American International University-Bangladesh (AIUB)

Department of Computer Science

Faculty of Science & Technology (FST)

PROJECT TITLE

An extension to the NASA app for travelling beyond the Earth.

Submitted by:

Semester: SPRING_23_24		Section: A	Group Number:01	
SN	Student Name	Student ID	Contribution (CO3+CO4)	Individual Marks
1	MAHIN MONTASIR AFIF	22-46573-1	20%	
2	AZHARUL ISLAM	22-46816-1	20%	
3	MD ZAHIDUL ISLAM	22-46022-1	20%	
4	AZMINUR RAHMAN	22-46588-1	20%	
5	MD. NURUZZAMAN	22-46042-1	20%	

The project will be Evaluated for the following Course Outcomes

CO3: *Select* appropriate software engineering models, project management roles and their associated skills for the complex software engineering project and evaluate the sustainability of developed software, taking into consideration the societal and environmental aspects	Total Marks	
Appropriate Process Model Selection and Argumentation with Evidence	[5 Marks]	
Evidence of Argumentation regarding Process Model Selection	[5Marks]	
Evaluate the sustainability of the developed software in terms of both society and the environment (Impact identification)	[5Marks]	
Submission, Defense, Completeness, Spelling, grammar and Organization of the Project report	[5Marks]	
CO4: *Develop* project management plan to manage software engineering projects following the principles of engineering management and economic decision process	Total Marks	
Develop the project plan, its components of the proposed software products using WBS and testcases	[5Marks]	
Identify all the activities/tasks related to project management and categorize them within Project estimation, and schedule of the tasks using appropriate resources	[5Marks]	

Identify all the potential risks in the specific project and prioritizing/categorizing those, and also mitigation plan to overcome the risk factors.	[5Marks]	

Description of Student's Contribution in the Project work

Student Name: MAHIN MONTASIR AFIF
Student ID: 22-46573-1
Contribution in Percentage (%): 25%
Contribution in the Project:

- PROJECT PROPOSAL
- CLASS DIAGRAM
- FUNCTIONAL REQUIREMENTS
- ACTIVITY DIAGRAM
- OBE PART [*detecting all the project roles*]
- UI/UX
- TEST CASE
- RISK TABLE

_____
Signature of the Student

Student Name: AZHARUL ISLAM
Student ID:22-46816-1
Contribution in Percentage (%): 22.5%
Contribution in the Project:

- USE CASE DIGARAM
- PROJECT PROPOSAL
- CLASS DIAGRAM
- OBE PART [*software nature & environment*]
- WBS

_____
Signature of the Student

Student Name: MD ZAHIDUL ISLAM
Student ID: 22-46022-1
Contribution in Percentage (%): 22.5%
Contribution in the Project:

- SEQUENCE DIAGRAM
- PROJECT PROPOSAL
- USE CASE DIAGRAM

- OBE PART [*selecting the right model*]
- TIMELINE CHARTS 1 AND 2

_____
Signature of the Student

Student Name: AZMINUR RAHMAN
Student ID: 22-46588-1
Contribution in Percentage (%): 20%
Contribution in the Project:

- FUNCTIONAL RQUIREMENTS
- PROJECT PROPOSAL
- OBE PART [*arguments for selecting the model*]
- EFFORT ESTIMATION
- TEST CASE

_____
Signature of the Student

Student Name: MD. NURUZZAMAN
Student ID: 22-46042-1
Contribution in Percentage (%): 10%
Contribution in the Project:

- SEQUENCE DIAGRAM
- ACTIVITY DIAGRAM
- OBE PART [*evidence to support the model*]
- RISK TABLE

_____
Signature of the Student

1. PROJECT PROPOSAL

1.1 Background to the Problem

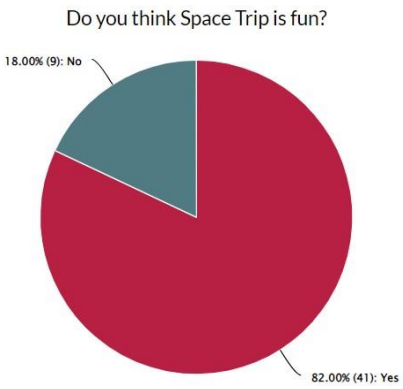
In a world where space exploration is increasingly becoming a reality for civilians, there exists a gap in accessibility to space travel. The root cause lies in the lack of an efficient and user-friendly platform for individuals to book their trips beyond Earth's atmosphere. People face a lot of problems when they try to know about the whole process of space travel. They must deal with very complex situations when they wish to travel beyond the earth. Most of them don't have proper knowledge about the current cost of each trip. This problem is of paramount importance as it addresses the democratization of space travel, opening it up to a wider audience beyond just trained astronaut.

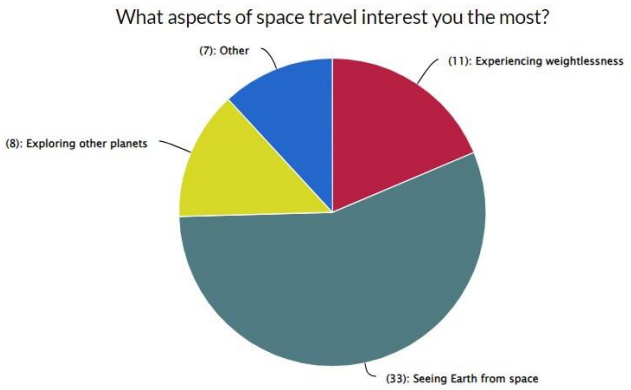
1.2 Solution to the Problem

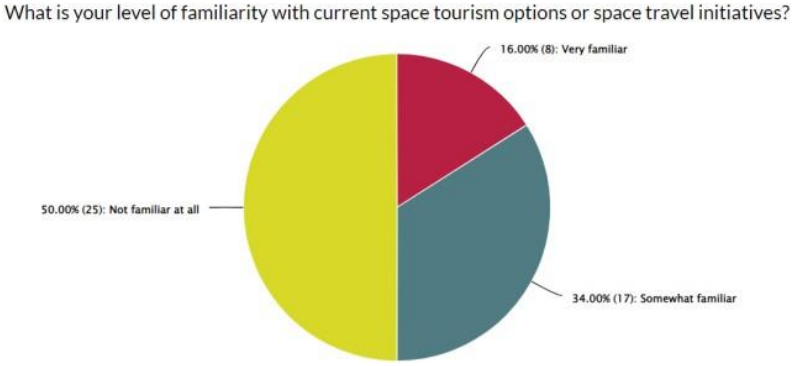
Our project, the Space Trip App, aims to bridge this gap by providing a comprehensive solution for booking space travel experiences online. The objective is clear: to offer a seamless platform that allows users to easily purchase tickets for space trips to various destinations in outer space. With the feasibility to meet business objectives, our app will revolutionize the space tourism industry. The basic functionalities of our app include a **user-friendly interface** for browsing and selecting space **trip packages**, secure **online payment** options, **real-time availability** updates, and **personalized trip customization** features. By making space travel more accessible, our solution will have a significant impact on societal perceptions of space exploration, opening new opportunities for scientific research, cultural exchange, and personal growth.

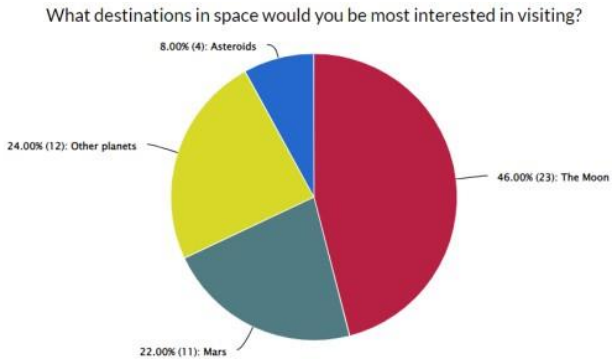
The target group of users for our solution includes adventurous individuals, space **enthusiasts**, **researchers**, and those seeking **once-in-a-lifetime experiences**. They will benefit from our proposed solution by gaining easier access to space travel opportunities, fulfilling lifelong dreams, and contributing to the advancement of space exploration.

According to a survey done by us among 50+ civilians, 82% of them think travelling beyond the earth is fun. 66% of them wants to see the earth from space. Specially, 46% of people wants to visit the moon. 50% of people don't have a proper idea about current space tourism options or space travel initiatives.

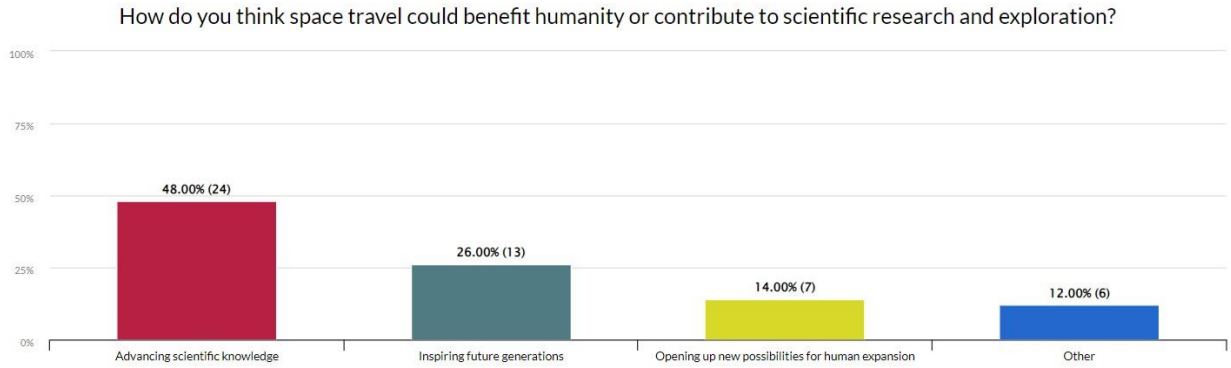


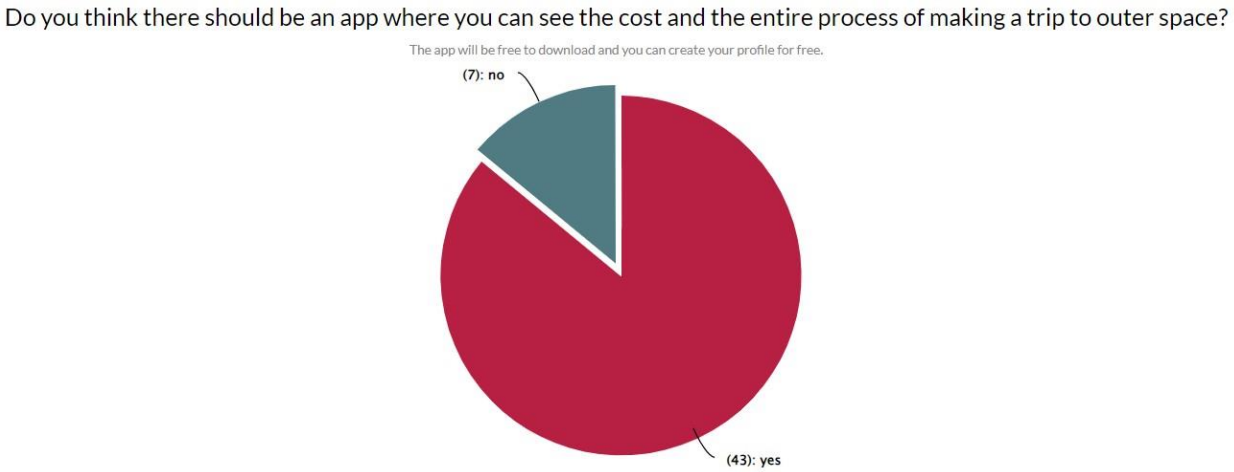






48% of people think space travelling will be beneficial for advancing scientific knowledge.26% think it will be inspiring for the future generations. Therefore, the survey also includes a question that if they wants an app for getting information about the total cost and the process of the trip. 86% of them wants an app to get proper information of space travel.





As of today, there isn't an existing mobile app where people can directly book tickets for a space trip. However, there are several apps and resources that can keep people informed about space travel developments and inspire them spacefaring dreams:

NASA App: This official app provides news, images, videos, and even live streams of space missions, letting you virtually experience space exploration.

SpaceX App: While not for booking yet, the SpaceX app offers real-time mission updates and launch notifications.

Star Walk 2: This AR app lets you explore the night sky, identifying constellations, satellites, and other celestial objects.

Virtual Astronaut: This VR app immerses you in realistic space simulations, from spacewalks to moon landings.

References:

https://www.nasa.gov/apps/

https://www.pastemagazine.com/tech/apps/10-great-apps-for-exploring-space

https://www.spaceapplications.com/

2. Process Model

Analysis of Software Nature and Environment: For the development of a space trip app, which serves as an extension of NASA's services, several factors influence the choice of development method:

- *Project Scope:* The project involves creating a comprehensive application that facilitates space trip planning, booking, and management.
- *Complexity:* Integrating real-time data from NASA's systems, providing accurate space trip information, and ensuring user-friendly interfaces add complexity.
- *Customer Requirements:* As an extension of NASA, the app must meet stringent standards for accuracy, reliability, and security.
- *Collaboration:* Collaboration with NASA's teams and integration with existing systems require a flexible and iterative approach.
- *Regulatory Compliance:* Compliance with space industry regulations and standards is critical for the app's success.
- *User Experience:* The app must provide an intuitive and seamless user experience for space travelers, astronauts, and NASA personnel.

Selected Method: Agile Scrum

Agile Scrum is the most suitable approach for developing the space trip app due to its **adaptability**, **iterative nature**, and **emphasis on collaboration.** Scrum's **flexibility** allows for **rapid iterations** and **continuous feedback**, ensuring that the app meets the evolving needs of NASA and its users.

Arguments for Selection

- Adaptability: Scrum enables the team to respond quickly to changing requirements and priorities, crucial in a dynamic environment like space exploration.
- Iterative Development: Scrum's iterative approach allows for the incremental delivery of features, ensuring that valuable functionality is delivered early and regularly.
- Collaboration: Scrum promotes collaboration between development teams, NASA stakeholders, and end-users, facilitating communication and alignment of goals.
- Feedback Loop: Scrum's sprint review and retrospective meetings provide valuable feedback from stakeholders, guiding the direction of future development efforts.
- Risk Mitigation: By breaking the project into smaller, manageable increments, Scrum reduces the risk of project failure and allows for early identification and mitigation of issues.

Evidence to Support Selection

I. Industry Best Practices: Agile methodologies, including Scrum, have been widely adopted in the software industry, with proven success in delivering complex projects.
II. NASA Collaboration: Input from NASA experts and stakeholders supports the suitability of Agile Scrum for the project, ensuring alignment with NASA's goals and standards.
III. Regulatory Compliance: Scrum's emphasis on transparency and documentation facilitates compliance with regulatory requirements, such as those governing space travel and exploration.

Project Role Identification

Roles/Stakeholders Identification

1. *Product Owner (NASA Representative):* Represents NASA and its stakeholders, defines the product vision, and prioritizes features based on mission objectives and user needs.
2. *Scrum Master:* Facilitates the Scrum process, removes obstacles, and ensures that the development team adheres to Scrum principles and practices.
3. *Development Team:* Cross-functional team responsible for designing, developing, testing, and deploying the space trip app.
4. *NASA Experts:* Provide domain expertise, guidance, and feedback on space exploration requirements, regulations, and standards.
5. *End-users (Space Travelers, Astronauts):* Provide input on user experience, functionality, and usability, ensuring that the app meets their needs and expectations.

Responsibilities:

1. Product Owner (NASA Representative):

- Define the product vision and roadmap based on NASA's strategic objectives and user requirements.
- Prioritize features and user stories based on mission priorities, technical feasibility, and user feedback.
- Collaborate with the development team to refine requirements, provide feedback, and ensure alignment with NASA's goals.

2. Scrum Master:

- Facilitate Scrum events, including sprint planning, daily stand-ups, sprint review, and sprint retrospective.
- Remove impediments and barriers to the team's progress, enabling efficient delivery of high-quality software.
- Coach the team on Agile principles, encourage self-organization, and foster a culture of continuous improvement.

3. Development Team:

- Design, develop, test, and deploy features and functionality according to the product backlog and sprint goals.
- Collaborate closely with NASA stakeholders to ensure that the app meets NASA's standards for accuracy, reliability, and security.
- Continuously improve processes, tools, and practices to enhance productivity and product quality.

4. NASA Experts:

- Provide domain expertise on space exploration, including mission requirements, regulations, and safety standards.

- Review and validate app features and functionality to ensure compliance with NASA's guidelines and best practices.
- Offer guidance and feedback to the development team on technical and operational aspects of space travel.

5. *End-users (Space Travelers, Astronauts):*

- Provide input on user needs, preferences, and pain points related to space trip planning and management.
- Participate in user testing and feedback sessions to evaluate app prototypes and provide usability insights.
- Help prioritize features and improvements based on their experience and requirements as space travelers and astronauts.

By clearly defining roles and responsibilities and adopting an Agile Scrum approach, the space trip app development project can effectively collaborate with NASA and deliver a high-quality product that meets the needs of space travelers, astronauts, and the broader space exploration community.

3. Functional Requirements

1) Software Login Functional Requirements

1.1 The software shall allow users to login with their provided username and password.

1.2 The login credentials (username and password) will be authenticated against the database records.

1.3 Upon successful login, the home page of the user account will be displayed.

1.4 If incorrect login credentials are entered, a random verification code will be generated and sent to the user's email address for retrying login.

1.5 Optionally, if the number of login attempts exceeds a predefined limit (e.g., 3 times), the system shall block the user account login for one hour.

Priority Level: Medium

Precondition: The user has a valid user ID and password.

2) Sign Up Functional Requirements

2.1 Users can create a new account by providing necessary information such as username, email, and password.

2.2 The system shall validate the uniqueness of the username and email to ensure no duplicate accounts are created.

2.3 Upon successful registration, users will be directed to the login page to access their newly created account.

Priority Level: Medium

Precondition: The user should have a unique user ID.

3) Forget Password Functional Requirements

3.1 Users who forget their password can initiate the password recovery process by clicking on the "Forgot Password" link.

3.2 The system shall prompt users to enter their email address associated with their account.

3.3 A password reset link will be sent to the provided email address for users to create a new password.

3.4 Optionally, a security question or verification code may be used for additional authentication.

Priority Level: Medium

Precondition: User has a registered Email address.

4) Logout Functional Requirements

4.1 Users can log out of their account by clicking on the "Logout" button.

4.2 Upon logout, the user will be redirected to the login page.

Priority Level: Medium

Precondition: User is logged in.

5) Destination Selection Functional Requirements

5.1 Users can browse and select their desired space destinations from a list provided in the app.

5.2 Information about each destination, such as distance, duration of travel, and attractions, will be displayed.

5.3 Users can filter destinations based on criteria such as planet, distance, or popularity.

Priority Level: High

Precondition: User is logged in.

6) One-Way and Two-Way Trip Options Functional Requirements

6.1 Users can choose between one-way or two-way trip options based on their travel preferences.

6.2 The system shall provide pricing and availability for both one-way and two-way trip options.

6.3 Users can select their preferred departure and return dates for two-way trips.

Priority Level: High

Precondition: Destination is selected.

7) Calendar Functional Requirements

7.1 The app shall include a calendar feature to assist users in scheduling their space trips.

7.2 Users can view their booked trips, upcoming events, and available dates for booking.

7.3 The calendar shall highlight special events or holidays that may affect trip availability.

Priority Level: Medium

Precondition: User is logged in.

8) Real-time Weather Forecast Functional Requirements

8.1 Users can access real-time weather forecasts for their selected destination.

8.2 The system shall display temperature, atmospheric conditions, and any potential hazards.

8.3 Users can view weather forecasts for specific dates to aid in trip planning.

Priority Level: High

Precondition: Destination is selected.

9) Online Booking and Payment Functional Requirements

9.1 Users can book their space trips directly through the app.

9.2 The system shall provide secure online payment options for booking confirmation.

9.3 Users can review and confirm trip details before making payment.

Priority Level: High

Precondition: Destination and trip options are selected.

10) Station Information Functional Requirements

10.1 Users can access information about space stations from which trips will depart.

10.2 Details such as station location, facilities, and transportation options will be provided.

10.3 Users can filter stations based on criteria such as country or popularity.

Priority Level: High

Precondition: Destination is selected.

11) Trip Management Functional Requirements

11.1 Users can manage their booked trips, including viewing trip details, making changes, or canceling bookings.

11.2 The system shall provide options for rescheduling trips based on availability.

11.3 Users can receive notifications about trip updates or changes.

Priority Level: High

Precondition: User has booked trips.

12) Notifications Functional Requirements

12.1 The app shall send push notifications to users for trip reminders, updates, or important announcements.

12.2 Users can customize notification preferences within the app settings.

Priority Level: High

Precondition: User is logged in.

13) Passport Creation Functional Requirements

13.1 Users can create a virtual passport within the app, including personal information and photos.

13.2 The passport shall contain details of desired destinations and previous trip history.

Priority Level: Medium

Precondition: User is logged in.

14) Physical Training Level Functional Requirements

14.1 Users can input their physical training level or fitness goals for space travel.

14.2 The system shall provide recommendations or training programs to improve users' physical readiness for space travel.

Priority Level: Low

Precondition: None

15) Previous Trip History Functional Requirements

15.1 Users can access their previous trip history, including details such as destination, dates, and activities.

15.2 The system shall maintain a record of past trips for reference and review.

Priority Level: Medium

Precondition: User is logged in.

16) Purpose-wise Cost System Functional Requirements

16.1 The app shall provide cost breakdowns based on the purpose of the trip (e.g., tourism, research, exploration).

16.2 Users can view pricing variations depending on trip objectives and activities.

Priority Level: Medium

Precondition: Destination and trip options are selected.

17) Planet Atmosphere Functional Requirements

17.1 Users can access information about the atmosphere and environmental conditions of planets they plan to visit.

17.2 Details such as temperature, air composition, and surface conditions will be provided.

Priority Level: Medium

Precondition: Destination is selected.

18) Checkout Functional Requirements

18.1 Users can review their trip details before proceeding to checkout.

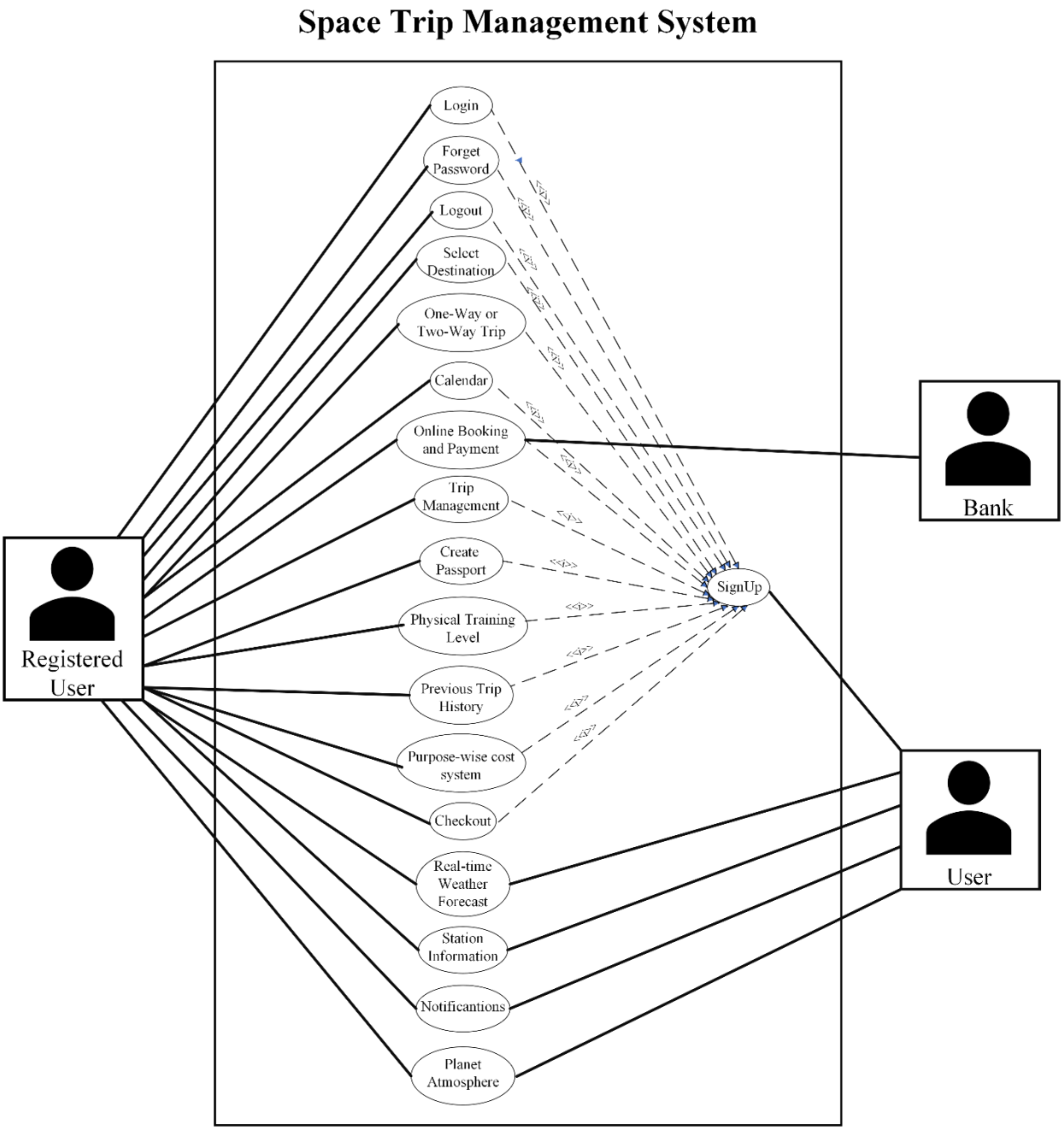
18.2 The system shall provide a secure payment gateway for online transactions.

18.3 Users can receive booking confirmation and trip details upon successful checkout.

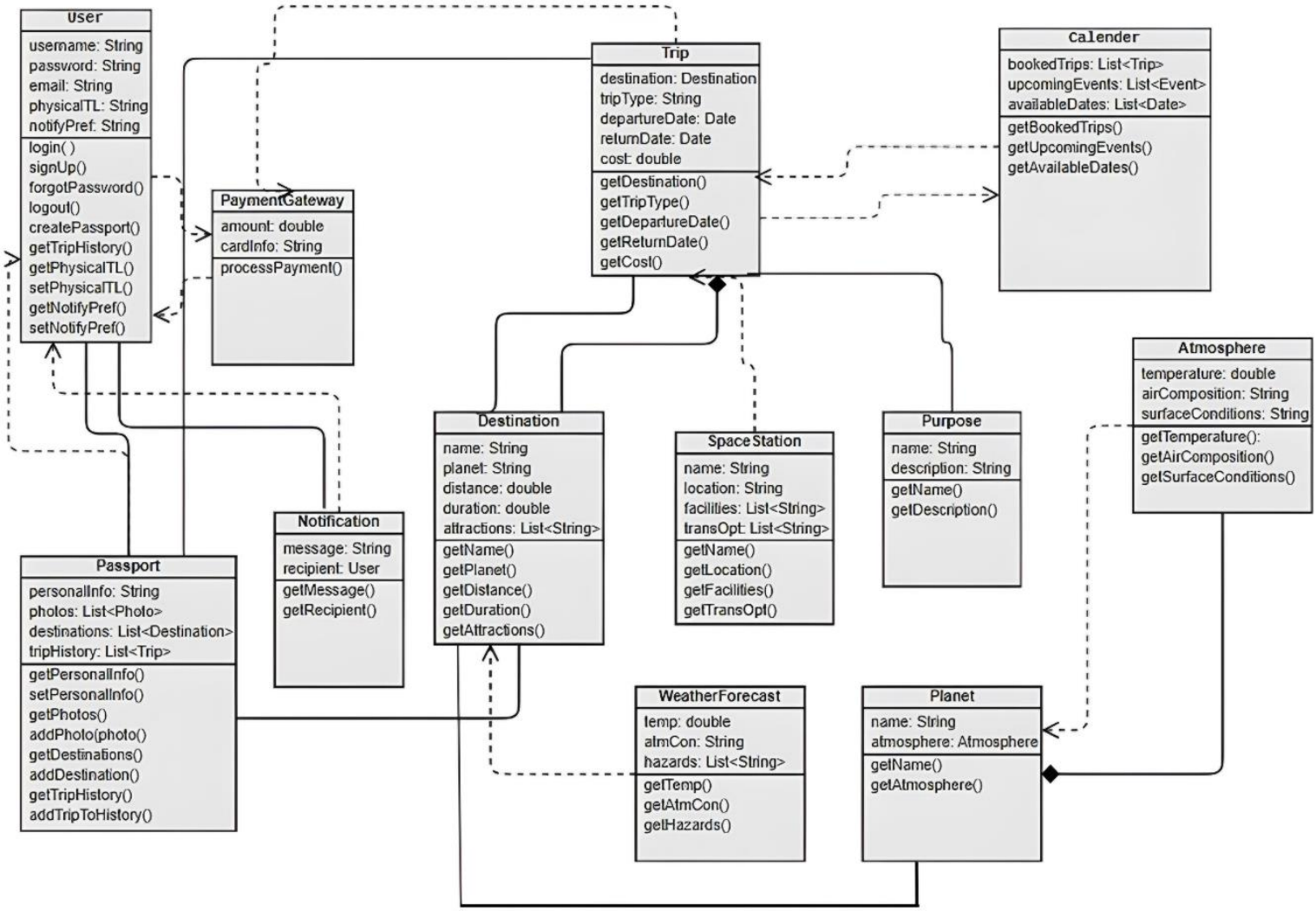
Priority Level: High

Precondition: Trip is booked.

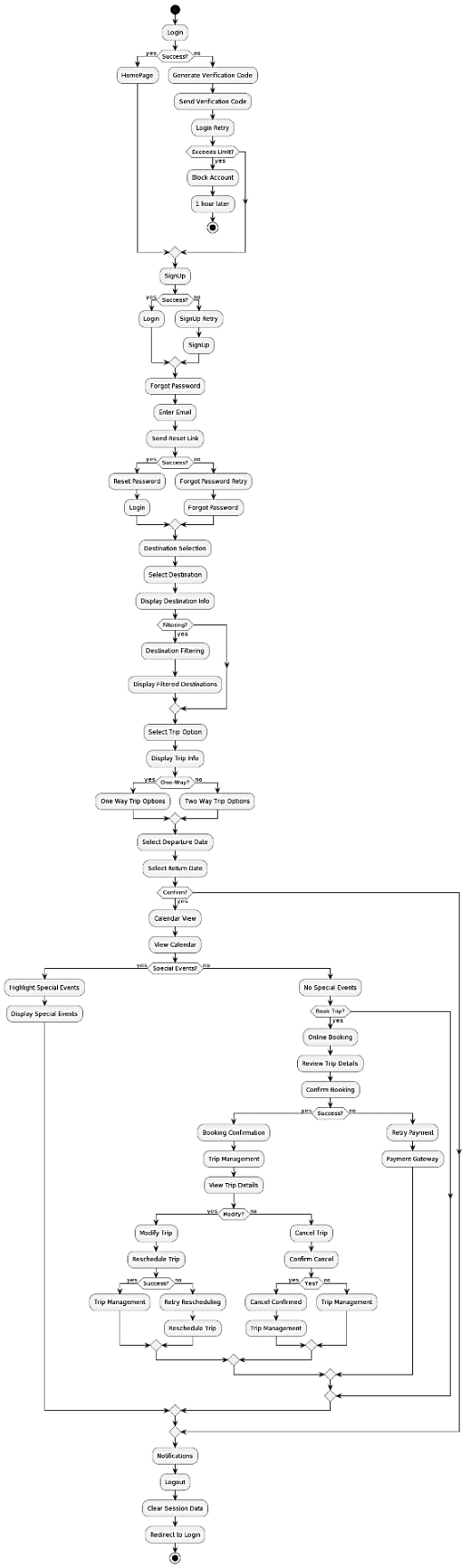
4. Use Case diagram:



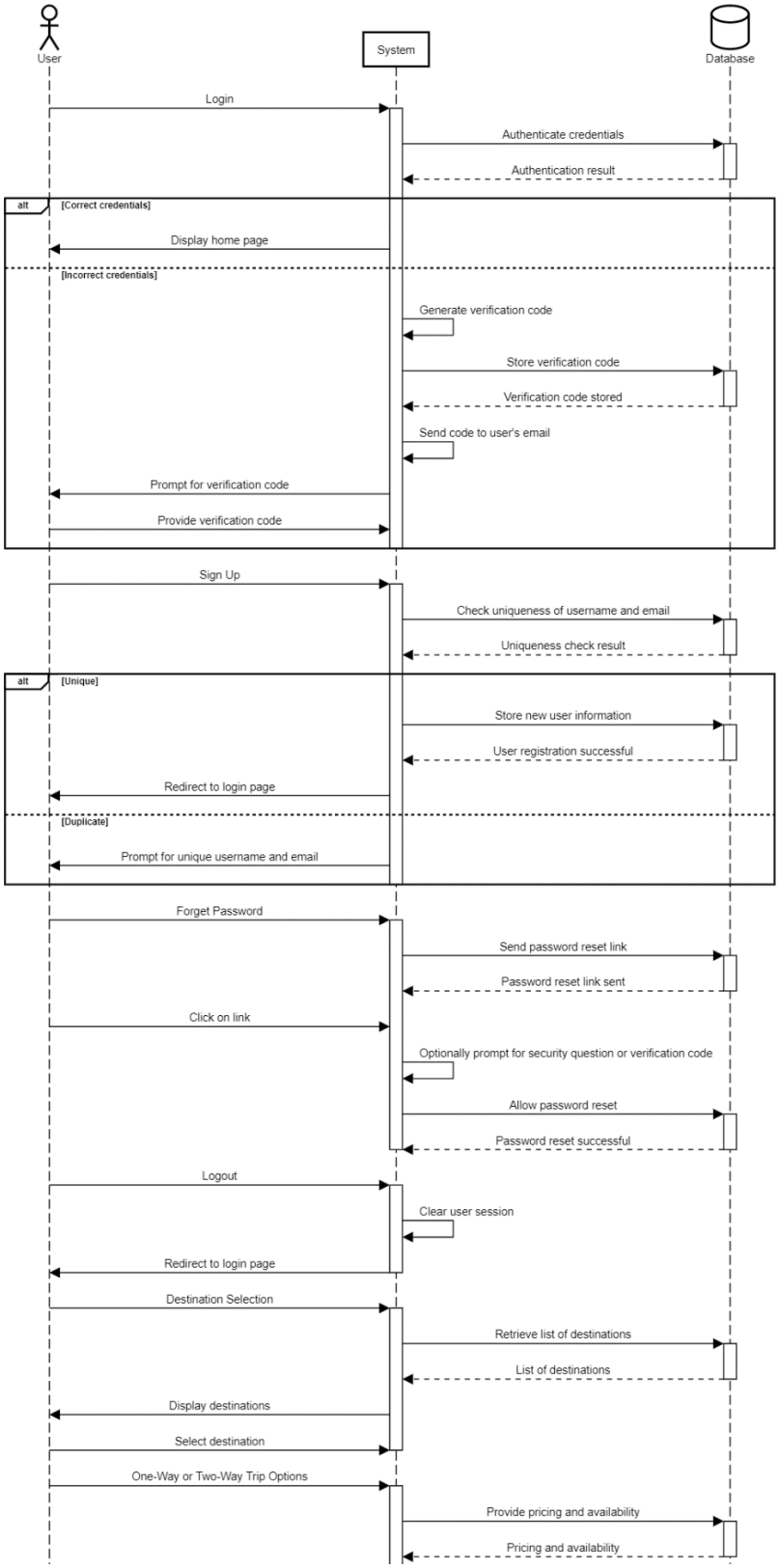
5. Class Diagram:

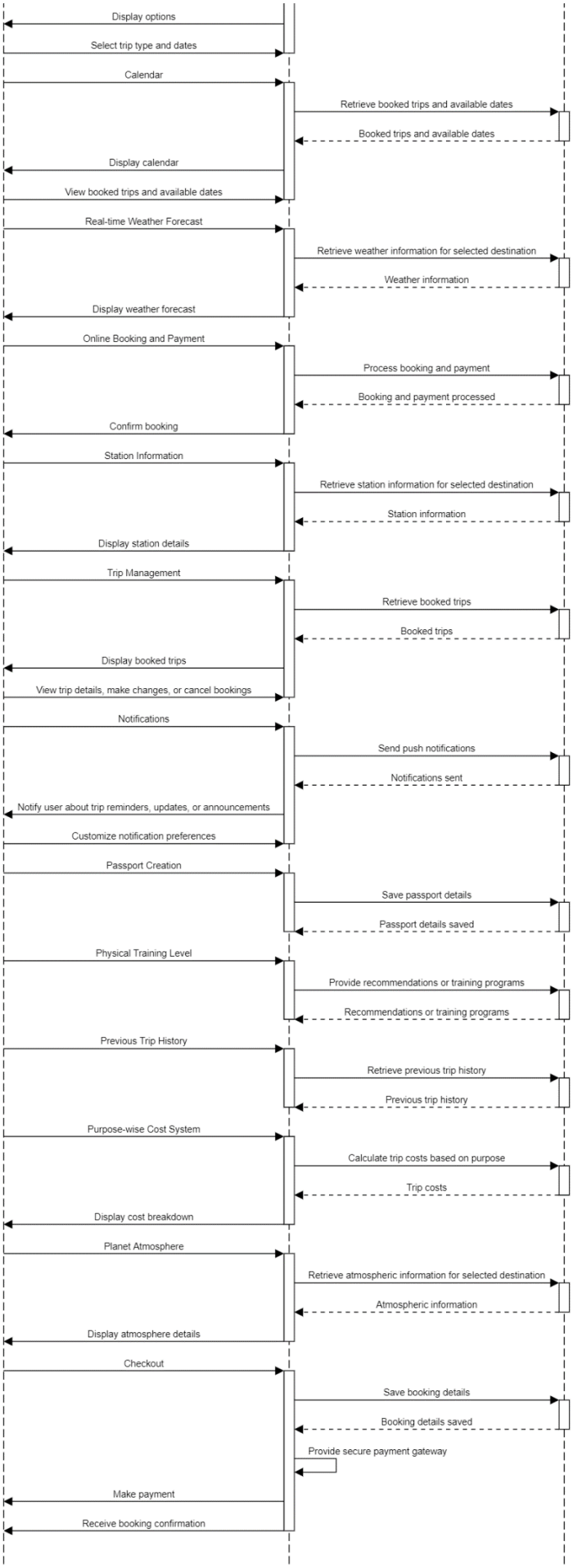


6. Activity Diagram:

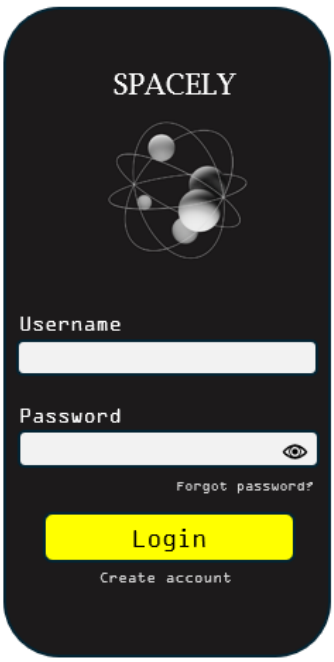


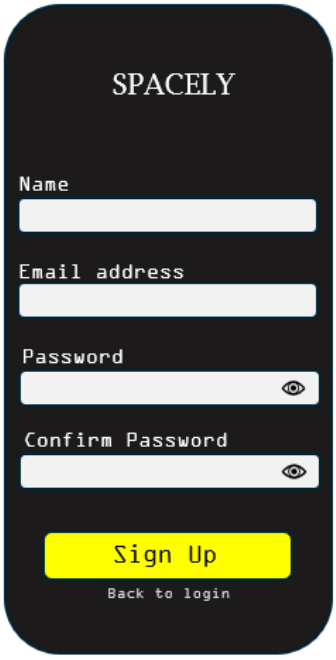
7. Sequence Diagram:

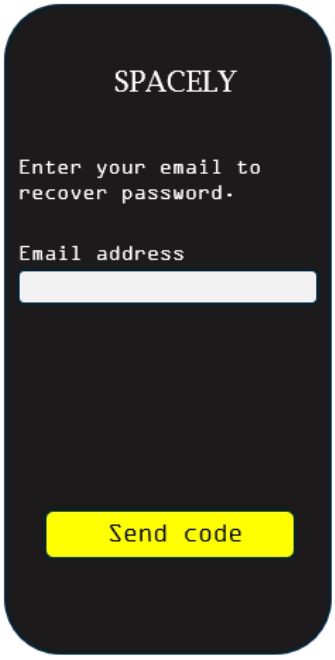


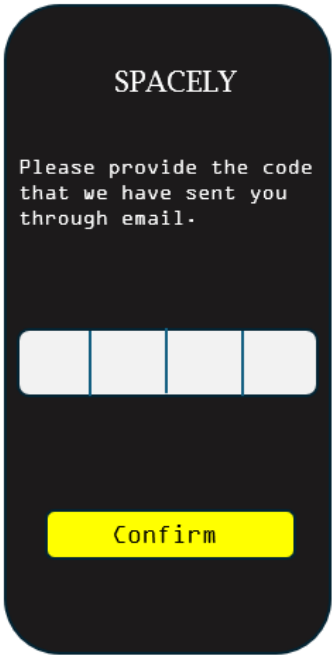

Display options
Select trip type and dates
Calendar
Retrieve booked trips and available dates
Booked trips and available dates
Display calendar
View booked trips and available dates
Real-time Weather Forecast
Retrieve weather information for selected destination
Weather information
Display weather forecast
Online Booking and Payment
Process booking and payment
Booking and payment processed
Confirm booking
Station Information
Retrieve station information for selected destination
Station information
Display station details
Trip Management
Retrieve booked trips
Booked trips
Display booked trips
View trip details, make changes, or cancel bookings
Notifications
Send push notifications
Notifications sent
Notify user about trip reminders, updates, or announcements
Customize notification preferences
Passport Creation
Save passport details
Passport details saved
Physical Training Level
Provide recommendations or training programs
Recommendations or training programs
Previous Trip History
Retrieve previous trip history
Previous trip history
Purpose-wise Cost System
Calculate trip costs based on purpose
Trip costs
Display cost breakdown
Planet Atmosphere
Retrieve atmospheric information for selected destination
Atmospheric information
Display atmosphere details
Checkout
Save booking details
Booking details saved
Provide secure payment gateway
Make payment
Receive booking confirmation

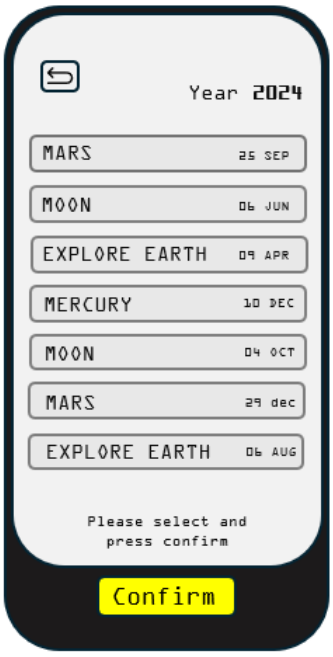
8. USER INTERFACE AND EXPERIENCE (UI/UX):

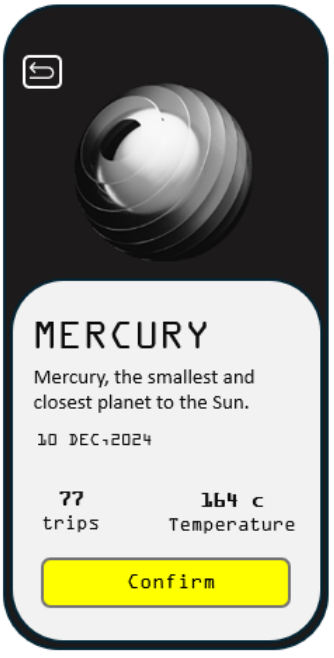


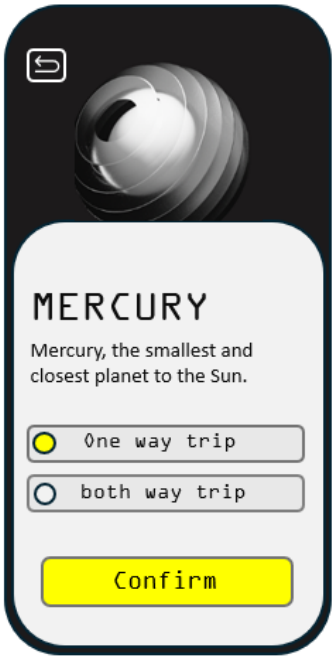




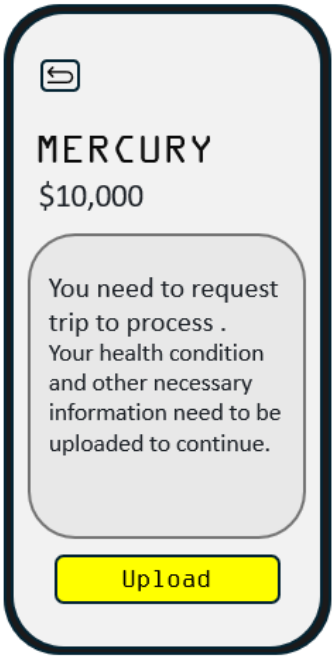


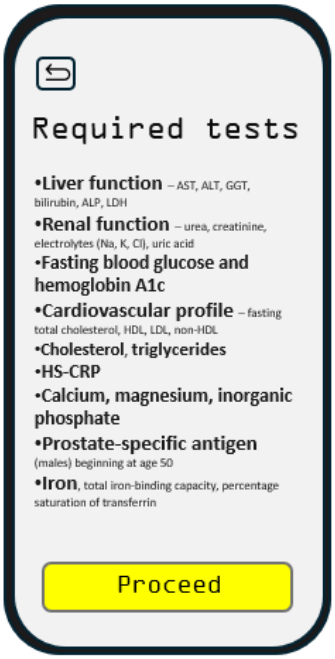




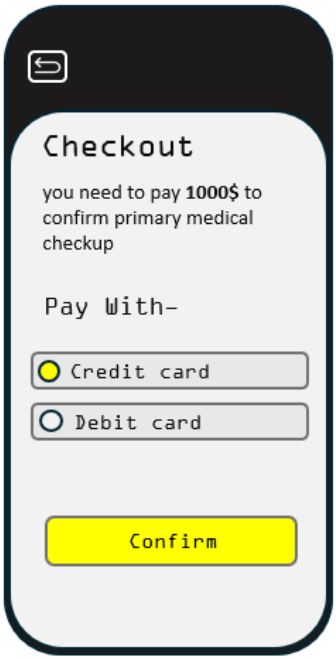

MERCURY
Mercury, the smallest and closest planet to the Sun.
One way trip
both way trip
Confirm

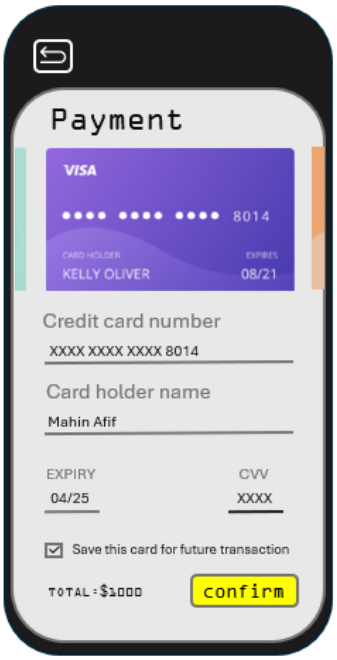

MERCURY
Purpose of this trip:
travelling
research
exploration
Confirm


MERCURY
$10,000
You need to request trip to process . Your health condition and other necessary information need to be uploaded to continue.
Upload

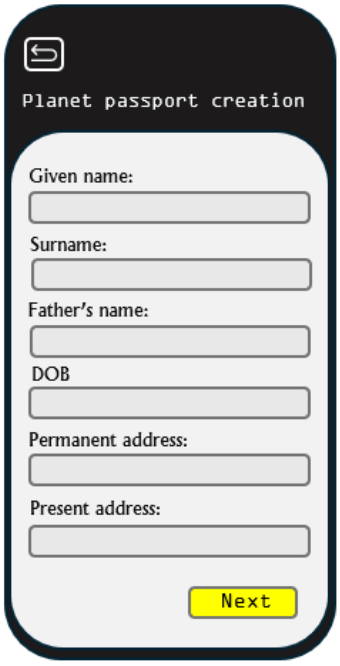

Required tests
•Liver function – AST, ALT, GGT, bilirubin, ALP, LDH
•Renal function – urea, creatinine, electrolytes (Na, K, Cl), uric acid
•Fasting blood glucose and hemoglobin A1c
•Cardiovascular profile – fasting total cholesterol, HDL, LDL, non-HDL
•Cholesterol, triglycerides
•HS-CRP
•Calcium, magnesium, inorganic phosphate
•Prostate-specific antigen (males) beginning at age 50
•Iron, total iron-binding capacity, percentage saturation of transferrin
Proceed

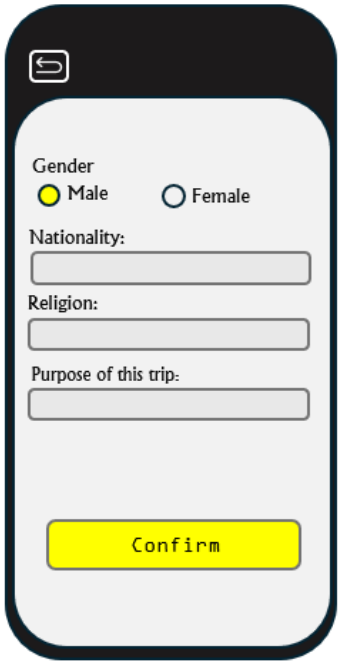

Upload documents
Confirm


Checkout
you need to pay 1000$ to confirm primary medical checkup
Pay With-
Credit card
Debit card
Confirm

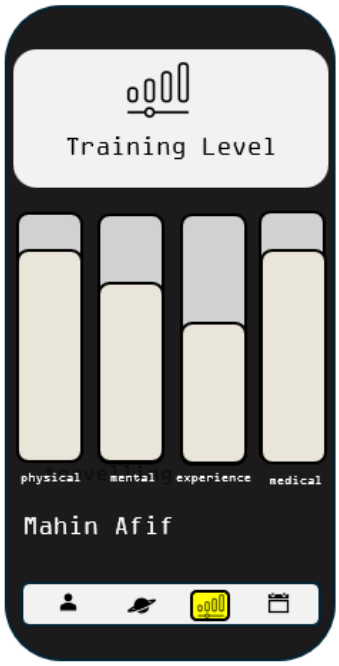

Payment
VISA
8014
KELLY OLIVER
08/21
Credit card number
XXXX XXXX XXXX 8014
Card holder name
Mahin Afif
EXPIRY
04/25
CVV
XXXX
Save this card for future transaction
TOTAL:$1000
confirm

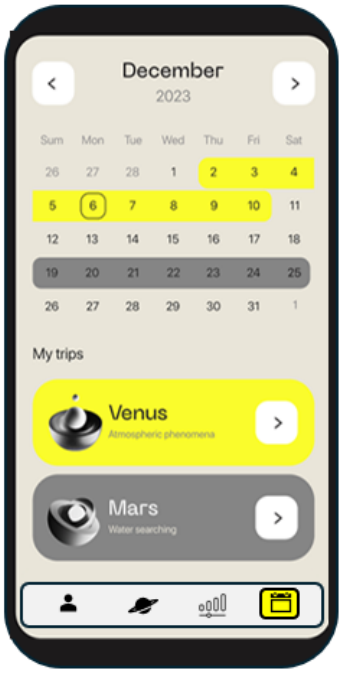

Congratulations!
your primary request for space trip to Mercury has been approved.
Now you can apply for NASA training
Apply for passport


Planet passport creation
Given name:
Surname:
Father's name:
DOB
Permanent address:
Present address:
Next


Gender
Male
Female
Nationality:
Religion:
Purpose of this trip:
Confirm

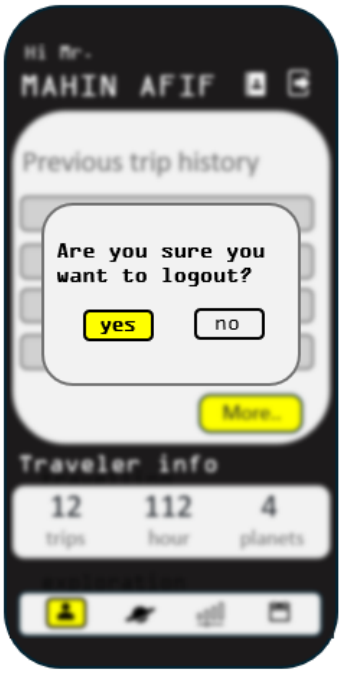

Request for passport creation is sent!
your primary request for planet passport is sent to NASA. You will get a confirmation notice later.
Proceed


Training Level
physical
mental
experience
medical
Mahin Afif


December
2023
Sun Mon Tue Wed Thu Fri Sat
My trips
Venus
Mars


Hi Mr.
MAHIN AFIF
Previous trip history
More..
Traveler info
12 trips
112 hour
4 planets


Planet passport
Given name: Mahin Montasir
Surname: Afif
Father's name: Md. Ali Akbar
DOB: 09-25-2000
Permanent address: Uttara, Dhaka
Present address: 33/A,kuril,Dhaka
Gender: Male
Nationality: Bangladeshi
Religion: Islam
Purpose of this trip: Exploration


Hi Mr.
MAHIN AFIF
Previous trip history
Are you sure you want to logout?
yes
no
More..
Traveler info
12 trips
112 hour
4 planets

9.TEST CASES/TEST ITEMS:

Project Name: ***A Space Trip app***		Test Designed by: Mahin Montasir Afif		
Test Case ID: FR_1.1		Test Designed date:		
Test Priority (Low, Medium, High): Medium		Test Executed by:		
Module Name: User Registration		Test Execution date:		
Test Title: Verify User Registration with valid input data				
Description: Test user registration process				
Precondition (If any): User is on the registration page				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/ Fail)

1. Go to the app. 2. Click on the signup button. 3. Enter valid name, username, email, and password. 4. Click submit Name: John Smith 5. Username: johnsmith123 6. Email: johnsmith123@gmail.com 7. Password: Password123 User account is created, and user is redirected to the login page As expected, Pass 8. Check email for verification link and click on it User is redirected to a page confirming their email address 9. Enter the registered email and password. 10. Click submit Email: johnsmith123@gmail.com 11. Password: Password123 User is redirected to the user account's home page	Name: John Doe Username: john_doe Email: john.doe@example.com Password: Abc12345	User should valid Username, Phone no and password		
Post Condition: User account is created.				

Project Name: ***A Space Trip app***			Test Designed by: Mahin Montasir Afif	
Test Case ID: FR_1.2			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: User Registration			Test Execution date:	
Test Title: Verify User Email				
Description: Test user email				
Precondition (If any): User is on the registration page				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the app. 2. Click on the signup button 3. Enter valid name, username, email, and password 4. Click submit Name: John Smith 5. Username: johnsmith123 6. Email: johnsmith123@gmail.com 7. Password: Password123 User account is created and user is redirected to the login page As expected, Pass 8. Check email for verification link and click on it User is redirected to a page confirming their email address 9. Enter the registered email and password 10. Click submit Email:	Name: John Doe Username: john_doe Email: john.doe@example.com Password: Abc12345	User should valid Email address		

johnsmith123@gmail.com 11. Password: Password123 User is redirected to the user account's home page				
Post Condition: User account is created and verified with the email address. The user's information is stored in the database.				

Project Name: ***A Space Trip app***		Test Designed by: Mahin Montasir Afif		
Test Case ID: FR_1.3		Test Designed date:		
Test Priority (Low, Medium, High): High		Test Executed by:		
Module Name: User Registration		Test Execution date:		
Test Title: Verify User with Username and Password.				
Description: Test user username and password				
Precondition (If any): User is on the registration page				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Go to the app 2. Click on the signup button 3. Enter valid name, username, email, and password 4. Click submit Name: John Smith 5. Username: johnsmith123 6. Email: johnsmith123@gmail.com 7. Password: Password123 User account is created and user is redirected to the login page As expected, Pass 8. Check email for verification link and click on it User is redirected to a page confirming	Name: John Doe Username: john_doe Email: john.doe@example.com Password: Abc12345	User should valid Username and password		
their email address 9. Enter the registered email and password 10. Click submit Email: johnsmith123@gmail.com 11. Password: Password123 User is redirected to the user account's home page				
Post Condition: User account is created and verified with the email address. The user's information is stored in the database.				

Project Name: ***A Space Trip app***			Test Designed by: Mahin Montasir Afif	
Test Case ID: FR_2.1			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Login Session			Test Execution date:	
Test Title: Verify successful login with valid username and password				
Description: Test website login page				
Precondition (If any): User must have valid username and password				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the app 2. Enter username 3. Enter password 4. Click submit	Username: john doe Password: Abc12345	User should login into the application		
Post Condition: User is validated with database and successfully login to account. The account session details are logged in the database.				

Project Name: ***A Space Trip app***			Test Designed by: Mahin Montasir Afif	
Test Case ID: FR_2.2			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Login Session			Test Execution date:	
Test Title: Verify login with incorrect username and password				
Description: Test website login page with incorrect username and password:				
Precondition (If any): User must have incorrect username and password				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Go to the app 2. Enter incorrect username 3. Enter incorrect password 4. Click submit Username: abc123 Password: pass123 User should be prompted with a verification code and an email should be sent to the user's email address As expected, Pass 5. Check email for verification code and enter the verification code received in the email. User should be redirected to the website and prompted to enter the correct username and password 6. Enter the correct username and password 7. Click submit User should login into the application	Username: abc123 Password: pass123 Verification code: 12345	User should login into the application		
Post Condition: User is logged in and the home page of the user account is displayed. The user session details are logged in the database.				

Project Name: ***A Space Trip app***		Test Designed by: Mahin Montasir Afif		
Test Case ID: FR_2.3		Test Designed date:		
Test Priority (Low, Medium, High): High		Test Executed by:		
Module Name: Login Session		Test Execution date:		
Test Title: Verify account block after exceeding the login attempts.				
Description: Test website login page with maximum login attempts				
Precondition (If any): User must have entered incorrect login credentials 3 times.				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Go to the app 2. Enter incorrect username 3. Enter incorrect password 4. Click submit Username: abc123 Password: pass123 User should be prompted with a verification code and an email should be sent to the user's email address As expected, Pass 5. Check email for verification code and enter the verification code received in the email. Verification code: 12345 User should be redirected to the website and prompted to enter the correct username and password. As expected, Pass 6. Enter the incorrect username and password two more times 7. Click submit after the third incorrect attempt User should be blocked from logging in for one hour As expected, Pass 8. Try to log in with the correct username	Username: 111115444 Password: 123	User should not log in into the application		

and password during the blocked period. User should be blocked from logging in, and an error message should be displayed to the user. As expected, Pass 9. Wait for one hour 10. Try to log in with the correct username and password again.				
Post Condition: User is logged in and the home page of the user account is displayed. The user session details are logged in the database.				

Project Name: ***A Space Trip app***		Test Designed by: Mahin Montasir Afif		
Test Case ID: FR_3.1		Test Designed date:		
Test Priority (Low, Medium, High): High		Test Executed by:		
Module Name: Forget Password		Test Execution date:		
Test Title: Verify Password Recovery Process				
Description: Test the password recovery process				
Precondition (If any):				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the app 2. Click on the "Forgot Password" link. 3. Enter registered email address. 4. Check email for password reset link. 5. Click on the password reset link. 6. Set a new password.		User get their new password.		

Post Condition: The app has set a new password for the user if he has forgotten it.

Project Name:			Test Designed by: Mahin Montasir Afif	
Test Case ID: FR_3.2			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Forget Password			Test Execution date:	
Test Title: Verify User Logout Functionality				
Description: Test the user logout functionality				
Precondition (If any): User is logged in				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Open the app. 2. Click on the profile section. 3. Click on log out.		User is logged out, and the login page is displayed.		
Post Condition: User logout successful and get back to login page.				

Project Name: ***A Space Trip app***			Test Designed by:	
Test Case ID: FR_3.3			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Forget Password			Test Execution date:	
Test Title: Verify Destination Selection Process				
Description: Test the process of browsing and selecting space destinations				
Precondition (If any): User is logged in				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Open the app. 2. Navigate to destinations section. 3. Browse and select desired destination 4. Verify information such as distance, duration, and attractions.		User successfully selected destination.		
Post Condition: Information is accurate and relevant.				

Project Name: ***A Space Trip app***			Test Designed by: Mahin Montasir Afif	
Test Case ID: FR_3.3			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Forget Password			Test Execution date:	
Test Title: Verify One-Way and Two-Way Trip Selection				
Description: Test the process of selecting between one-way and two-way trip options				
Precondition (If any): Destination is selected				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to trip options section. Navigate to destinations section. 2. Choose between one-way and two-way trips. 3. Verify pricing and availability for both options.		Selected option is highlighted.		

Post Condition: Pricing and availability are displayed correctly.

Project Name: ***A Space Trip app***			Test Designed by: Mahin Montasir Afif	
Test Case ID: FR_3.4			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Forget Password			Test Execution date:	
Test Title: Verify Calendar Feature				
Description: Test the functionality of the calendar feature.				
Precondition (If any): User is logged in				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the calendar section. 2. View booked trips, upcoming events, and available dates. 3. Check for highlighted special events or holidays.		Information is displayed accurately.		
Post Condition: Events and holidays are highlighted.				

Project Name: ***A Space Trip app***			Test Designed by: Mahin Montasir Afif	
Test Case ID: FR_3.5			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Forget Password			Test Execution date:	
Test Title: Verify Real-time Weather Forecast				
Description: Test the functionality of accessing real-time weather forecasts				
Precondition (If any): Destination is selected				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the weather forecast section. 2. Access real-time weather information. 3. View weather forecasts for specific dates.		Temperature, atmospheric conditions, and hazards are shown.		
Post Condition: Forecast for selected dates is displayed.				

Project Name: ***A Space Trip app***			Test Designed by: Mahin Montasir Afif	
Test Case ID: FR_3.6			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Forget Password			Test Execution date:	
Test Title: Verify Online Booking and Payment				
Description: Test the process of booking space trips and making payments online				
Precondition (If any): Destination and trip options are selected				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Go to booking section. 2. Select trip options and confirm booking details. 3. Proceed to payment. 4. Make payment. 5. Receive booking confirmation.		Payment is processed successfully.		
Post Condition: Confirmation message or email is received.				

Project Name: ***A Space Trip app***		Test Designed by: AZMINUR RAHMAN		
Test Case ID: FR_4.1		Test Designed date:		
Test Priority (Low, Medium, High): High		Test Executed by:		
Module Name: Forget Password		Test Execution date:		
Test Title: Verify Access to Station Information				
Description: Test the functionality of accessing information about space stations				
Precondition (If any): Destination is selected				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to station information section. 2. Access details about station location, facilities, and transportation options.		Information is accurate and comprehensive.		

3. Filter stations based on criteria such as country or popularity.				
Post Condition: Stations are filtered accordingly.				

Project Name: ***A Space Trip app***			Test Designed by: AZMINUR RAHMAN	
Test Case ID: FR_4.2			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Forget Password			Test Execution date:	
Test Title: Verify Passport Creation				
Description: Test the process of creating a virtual passport within the app				
Precondition (If any): User is logged in				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to the passport creation section. 2. Enter personal information and upload photos. 3. View passport details, including desired destinations and trip history.		Passport creation is successful.		
Post Condition: Details are displayed accurately.				

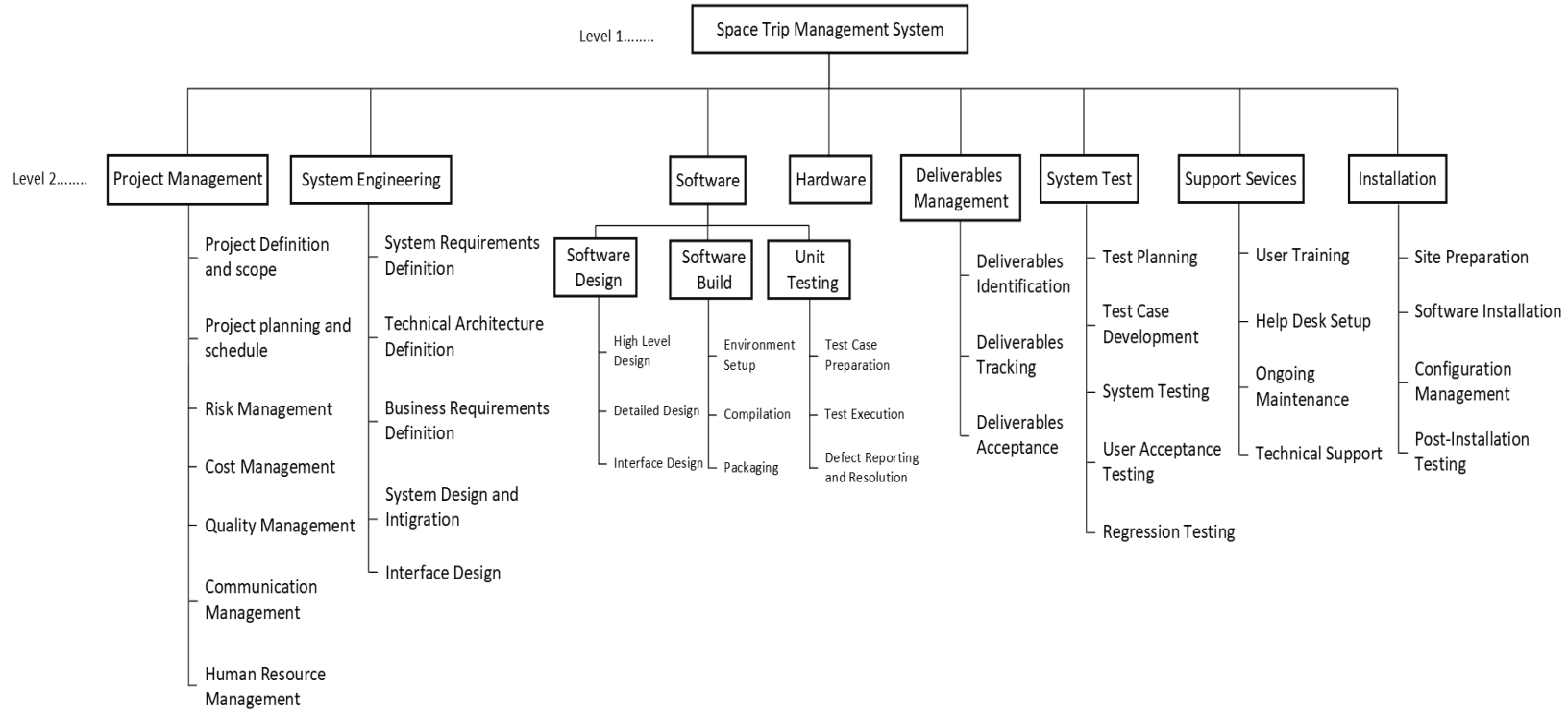
Project Name: ***A Space Trip app***			Test Designed by: AZMINUR RAHMAN	
Test Case ID: FR_4.3			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Forget Password			Test Execution date:	
Test Title: Verify Physical Training Input				
Description: Test the process of inputting physical training level or fitness goals				
Precondition (If any): User is logged in				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to physical training section. 2. Enter physical training level or fitness goals. 3. Receive recommendations or training programs.	Get physical training documents .	information is saved successfully.		
Post Condition: Recommendations are provided based on input.				

Project Name: ***A Space Trip app***			Test Designed by: AZMINUR RAHMAN	
Test Case ID: FR_4.4			Test Designed date:	
Test Priority (Low, Medium, High): High			Test Executed by:	
Module Name: Forget Password			Test Execution date:	
Test Title: Verify Purpose-wise Cost Calculation				
Description: Test the functionality of providing cost breakdowns based on the purpose of the trip				
Precondition (If any): Destination and trip options are selected				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)

1. Go to cost system section. 2. Select trip purpose (e.g., tourism, research, exploration).		Cost breakdown options are displayed.		
Post Condition: Relevant cost breakdown is shown.				

Project Name: ***A Space Trip app***		Test Designed by: AZMINUR RAHMAN		
Test Case ID: FR_4.5		Test Designed date:		
Test Priority (Low, Medium, High): High		Test Executed by:		
Module Name: Forget Password		Test Execution date:		
Test Title: Verify Checkout Process				
Description: Test the process of reviewing trip details and making payments				
Precondition (If any): Trip is booked				
Test Steps	Test Data	Expected Results	Actual Results	Status (Pass/Fail)
1. Go to checkout section. 2. Review trip details before proceeding.		Cost breakdown options are displayed.		
Post Condition: Confirmation message or email is received.				

10. WORK BREAKDOWN STRUCTURE (WBS):



11.EFFORT ESTIMATION:

COCOMO (Constructive Cost Model):

SLOC = 11000
P = 1.05 (Organic)
Coefficient <Effort Factor> = 2.4
T = 0.38

Effort = PM = Coefficient*(SLOC/1000) ^P
= 2.4 * (11000/1000) ^1.05
= 29.76 months

Development time = DM = 2.50*(PM)^T
= 2.50 * (29.76) ^0.38

= 9.07 months

Required number of people = ST = PM/DM
= 29.76/9.07
= 3.28
= 4

EVA:

Task	Planned Effort	Actual Effort
1	8	8.5
2	9	10
3	8.5	8
4	5	6
5	9.5	9
6	13	12.5
7	12.5	11.5
8	25	26
9	16	16.5
10	7	-
11	10	-
12	13	-

When we were asked to do the earned value analysis, 9 tasks were completed. However, the project scheduled indicates that 12 tasks should have been completed.

Effort Estimation = 595 Person Day

BAC = 595.00

BCWP = 106.50

BCWS = 136.50

ACWP = 108.00

SPI = BCWP/BCWS = 106.50/136.50 = 0.7802

SV = BCWP - BCWS = 106.50 – 136.50 = -30 person-day
CPI = BCWP/ACWP = 106.50/108.00 = 0.9861

CV = BCWP – ACWP = 96.50 – 108.00 = -1.5

% schedule for completion = BCWS/BAC = 136.50/595.00 = 22.94%

[% of work schedule to be done at this time]

% complete = BCWP/BAC = 106.50/595.00 = 17.90%

[% of work completed at this time]

12.1: TIMELINE CHARTS (1):

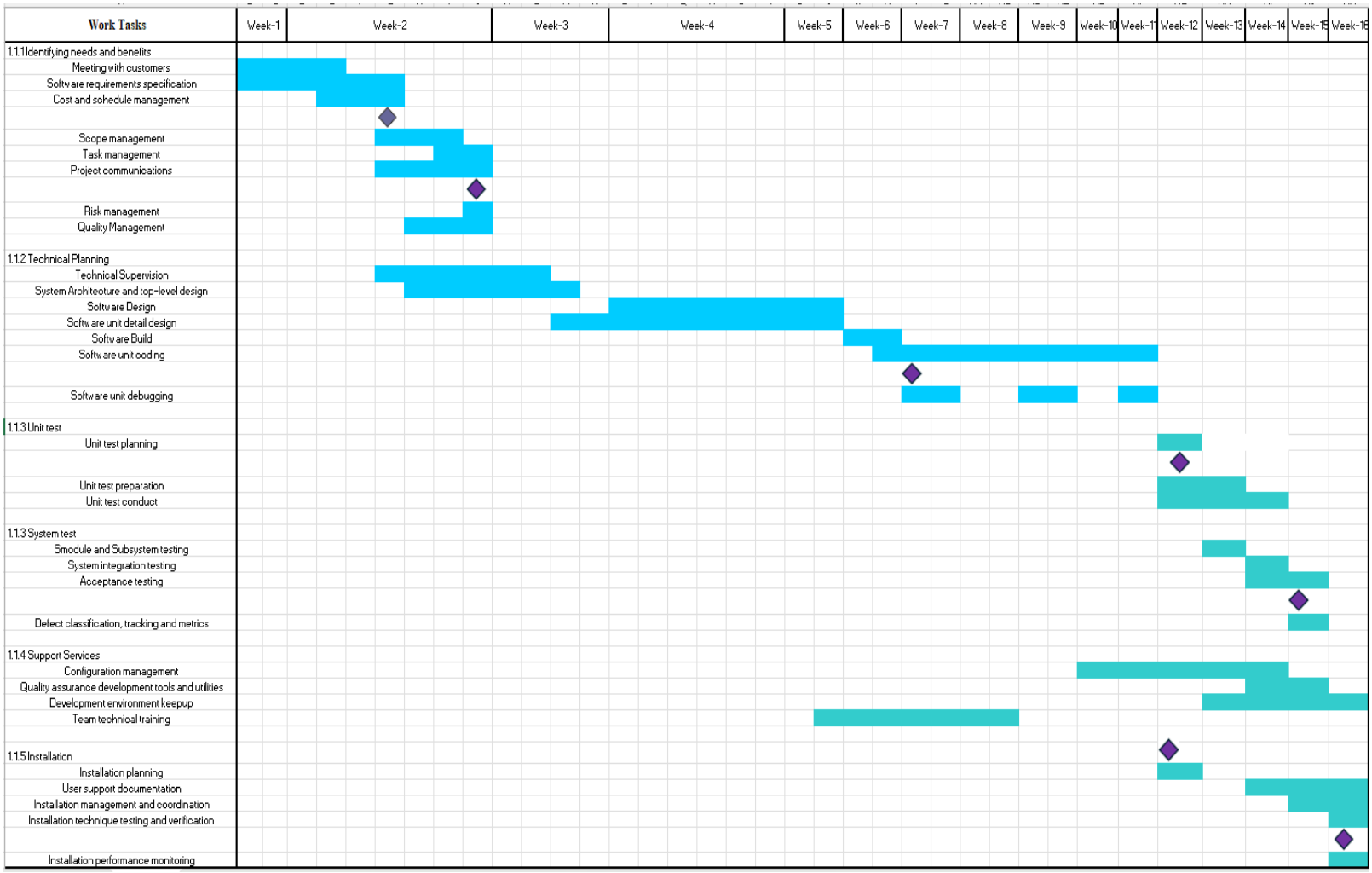
	Pre-Game					Game						Post-Game				
						SPRINT-1		SPRINT-2		SPRINT-3						
Task: Person	**Week-1**	**Week-2**	**Week-3**	**Week-4**	**Week-5**	**Week-6**	**Week-7**	**Week-8**	**Week-9**	**Week-10**	**Week-11**	**Week-12**	**Week-13**	**Week-14**	**Week-15**	**Week-16**
A: James																
B: James																
C: David																
D: David																
E: David																
F: James																
G: James																
N: James																
I: James																
H: Bond																
J: Bond																
K: Bond																
P: Chappie																
M: David																
L: Chappie																
O: David																
Final Release																

A: Meeting With Customer
B: Requirements Planning
C: Overall Architecture
D: Project Planning
E: Project Designing

F: Specify Module 1
G: Specify Module 2
H: Specify Module 3
I: Code Module -1
J: Code Module -2
K: Code Module -3

L: Integration Testing
M: System Testing
N: Analysis
O: Documentation
P: Functional Testing

12.2: TIMELINE CHARTS (2):



13. Risk Table:

Risks	Category	Probability	Impact	RMMM
Size estimate may be significantly low	PS	60%	2	Let's have the size of the new project checked. It might be smaller than anticipated. Careful consideration of the project's components is needed for effective planning and proper resource utilization.
Larger number of users than planned	PS	30%	3	The project's scalability approach should be revised to handle unexpected increases in user traffic. This requires adjusting resource allocation and adopting flexible scaling solutions in advance.
Less reuse than planned	PS	70%	2	The reuse strategy needs to be revamped, and other ways to use resources better should be investigated. It's important to focus on being adaptable and efficient when allocating resources.
End-users resist system	BU	40%	3	Educate users on how to effectively utilize the university's new technology, ensuring a smooth transition and maximizing its benefits.
Delivery deadline will be tightened	BU	50%	1	Accelerate development progress by prioritizing essential feature implementation, ensuring timely delivery and user satisfaction.
Funding will be lost	CU	40%	1	Conduct regular meetings with stakeholders to demonstrate the tangible value they can expect from their investment, fostering transparency and alignment throughout the project lifecycle.
Customer will change requirements	PS	80%	2	Adopt agile methodologies to remain adaptable and responsive to rapid changes, ensuring project readiness for evolving requirements and market dynamics.
Technology will not meet expectations	TE	30%	1	Evaluate the feasibility of importing advanced technology to meet quality expectations or consider custom-built solutions from China to fulfill specific project requirements.
Lack of training on tools	DE	80%	3	Develop comprehensive documentation and training materials for the development tools to empower team members with the necessary skills and knowledge for effective utilization.
Staff inexperienced	ST	30%	2	Train the staff on new technologies to ensure seamless integration and proficiency in their use.
Staff turnover will be high	ST	60%	2	Establish knowledge transfer mechanisms to mitigate the effects of high staff turnover on project continuity, ensuring seamless transitions and retention of critical expertise.
Unclear requirements or Changing requirements	PS	80%	2	Address unclear or changing requirements promptly to maintain project clarity and momentum.

Security vulnerabilities or data breaches	PR	10%	2	Mitigate security vulnerabilities and prevent data breaches through rigorous security protocols and proactive monitoring.
Delays is software developments or testing	CU	50%	3	Address delays in software development or testing promptly to ensure project timelines are met effectively.

Category:

- Product size (PS)
- Business impact (BU)
- Customer characteristics (CU)
- Process definition (PR)
- Development environment (DE)
- Technology to be built (TE)
- Staff size and experience (ST)

Impact values:

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

Rubric for Project Assessment (CO1)

Marking Criteria	Marks Distribution (Maximum 3X5=15)				Acquired Marks
	Inadequate (1-2)	Satisfactory (3)	Good (4)	Excellent (5)	
Background Analysis	No background information regarding the project is given; project goals and benefits are missing.	Insufficient background information is given; project goals and benefits are poorly stated	Sufficient background information is given; the purpose and goals of the project are explained.	Thorough and relevant background information is given; project goals are clear and easy to identify.	
Analysis the impact of societal, health, safety, legal and cultural issues	Student vaguely discuss the impact of societal, health, safety, legal and cultural issues in their project	Student provided with partial relevance to the impact of societal, health, safety, legal and cultural issues in their project	Student fairly provided the analysis to the impact of societal, health, safety, legal and cultural issues in their project	Student comprehensively provided the analysis to the impact of societal, health, safety, legal and cultural issues in their project	
Existing Studies and Relevant Example	Ambiguous representative example.	Partially identify / indicate towards real-life example.	Real-life example is fairly connected towards the definition.	Comprehensively defend with real life example.	
				Acquired Marks:	
				CO Pass / Fail:	

Rubric for Project Assessment (CO2)

Criteria	Marks distribution (Max 3X5= 15)				Acquired Marks
	Inadequate (1-2)	Satisfactory (3)	Good (4)	Excellent (5)	
Argumentation of Model selection with Evidence of Argumentation	Does not articulate a position or argument of choosing appropriate model. Does not present any evidence to support the arguments for the choice of the model	Articulates a position or argument for choosing models that is unfocused or ambiguous. Presents incomplete/vague evidence to support argument for model choice	Articulates a position or argument of choosing models that is limited in scope. Does not present enough evidence to support the argument for the choice of the model	Clearly articulates a position or argument for the choosing software engineering models. Presents sufficient amount of evidence to support argument for the model selection	
Role identification and Responsibility Allocation	The project has poor project management plans for identifying roles and assigning the responsibilities	Identify few roles in the project management where some of the roles are left alone with any project responsibilities	Identify most of the roles in the project management and assign their responsibilities	Well planned project with proper role identification and responsibility allocation in the project management activities	
Submission, Completeness, Spelling, grammar and Organization of the Project report	Project report is not complete and Several errors in spelling and grammar. Present a Confusing organization of concepts, supporting arguments, and real-life example. Sentences rambling, and details are repeated.	Some errors in spelling and grammar. Some problems of organizing the answer in a logical order of defining, elaborating, and providing real-life examples.	Few errors in spelling and grammar. Presents most of the details in a logical flow of organization in definition, details, and example.	Project report is complete and No errors in spelling and grammar. Consistently presents a logical and effective organization of definition, details, and real-life example of the topic.	
				Acquired marks:	
				CO Pass / Fail:	