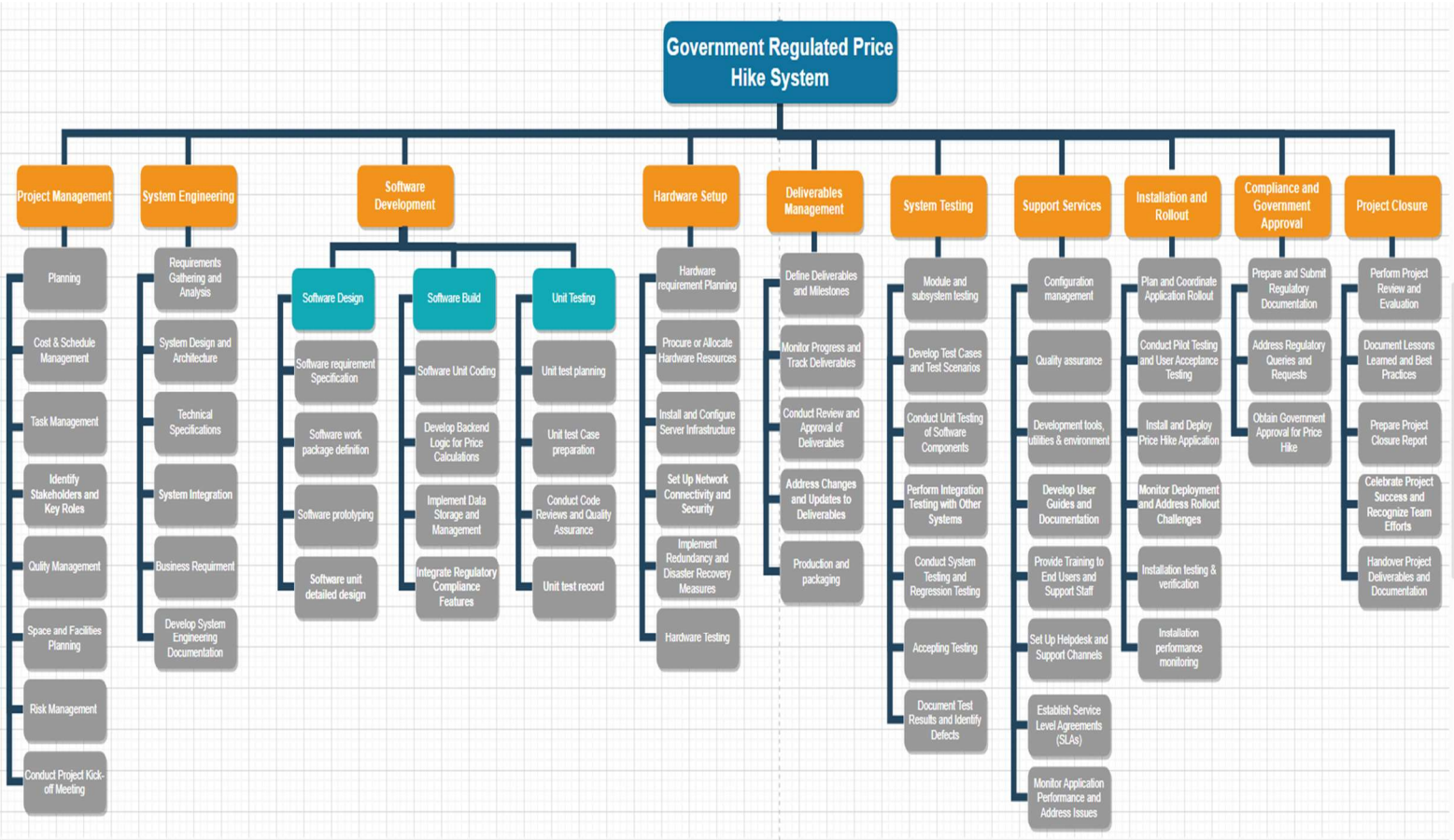
110/lt	15sep, 24
65/kg	11 sep, 24
40/kg	14 sep, 24
170/kg	12 sep, 24
135/kg	11 sep, 24
110/lt	15sep, 24
65/kg	11 sep, 24
40/kg	14 sep, 24
170/kg	12 sep, 24
135/kg	11 sep, 24



## Things to concern:

- **Regular Monitoring**
- **Physical Stock monitoring**
- **Reach out to mass people or Rural area**
- **Mobile App or a Responsive app needed**

Work Breakdown Structure



Project Estimation:

$$PM = 2.4 \times (6)^{1.05} = 15.75$$

$$DM = 2.5 \times (15.75)^{0.35} = 6.56$$

$$ST = \frac{PM}{DM} = \frac{15.75}{6.56} = 2.40 \cong 3 \text{ People}$$

$$PM = 2.4 * (6)^{1.05} = 15.75$$

$$DM = 2.5 * (15.75)^{0.35} = 6.56$$

$$ST = \frac{PM}{DM} = \frac{15.75}{6.56} = 2.40 = 3 \text{ People}$$

**Timeline Chart**

		Pre-Game										Development (Game Phase)															Post-Game				
Task	Sprint	Initialize			Sprint 1			Sprint 2			Sprint 3			Sprint 4			Sprint 5			Sprint 6			Sprint 7			Sprint 8			Sprint 9		
Name	Week	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
A: MEHEDI																															
B: TAMIM																															
C: TRIDIB																															
D: CHAYAN																															
E: PROGGA																															
F: MEHEDI, TRIDIB																															

**Activity Key:**

- A: Overall Requirements Gathering**
- B: Develop Environment and Infrastructure**
- C: Overall Design**
- D: Developer 1**
- E: Developer 2**
- F: Tester, Reviewer and Deployment**

## Gantt Chart

Task	Pre-Game										Game														Post-Game						
	Sprint	Initialize			Sprint 1		Sprint 2		Sprint 3		Sprint 4				Sprint 5		Sprint 6		Sprint 7		Sprint 8		Sprint 9								
	Week	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Planning																															
Cost and Schedule Management																															
Task and Quality Management																															
Identify stakeholders and Key Roles																															
Risk Management																															
Space and facility planning																															
Conduct project kickoff meeting																															
Requirement Gathering																															
Technical specification																															
Software Requirement Specification																															
Software Unit Coding																															
Unit test planning																															
Software Work Package Definition																															
Develop Backend Logic for Price calculation																															
Unit test case preparation																															
Software Prototyping																															
Implement Data Storage and management																															
Conduct Code Reviews and assurance																															
Software Unit detailed Design																															
Integrate Regulatory Compliance Facilities																															
Unit Test Records																															
Hardware Requirement Planning, Allocate																															
Install and Configure Server																															
Set up Connectivity and Security																															
Disaster Recovery measures																															
Hardware testing																															
Module and sub system testing																															
Develop test cases and Test scenarios																															
Conduct Unit Testing and Software comp.																															
Perform Integration with other systems																															
System Integration																															
System Testing																															
Business Requirements																															
Develop System Engr. Documentation																															
Define Deliverables and Milestones																															
Configuration Management																															
Monitor progress and Track Deliverables																															
Quality Assurance																															
Conduct Review and approval of delivery																															
Development tools, utilities, environments																															
Address Changes and updates to deliver																															
Accepting Testing																															
Document Test Results and identify defects																															
Develop User guides and Documentation																															
Provide training to End users, staffs																															
Production and Packaging																															
Setup Help desk and support channels																															
Established service level agreement																															

### EVA Calculation

Task	Planned Effort	Actual Effort
1	15	15.8
2	17	13
3	4	6
4	22	19.3
5	12	17
6	11	19
7	13	9.6
8	10	16
9	20	24
10	23	18
11	8	
12	15	
13	19	
14	14	
15	7	

Total Task = 66, Effort Estimated= 315 Person Day

BAC = 315, ACWP = 157.7, BCWS = 210, BCWP = 147

$SPI = BCWP / BCWS = 147 / 210 = 0.7$

$SV = BCWP - BCWS = 147 - 210 = -63$  person- day

$CPI = BCWP / ACWP = 147 / 157.7 = 0.93$

$CV = BCWP - ACWP = 147 - 157.7 = -10.7$  or -11 person-day

**% Schedule for completion =  $BCWS / BAC = 210 / 315 = 66.66\%$**

[% of work scheduled should have been done at this time]

**% complete =  $BCWP / BAC = 147 / 315 = 46.66\%$**

[% of work completed at this time]

**BUILDING RISK TABLE:**

Risk Description	Impact	Probability	Category	RMMM
Regulatory Compliance Issues	2	70%	PR	Mitigation: Regularly consult with legal and compliance experts. Monitoring: Conduct compliance audits at each project phase. Management: Adjust policies and procedures based on legal advice and regulatory updates.
System Downtime	2	60%	DE, TE	Mitigation: Implement redundancy and failover systems. Monitoring: Continuously monitor system performance. Management: Develop and execute a quick recovery plan to minimize downtime.
User Resistance/Training	3	80%	CU	Mitigation: Provide comprehensive user training early and often. Monitoring: Gather and act on user feedback regularly. Management: Adjust training methods and include usability enhancements based on user input.
Data Loss	2	50%	TE	Mitigation: Implement automated backups and disaster recovery plans. Monitoring: Regularly test data recovery systems. Management: Develop rapid response plans to minimize loss if data loss occurs.
Inadequate Scalability	2	60%	DE, TE	Mitigation: Design systems for scalability from the start. Monitoring: Track system performance metrics regularly. Management: Plan for scaling up infrastructure and services based on demand growth.
Data Breach/Security Compromise	1	40%	PR, DE	Mitigation: Implement robust encryption and access controls. Monitoring: Perform regular security audits and penetration tests. Management: Have an incident response plan in place in case of breach.
Unforeseen Technological Changes	3	50%	TE	Mitigation: Implement robust encryption and access controls. Monitoring: Perform regular security audits and penetration tests. Management: Have an incident response plan in place in case of breach.

Insider Threats	2	30%	ST	Mitigation: Implement strict access controls and monitoring for insider activity. Monitoring: Regular employee activity audits. Management: Have contingency plans for dealing with insider threats, including rapid investigation procedures.
Lack of Penetration Testing	3	70%	PR, DE	Mitigation: Schedule periodic penetration tests and vulnerability assessments. Monitoring: Track test results and address vulnerabilities. Management: Incorporate penetration testing into routine security management practices.
Technical Compatibility Issues	3	60%	DE	Mitigation: Ensure thorough testing of integrations between systems. Monitoring: Conduct regular compatibility checks. Management: Allocate additional time and resources for resolving compatibility issues.
Integration Challenges	2	70%	DE, TE, ST	Mitigation: Plan early for integration tasks and allocate adequate resources. Monitoring: Regular integration testing and reviews. Management: Adjust timelines and resources for complex integration phases.
Inaccurate Price Calculations	2	80%	TE	Mitigation: Use automated systems for price calculations and validations. Monitoring: Periodic audits of pricing algorithms and results. Management: Have backup systems in place for manual validation or correction of calculations.
Performance Degradation	3	50%	TE	Mitigation: Implement performance monitoring tools and optimizations. Monitoring: Continuously monitor system performance under varying loads. Management: Optimize infrastructure and refactor code to improve performance.
Lack of Documentation	3	40%	PR	Mitigation: Assign dedicated resources for documentation. Monitoring: Review documentation progress regularly. Management: Set documentation standards and deadlines to ensure completeness and accuracy.



Changing Customer Needs	2	50%	CU	Mitigation: Use agile development methods to accommodate changing requirements. Monitoring: Regular feedback loops with customers to ensure alignment. Management: Prioritize and adjust the scope based on evolving customer needs.
Vendor/Supplier Reliability	3	70%	PR, TE, ST	Mitigation: Maintain strong communication with suppliers and have backup vendors. Monitoring: Regular vendor performance reviews. Management: Develop contingency plans for supplier failures or delays.
Skill Shortages	2	60%	ST	Mitigation: Upskill current employees and have a clear hiring strategy. Monitoring: Track team skills and project needs. Management: Allocate resources for training and recruitment of required expertise.
Budget Overruns	2	80%	BU	Mitigation: Set realistic budgets and build in contingencies. Monitoring: Regular budget reviews and expense tracking. Management: Reprioritize project tasks or secure additional funding if necessary.

Impact values:

- 1 - Catastrophic
- 2 - Critical
- 3 - Marginal
- 4 - Negligible

### **Allocation:**

### **Project Management:**

**Project Manager:** Oversees the entire project, ensuring proper planning, coordination, stakeholder communication, and risk management strategies are applied.

**Legal Compliance Officer:** Ensures that the project complies with regulatory requirements and that legal concerns are addressed throughout the project lifecycle.

### **Development Team:**

**System Architect:** Designs the scalable system architecture to ensure it can handle anticipated load and accommodate future growth.

**Backend Developer:** Develops the backend systems, including database interactions and API integrations.

**Frontend Developer:** Implements user interfaces for the web and mobile platforms, ensuring they are user-friendly and intuitive.

**Database Administrator:** Manages the system's database, ensuring data integrity, security, and scalability.

**Mobile App Developer:** Develops the mobile application for end-users to access system functionalities.

**Security Specialist:** Implements robust security measures to mitigate risks such as data breaches and insider threats, ensuring compliance with best practices and regulations.

**Integration Specialist:** Manages the technical integration between various system components to ensure compatibility and smooth functioning.

### **Testing and Quality Assurance:**

**QA Lead:** Manages all quality assurance activities, ensuring the system meets functional, security, and scalability requirements.

**Test Analyst:** Develops and executes test plans for functional, security, and integration testing.

**QA Engineers:** Assist in functional, security, performance, and penetration testing, ensuring thorough coverage of potential vulnerabilities.

### **Deployment and Maintenance:**

**Deployment Manager:** Oversees the deployment process, ensuring that scalability and downtime risks are mitigated, and coordinates with system administrators.

**System Administrators:** Manage the infrastructure, ensuring uptime, security, and system performance. They monitor for hardware failures and execute timely replacements.

**Deployment Engineers:** Assist in rolling out updates and patches to the system while ensuring minimal downtime and maintaining data integrity.

### **Customer Support and Training:**

**Training Specialist:** Provides training resources and guides to ensure that both end-users and internal teams are properly trained, mitigating risks of user resistance.

**Support Engineers:** Provide technical support, address user feedback, and resolve system issues. They also ensure that customer needs and requirements are met and help maintain high user satisfaction.

### **Security and Compliance:**

**Compliance Officer:** Ensures that all legal and regulatory requirements are adhered to, conducts regular audits, and coordinates with development teams for compliance adjustments.

**Incident Response Team:** Dedicated team for addressing security breaches and data loss, responsible for mitigating any immediate damage and communicating with stakeholders.

This structure emphasizes proper risk handling for scalability, security, compliance, and user support.