American International University-Bangladesh (AIUB)
Department of Computer Science
Faculty of Science &Technology (FST)
Fall 22 23

Section: A

Software Quality Assurance and Testing

Digital Petroleum System & Mechanism Tech

A Report submitted

By

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Under the supervision of

ABHIJIT BHOWMIK

Associate Professor

Checked By Industry Personnel

Name:

Designation:

Company:

Sign:

Date:

Software Test Plan

for

< **Digital Petroleum System & Mechanism Tech** >

Version 1.0 approved

Prepared by <Samir, Shafiul, Shagor, Tareq>

< American International University-Bangladesh>

<date created>

Checked By Industry Personnel

Name:

Designation:

Company:

Sign:

Date:

Table of Contents

Revision History

Revision	Date	Updated by	Update Comments
0.1	2022.11.24	Samir Faisal	First Draft
0.2	2022.11.27	Shagor Kanti	Second Draft
0.3	2022.11.30	Shafiul Islam	Third Draft
0.4	2022.12.03	Samir Faisal	Fourth Draft
0.5	2022.12.06	Shafiul Islam	fifth Draft
0.6	2022.12.09	Tareq Annan	Final

1. TEST PLAN IDENTIFIER:RS-MTP01.3

2. REFERENCES

1) Software Requirement Specification (SRS) Document
2) https://mockflow.com/

3. INTRODUCTION

Background to the Problem

We have been watching since my childhood that people cars or vehicles breakdown in the middle of the road or their diesel or petrol runs out. In this case, people have to suffer from various kinds of sufferings. Since the vehicle stopped in the middle of the road, no mechanic could be found anywhere in the vicinity. Sometimes people vehicles stop in the middle of the road because they do not have enough petrol or diesel in their vehicles. In that case, they have to push the vehicles and take them to the front petroleum pump, which is very difficult.

This is a problem that many people face in their daily life, but the problem no such problem has been solved in Bangladesh till date. These types of problems waste a lot of people's time and at the same time these problems increase their physical labor. There are many people who go out for urgent work and face such problems along the way. At least, it is important to take some kinds of steps for them. So, in my opinion such an application would be extremely good for solving these problems.

Solution to the Problem

This is a problem that many people face in their daily lives, but no such problem has been solved in Bangladesh till date. These issues require time and effort. Urgent workers regularly face similar challenges. Helping is crucial. I suppose this app might fix these concerns. We're developing a mobile app to simplify vehicle fuel purchasing and maintenance. Since there is no equivalent project on the market, the solution can satisfy the business objective and accurately solve the car problem.

Our application is called "Digital Petroleum System & Mechanism Tech" which will have 4 types of users and they are fuel station owner, customer, delivery man or service man, service center owner. This app will allow us to do certain operations such as

1. Bike riders or customers can request fuel delivery.
2. Bike riders or customers can request vehicle servicing.

3. The fuel station owner may accept the rider's request and appoint a delivery person to deliver the item to the rider's location.
4. The owner of the service center can accept requests from riders and appoint a service technician with the necessary tools to service the vehicles.

The main goal of this application is to make the above mentioned daily works easier for vehicle riders. And the target market for our app are mainly the vehicle owner or rider.

4. REQUEIREMNT SPECIFICATION

4.1 System Features

1) System Registration

Functional Requirements

i) The software must allow users to register with the necessary information.
ii) If the username is not unique, the system will prompt the user to try registration with a different username again.

Priority Level: High

Precondition: Not applicable.

2) System Login

Functional Requirements

i) Users must be able to log in using their assigned username and password.
ii) If the username and/or password have been entered incorrectly more than three times, the random verification code will be generated by the system to retry login.

Priority Level: High

Precondition: The user must have a valid user ID and password.

3) Search for fuel station

Functional Requirements

i) Users will be able to search for filling stations within a 15-minute delivery distance using the software.

Priority Level: Medium

Precondition: User must have valid account

4) **Request for petroleum**

Functional Requirements

i) Users will be able to request petroleum with a location and description using the software.
ii) If no location is specified, the system should reject the request and instruct the user to try again with a more precise location.
iii) Adding quantity with petroleum name.

Priority Level: High

Precondition: User must have valid account

5) **Request for service**

Functional Requirements

i) The program enables customers to acquire assistance from the service facility within a 30-minute driving radius of their vehicle's issue.

Priority Level: High

Precondition: User must have valid account

6) **Messaging for service details**

Functional Requirements

i) The software allows user to send message to the service man for details about vehicles problem

Priority Level: Medium

Precondition: User must have valid account

7) **Request for payment**

Functional Requirements

i) User can payment their charges through the software. Three ways to get payment 1. Bkash/ Nagod 2. Banking 3. Cash on delivery or cash on service.

Priority Level: Medium

Precondition: User must have valid account

4.2 System Quality Attributes

1. Usability: The system must be user-friendly. The system should be intuitive and simple to navigate.
2. Efficiency: The system should maximize the capacity and memory of the processor. Any task should be completed with optimal efficiency.
3. Security: System security should be sufficient to prevent unauthorized access to system functions in order to prevent information loss, protect data privacy, and safeguard the system against viruses.
4. Modularity: The system's every block of code must be under separate and acceptable modules.
5. Testability: The system should be simple to test and identify flaws.
6. Flexibility: The system should be flexible enough to be modified.
7. Reusability: Code library classes should be general enough to be utilized on multiple versions of an application or new projects.

4.3 System Interface

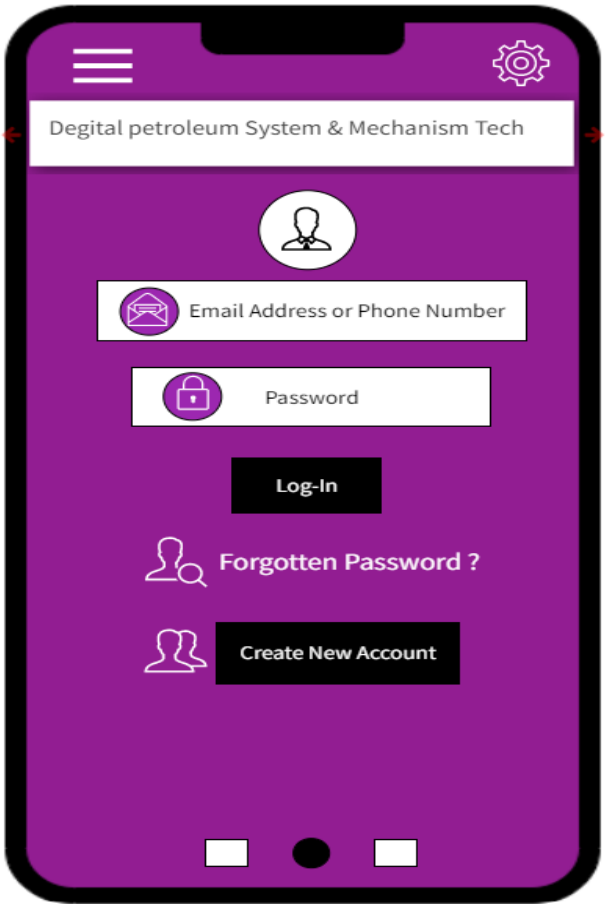

Figure 1: Homepage

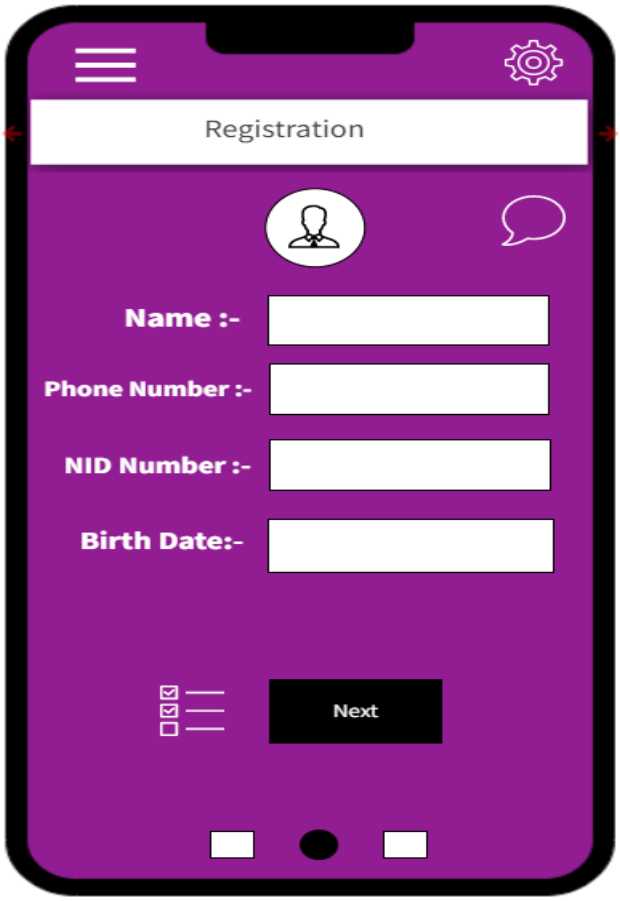

Figure 2: Create new Account-1

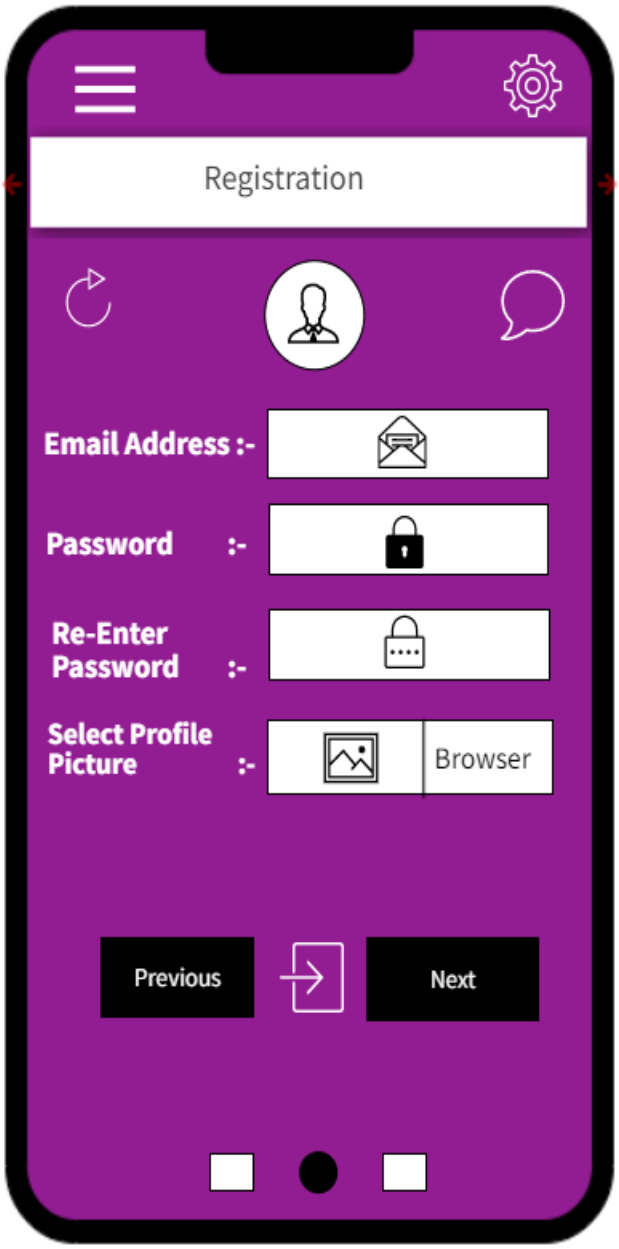

Figure 3: Create new Account-2

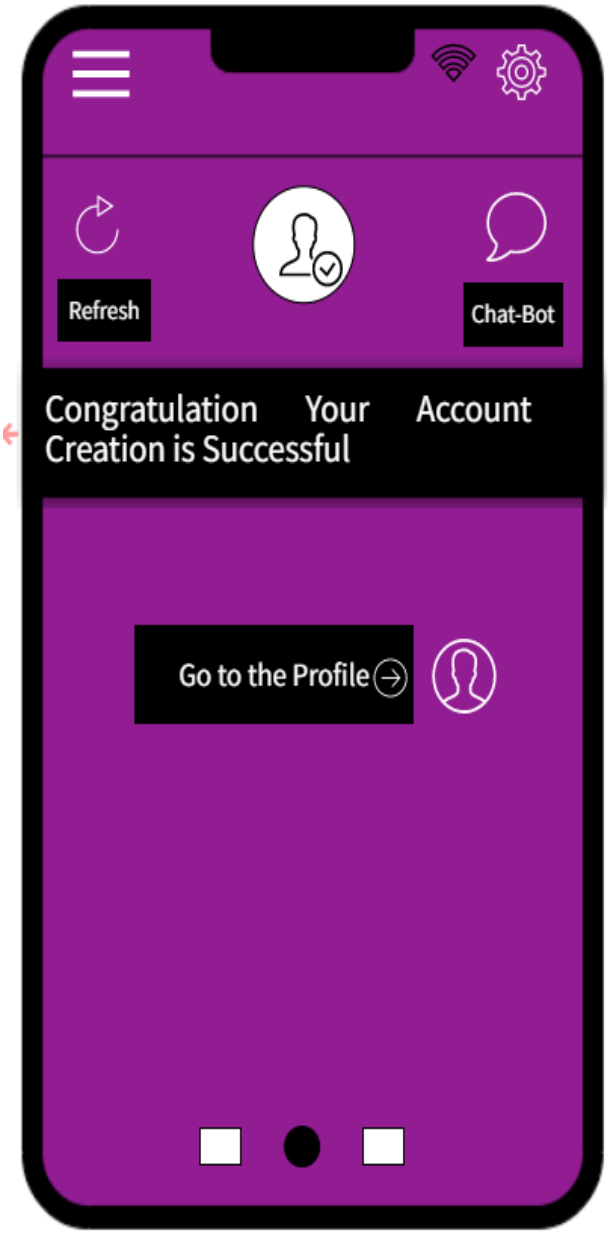

Figure 4: Create new Account-3

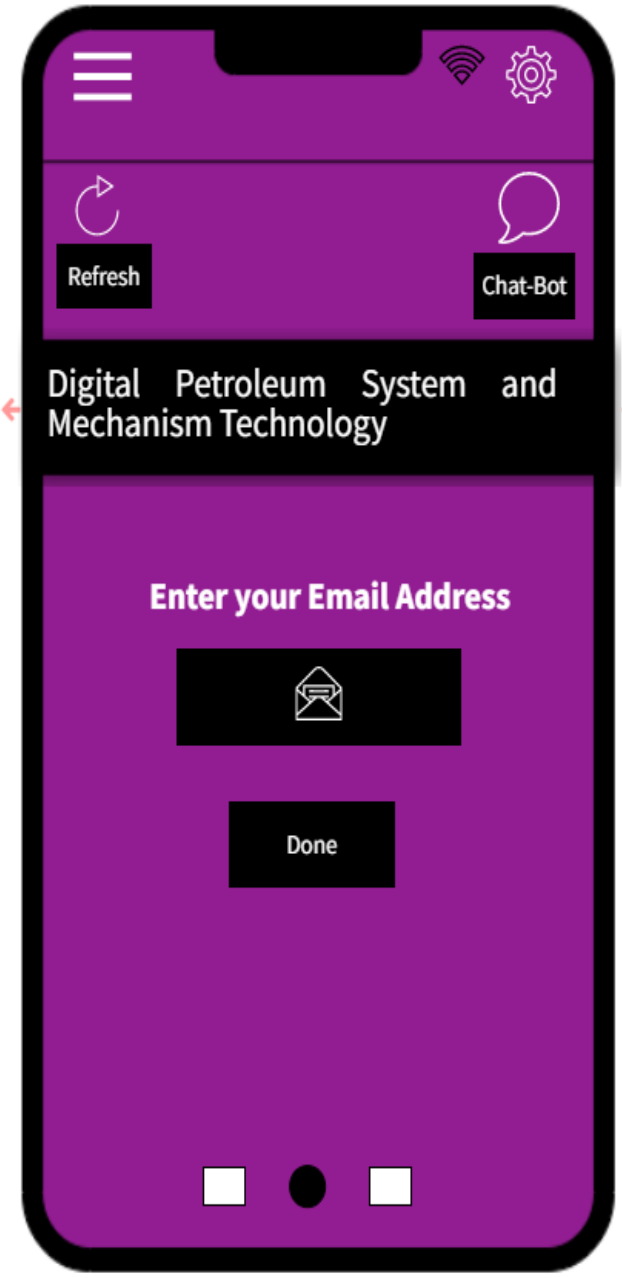

Figure 5: Forgotten password

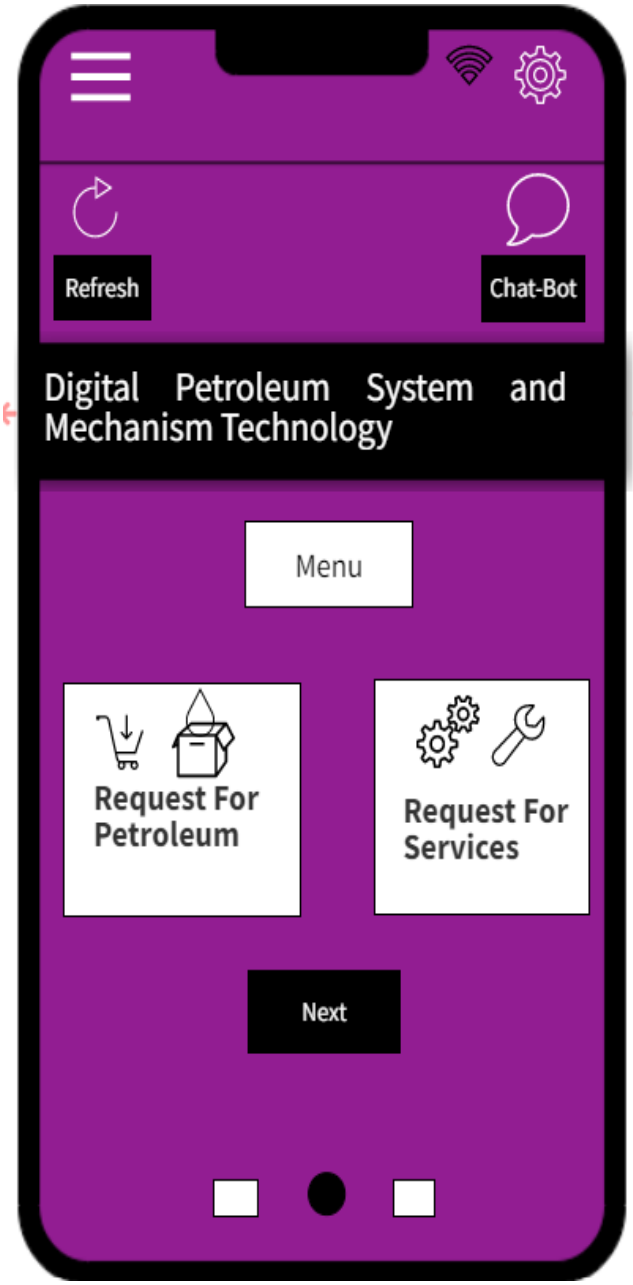

Figure 6: Menu

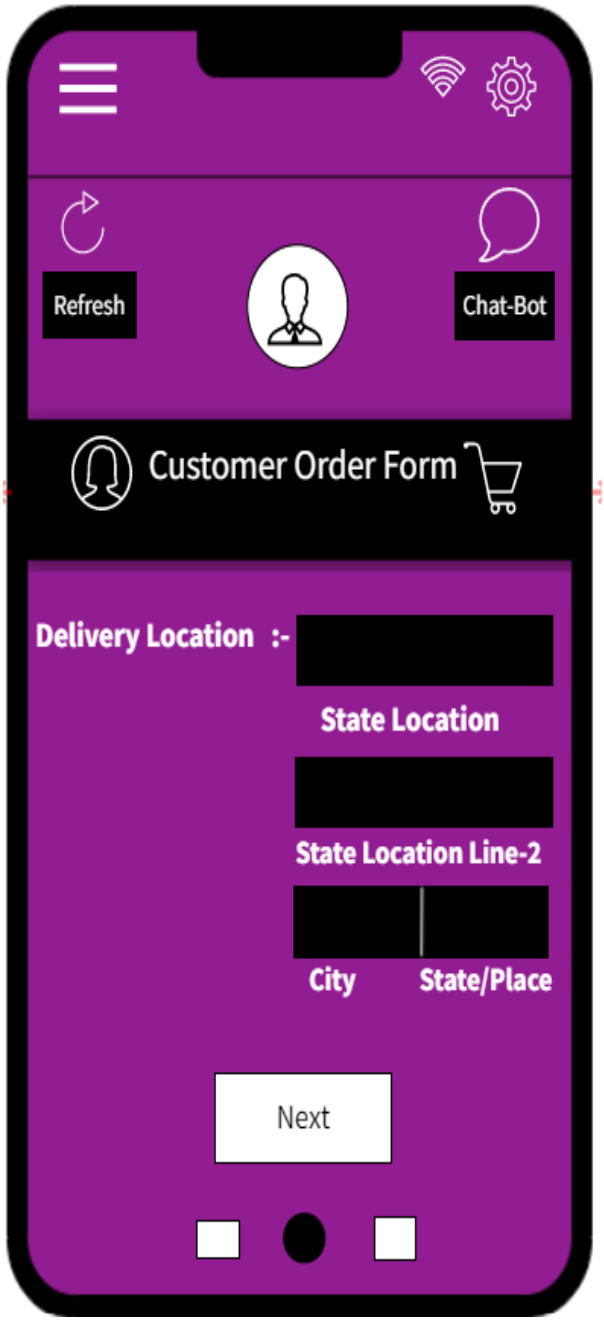

Figure 7: Customer Order Form

Figure 8: Customer Order form-2

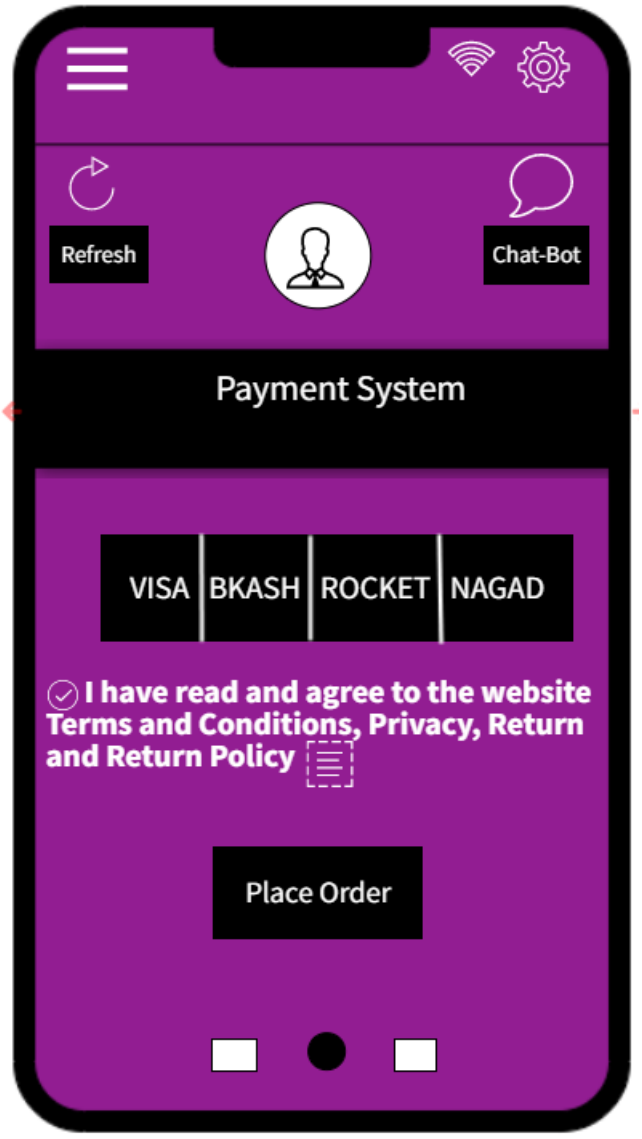

Figure 9: Payment

4.4 Project Requirements

i) The source code must be in java language.
ii) For software databases, shall use an Oracle database server, but other databases are also acceptable.
iii) For software development, shall use Android studio.
iv) For testing, shall use Selenium Automation.
v) The software size is maximum 250MB.

Constructive Cost Model

Software project type: Organic; [p=1.05]
Coefficient<Effort Factor> = 2.4
Effort = PM =
So, P = 1.05 and T = 0.38
SLOC = 25000 Lines
Persons-months, PM = Coefficient<Effort Factor> * (SLOC / 1000) ^{P} = 2.4 * (15000/1000)^1.05
= 41.22
Development time, DM = 2.50 * (PM) ^T
= 2.50 * (41.22) ^0.38
= 10.27 = 11 months
= 1760 Working hours in total (Per week 40 hours)
Required number of people, ST = PM/DM
= 41.22/11
= 3.74 = 4 people

Budgeting

Developer/Tester salary of 11 months:
Per employee salary per month = 40000 Taka = 400 Taka per hour
Total salary = 400 * 1760 = **7, 04, 000 Taka**
Requirement analysis:
Required time = 1 month = 25 working days = 200 working hour
Requirement analysis person's per hour salary = 250 Taka
Total requirement analysis salary = 250 * 200 = **50,000 Taka**
Transportation cost: **15,000 Taka** (Approximate)
Hardware expense: **1, 20, 000 Taka** (Approximate)
Rent expenses:
Total in 11 months = **1, 65, 000 Taka** [Per month = 15,000 Taka]
Total utilities in 11 months: **15,000 Taka** (Approximate)
Maintenance (Till 4 months after delivery):
Cost per hour = 1,200 Taka
Total estimated time needed for maintenance = 40 hours
Total estimated maintenance cost = 1,200 * 40 = **48,000 Taka**
Project manager's salary of 11 months:
Per month salary = 40,000 Taka
Total salary = 40,000 * 11 = **4, 40, 000 Taka**
Accountant's salary of 11 months:
Per month salary = 12,000 Taka
Total salary = 12, 000 * 11 = **1, 32, 000 Taka**
Total expense: 7, 04, 000 + 50,000 + 15,000 + 1, 20, 000 + 1, 65, 000 + 15,000 + 48,000 + 4, 40, 000 + 1, 32, 000 = **1, 689, 000 Taka**

Profit: 25% of total expense = 1, 689, 000 * 25% = 4, 22,250 Taka
Total budget: 1,689, 000 + 4, 22,250 = **2, 411, 250 Taka**

5. FEATURES NOT TO BE TESTED

1. Networks
2. Hardware
3. Users' registration information (Name, Address, Phone number)

6. TESTING APPROACH

6.1 Testing Levels

The testing for the "Digital Petroleum System & Mechanism Tech" project will consist of Unit, System/Integration (combined) and Acceptance test levels. It is hoped that there will be at least one full time independent test person for system/integration testing. However, with the budget constraints and timeline established; most testing will be done by the test manager with the development teams' participation.

i) UNIT Testing: Initially, we'll conduct unit testing during system development. In this testing, we will test different software modules. Occasionally, the developer may also test the product as a whole. The code will be inspected line by line by the programmer using a few ways. It will be a "white box" test in which no code execution is performed.

ii) SYSTEM/INTEGRATION Testing:

iii) ACCEPTANCE Testing :

6.2 Test Tools

1) The Selenium Web driver Tool will be used for automated testing. We utilize this instrument to discover errors and verify that our systems are of high quality, responsive, progressive, and consistent.

2) Jira project management tool will be used to share documents, communicate with team members,
3) To keep track of schedule and planning, the progress of the testing project and so on.

6.3 Meeting

The test team will meet once in every week to evaluate progress to date and to identify error trends and problems as early as possible. The test team leader will meet with development and the project manager once every two weeks as well. These two meetings will be scheduled on different weeks. Additional meetings can be called as required for emergency situations.

7. Test cases

<table>
<tr><td colspan="3">Project Name: Digital Petroleum System and Mechanism Tech</td><td colspan="2">Test Designed by: Samir</td></tr>
<tr><td colspan="3">Test Case ID: 1</td><td colspan="2">Test Designed date:</td></tr>
<tr><td colspan="3">Test Priority (Low, Medium, High): High.</td><td colspan="2">Test Executed by: Samir</td></tr>
<tr><td colspan="3">Module Name: System login session.</td><td colspan="2">Test Execution date:</td></tr>
<tr><td colspan="3">Test Title: Verify the Home Page feature.</td><td colspan="2"></td></tr>
<tr><td colspan="3">Description: Test to view website Home page.</td><td colspan="2"></td></tr>
<tr><td colspan="5">Precondition (If any): User must have valid username and password</td></tr>
<tr><td>Test Steps</td><td>Test Data</td><td>Expected Results</td><td>Actual Results</td><td>Status (Pass/Fail)</td></tr>
<tr><td>1. Go to application log in page.
2. Enter user id.
3. Enter user password
4. Click submit</td><td>User Id: samirfaisal16@gmail.com

Password: samir2022@</td><td>User can login into the application.</td><td>As expected,</td><td>Pass</td></tr>
<tr><td colspan="5">Post Condition: User have to contain a valid user id with a valid password with database to successfully login to his/her account. The account season details are logged in the database.</td></tr>
</table>

Project Name: Digital Petroleum System and Mechanism Tech			Test Designed by: Samir	
Test Case ID: 2			Test Designed date:	
Test Priority (Low, Medium, High): High.			Test Executed by: Samir	
Module Name: Create New Account Session			Test Execution date:	
Test Title: New user with new Id & password.				
Description: Test website Create new Id feature.				
Precondition (If any): User must have valid email id or phone number.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the website account login page. 2. Click Create New Account. 3. Enter Email id or Phone number. 4. Enter Confirmation Code. 5. Enter New Password. 6. Click Submit.	E-Mail: Samirfaisal16@gmail.com Code: 1610 New Password: samir@2000	User should login into the webpage	As expected	Pass
Post Condition: User can successfully login to his/her account.				

Project Name: Digital Petroleum System and Mechanism Tech	Test Designed by: Shafiul
Test CaseID:3	Test Designed date:
Test Priority (Low, Medium, High): Medium.	Test Executed by: Shafiul.
Module Name: Forgot Password Session	Test Execution date:
Test Title: Provide user with new password.	
Description: Test website forgot password feature.	
Precondition (If any): User must have valid email id or phone number.	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
7. Open the website account login page. 8. Click Forgot Password. 9. Enter Email id or Phone number. 10. Enter Confirmation Code. 11. Enter New Password. 12. Click Submit.	E-Mail: shafi@gmail.com Code: 1610 New Password: Shafi2022@	User should login into the webpage	As expected	Pass
Post Condition: User can successfully login to his/her account.				

Project Name: Digital Petroleum System and Mechanism Tech	Test Designed by: Shagor Kanti.
Test Case ID: 4	Test Designed date:
Test Priority (Low, Medium, High): Medium	Test Executed by: Shagor Kanti.
Module Name: Menu	Test Execution date:
Test Title: Provide Types of provide service.	
Description: User takes their service	

Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the website. 2. Log in. 3. Choose items. 4. Request petroleum. 5. Request service.	User menu.	User should see service option.	As expected	Pass
Post Condition: User successfully gets to see his/her service.				

Project Name: Digital Petroleum System and Mechanism Tech			Test Designed by: Shagor Kanti	
Test Case ID: 5			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by: Shagor Kanti	
Module Name: Check order.			Test Execution date:	
Test Title: Checking customers order form.				
Description: Customers order checking feature.				
Precondition (If any):				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the website. 2.Log in as a customer 3.Select types of order- *Delivery, *Pickup 4. Select delivery location. 5. Click customer order.	Order request	User will be able to see ordered form.	As expected	Pass
Post Condition: User can successfully see the order request notices.				

Project Name: Digital Petroleum System and Mechanism Tech			Test Designed by: Tareq	
Test Case ID: 6			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by: Tareq	
Module Name: Check payment methods.			Test Execution date:	
Test Title: Checking customers payment.				
Description: Customers payment methods checking feature.				
Precondition (If any):				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Open the website. 2.Log in 3. Select your order. 4. Click payment. 5. Choose online payment. 6.Click SHURJO PAY 7.Select -VISA/ BKASH / ROCKET /NAGAD 8.Enter your amount 9.Select agree 10. Place order.	Payment method	User will be able to see all available payment method.	As expected	Pass
Post Condition: User can successfully see the payment notices.				

Project Name: Digital Petroleum System and Mechanism Tech			Test Designed by: Shafiul	
Test Case ID: 7			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by: Shafiul	
Module Name: Chatting system			Test Execution date:	
Test Title: Checking Chatting option				
Description: Customers message to the serviceman feature.				
Precondition (If any):				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the website. 2.Log in 3. Select your menu. 4. After selecting an option For more details contact with service man with chat bot.	Chatting	User will be able to see chat icon to communication with serviceman	As expected	Pass
Post Condition: User can successfully interact with chat bot.				

Project Name: Digital Petroleum System and Mechanism Tech			Test Designed by: Shafiul	
Test CaseID:8			Test Designed date:	
Test Priority (Low, Medium, High): Medium.			Test Executed by: Samir.	
Module Name: Request for Petroleum			Test Execution date:	
Test Title: Checking Petroleum request				
Description: Test website Petroleum request				
Precondition (If any): User must have valid email id or phone number.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the website account login page. 2. Click Menu Button 3. Menu to request for Petroleum.	E-Mail: shafi@gmail.com Code: 1610 New Password: Shafi2022@	User should order Petroleum	As expected	Pass
Post Condition: User can successfully get the Petroleum				

8. ITEM PASS/FAIL CRITERIA

The entrance criteria for each step of testing must be met before proceeding to the subsequent phase. The criteria for passing and failing are listed below.

1. In accordance with the stated scenario, the expected outcome must occur for the design to be deemed successful; otherwise, this criterion must be failed.
2. If an item is tested ten times and functions correctly nine times, but fails once, it will be called a fail case.
3. Crashing of the system will be deemed a failure scenario.
4. After submitting a query to the system, if the desired page does not show, it will be considered a failure.

9. TEST DELIVERABLES

a) Test Design Specifications

b) Acceptance test plan
c) System test plan
d) Integration test plans
e) Unit test plans

10. STAFFING AND TRAINING NEEDS

This part covers personnel and test job preparation. At least one full-time tester is recommended for system/integration and acceptance testing. Most employees will embrace challenging tasks. Job descriptions follow:

1) Project Manager: Responsible for the overall project execution. This includes drafting requirements and managing the testing cycle, among other tasks. Therefore, project managers need training in these areas.
2) Test Manager: Responsible for creating expert test strategies, evaluating test deliverables, managing test cycles, and recommending testing completion. Test managers must be qualified to evaluate professional standard test designs.
3) Test Engineer: Responsible for designing tests, creating test methods, generating test data, executing tests, constructing automated test strategies, and providing the test administrator with measurement information. Test engineers should therefore be able to plan and execute any test case using automated technologies.

11. RESPONSIBILITIES

	TM	PM	Dev Team	Test Team	Client
Acceptance test documentation & execution	X	X			
System/Integration test documentation & execution	X	X			X
Unit test documentation & execution	X	X		X	X
System Design Reviews			X		X
Detail Design Reviews			X		X
Test procedures and rules	X	X		X	
Screen & Report prototype reviews			X		X
Change Control and regression testing	X	X	X	X	

12. TESTING SCHEDULE

1. Project Proposal
2. Requirement
3. Project Planning

4. System Design
5. Coding
6. Testing
7. Implement and Unit Testing
8. System Integration and Testing

Name/weeks	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20
1: Samir										
2: Shagor										
3: Shafi										
4: Tareq										

Name/weeks	21-22	23-24	25-26	27-28	29-30	31-32	33-34	35-36	37-38	39-40
5,6: Samir										
5,6: Shagor										
6,7: Shafi										
7,8: Tareq										

13. PLANNING RISKS AND CONTINGENCIES

1) Software Failure: We will keep a primary and a backup hardware system up and running, and printers and workstations must be regularly serviced and kept in good shape.
2) Illness or Injury: Regular medical checkups are arranged for the employees.

14. APROVALS

Project Sponser – Samir Faisal	Approved
Development Management- Shagor Kanti	Approved
EDI Project Manager-Shafiul Islam	Approved
RS Test Manager- Tareq Annan	Approved
RS Development Team Manager- Samir Faisal	Approved
Reassigned Sales- Shagor Kanti	Approved
Prder Entry EDI Team Manager- Shafiul Islam	Approved