CS3354 Software Engineering Final Project Deliverable 2

Suite Software

A Hotel Management System

Arjun Balaji, Aseal Mohmand, Cristian Cruz, Joel Tharakan, Ryan Nelson, Titus Ayeni, Trankley Mahler

Delegation of Tasks for Deliverable 2

Team Member	Tasks
Arjun Balaji	Create GitHub, Create Sequence Diagram, Project Schedules, Presentation
Aseal Mohmand	Create Class Diagram, Structure deliverable, Cost Estimate, Conclusion
Cristian Cruz	Create Architectural Design Pattern: Repository, Write Functional Requirements, Demo
Joel Tharakan	Commit ReadMe, Create Case Diagram, Software Comparison, GitHub
Ryan Nelson	Manage Document, Write Non-Functional Requirements, Develop Test Plan, Write Test Code, Implement Test Plan on Test Code
Titus Ayeni	Agile Scrum Methodology, Review Class Diagram, Demo
Trankley Mahler	Commit Project Scope, Review Case Diagram, 3.3. - 3.5., References

Deliverable 1

PROJECT PROPOSAL

Hotel Management System

Group Members: Arjun Balaji, Ryan Nelson, Cristian Cruz, Trankley Mahler, Joel Tharakan, Aseal Mohmand, Titus Ayeni

Objective: To create a hotel management system that consolidates different systems into one all-encompassing program.

Motivation: When looking at a hotel management system, The Hotel goes through several different applications for one booking. Our goal is to lower the complexity of booking a hotel using our new all-encompassing software. The software focuses on incorporating the front-end software - Log in, Booking/Availability, Key code/Code generator, Auto-Messaging, Maintenace/Room service.

Tasks:

Cristian Cruz — Document formatting. Architectural design, comparison with similar software

Joel Tharakan – Motivation, use case diagram, class diagram

Ryan Nelson – Which software model and why, Cost effort and pricing,

Arjun Balaji - Wrote Objective, Created GitHub, sequence diagram

Trankley Mahler – project scope commit, project scheduling, conclusion, submission of materials

Aseal Mohmand– ReadMe, what will you be doing after feedback,

Titus Ayeni – List of software requirements, Test plan for software

We will all equally contribute to brainstorming, development of presentation, and sample code

Scholarly paper: No

Instructor Feedback

Interesting and promising to be a useful topic.

In the final report, please make sure to include comparison with similar applications -if any-, make sure that you differentiate your design from those, and explicitly specify how.

Fair delegation of tasks.

Please share this feedback with your group members.

You are good to go. Have fun with the project and hope everyone enjoys the collaboration.

Team Response

Our feedback did not require us to change our course of action for deliverable one, but we will keep the feedback in mind for deliverable two.

GITHUB - axb190105/3354-Suite-Life-Of-Code (github.com)

DELEGATION OF TASKS

Team Member	**Tasks**
Arjun Balaji	Create GitHub, Create Sequence Diagram
Aseal Mohmand	Create Class Diagram, Structure deliverable
Cristian Cruz	Create Architectural Design Pattern: Repository, Write Functional Requirements
Joel Tharakan	Commit ReadMe, Create Case Diagram
Ryan Nelson	Manage Document, Write Non-Functional Requirements, Review Sequence Diagram
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SOFTWARE PROCESS MODEL - For our project we are using the agile scrum methodology. This is a project management system that relies on incremental development. Each iteration consists of two- to four-week sprints, where the goal of each sprint is to build the most important features first and come out with a potentially deliverable product. We decided to use the agile methodology because we are prioritizing the most important aspects of the hotel management system first before implementing the least important aspects. For example, we would want to work on the Room Availability and booking system before implementing maintenance and Room Service.

SOFTWARE REQUIREMENTS

Functional Requirements

A user shall gain secure access to the system's user interface through the Log-in Portal.

A user shall be able to search for available rooms and services for all hotels.

The system shall automatically generate a text message containing the booked room's keycode.

The user shall be able to request a new keycode to their hotel room during the duration of their stay.

The system shall automatically deliver the text message containing the booked room's keycode to the requesting customer.

The system shall automatically generate each day, for each formerly occupied room, a list of rooms to be marked unavailable for maintenance.

The user shall be able to request room service and assistance at any time during staff hours.

Non-Functional Requirements

Users should be able to access the app on a mobile or desktop device.

Users should be able to book a hotel room in 10 minutes or less.

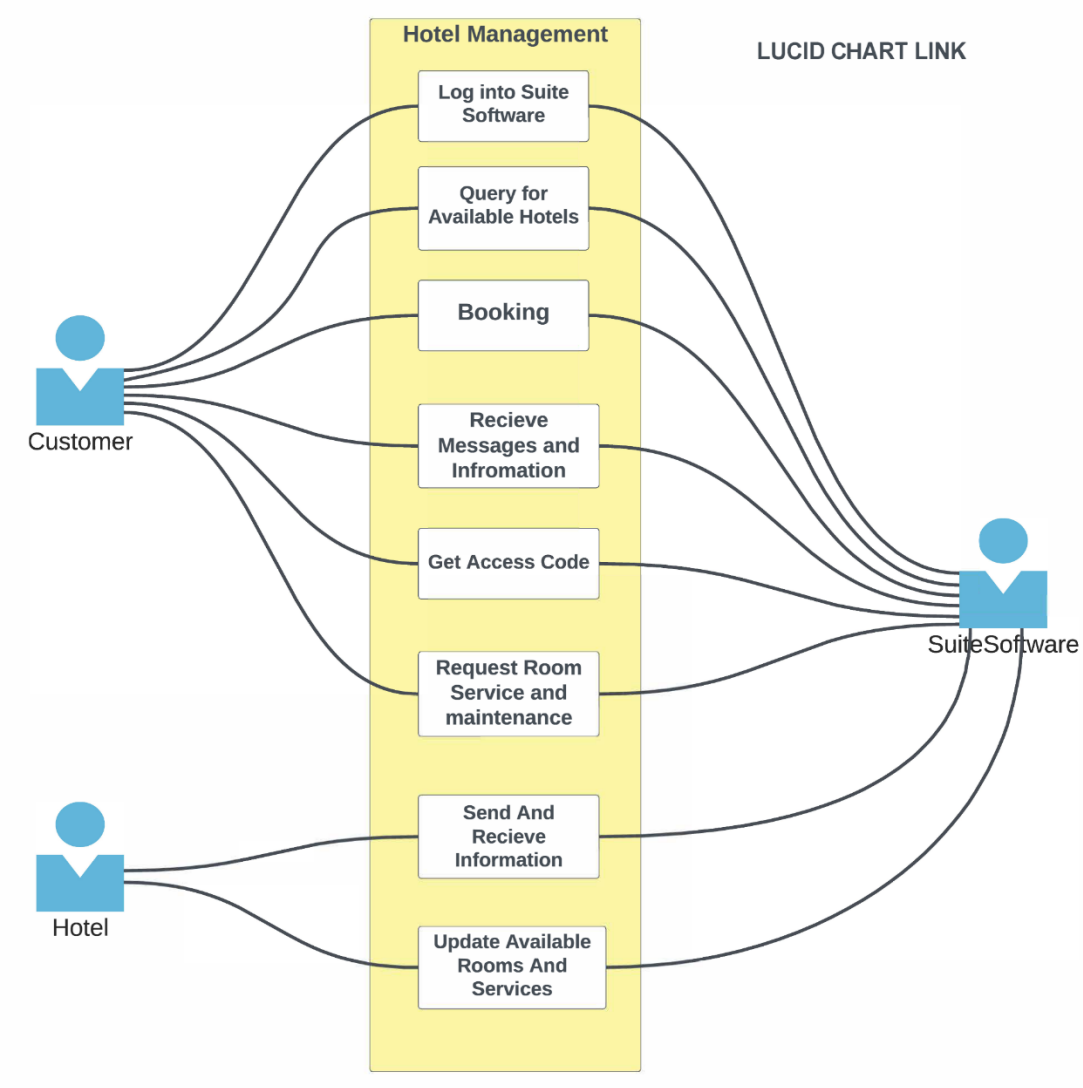
Auto-messages should be sent to email or SMS within one minute.

Guests' messages should be able to be viewed and responded to by hotel staff within a minute of sending.

Personal information, such as room number, key codes, and payment information, should be secure and only accessible by hotel staff with permission.

Software must be compatible with hotel licensing institutions, as well as local and federal law.

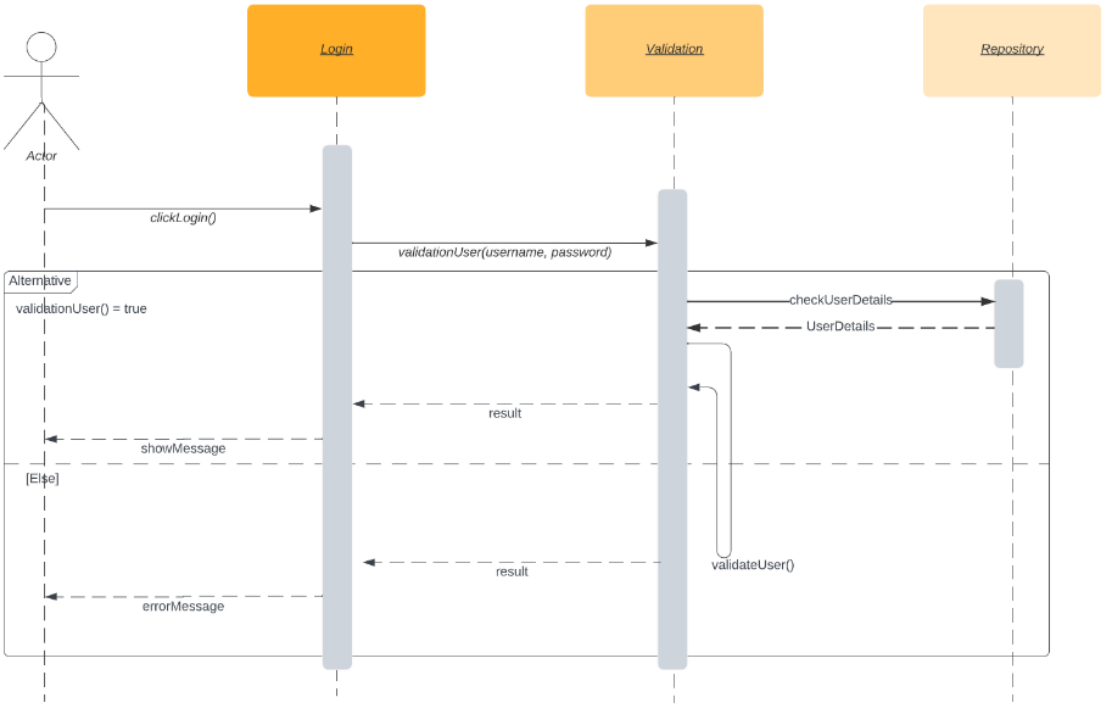
CASE DIAGRAM



SEQUENCE DIAGRAM

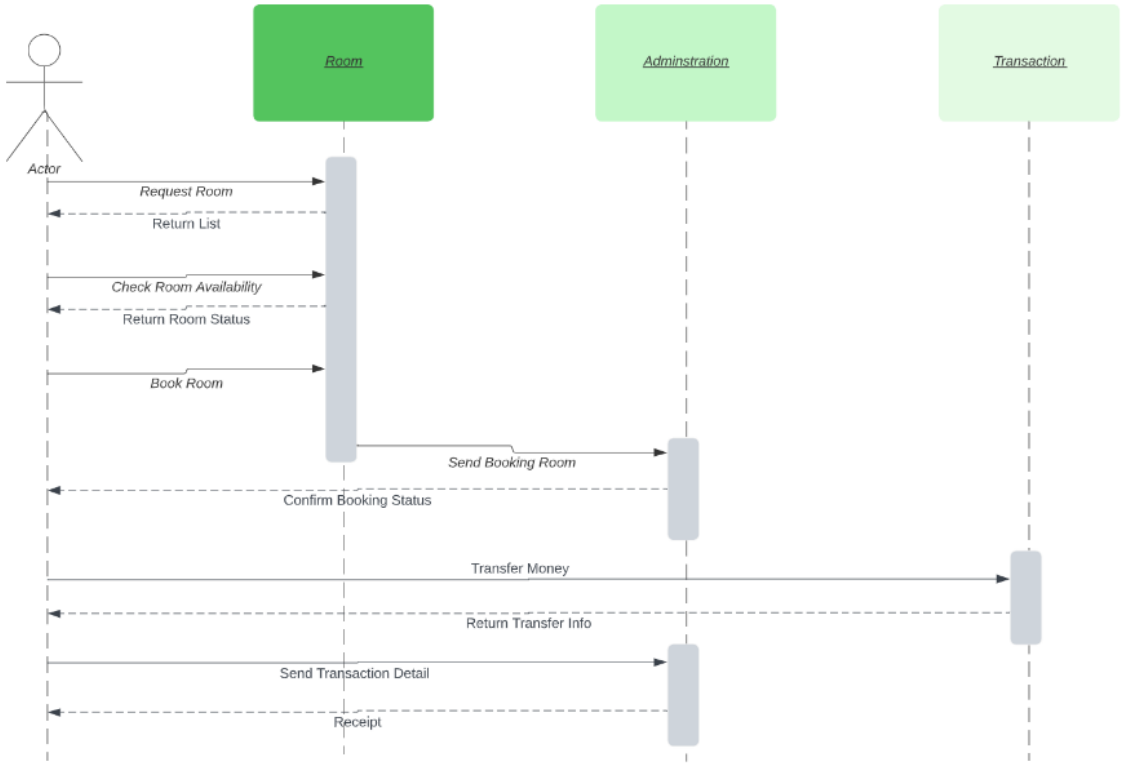
Login Sequence Diagram

Arjun Balaji | October 20, 2022



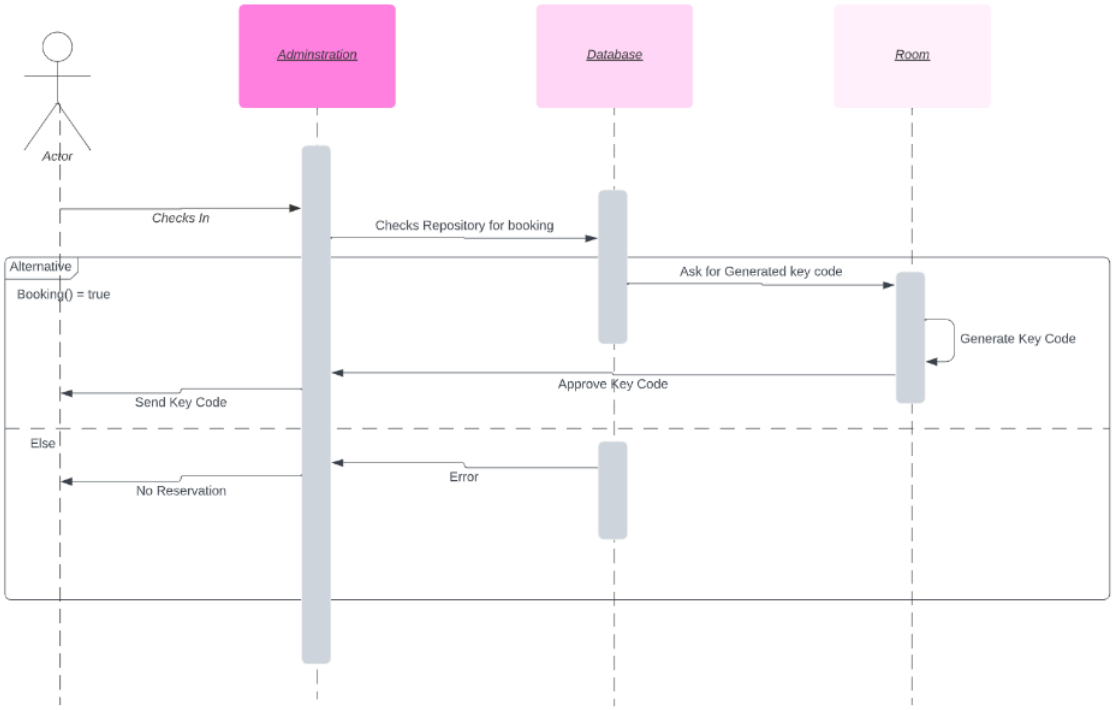
Booking/Availablility Sequence Diagram

Arjun Balaji | October 20, 2022



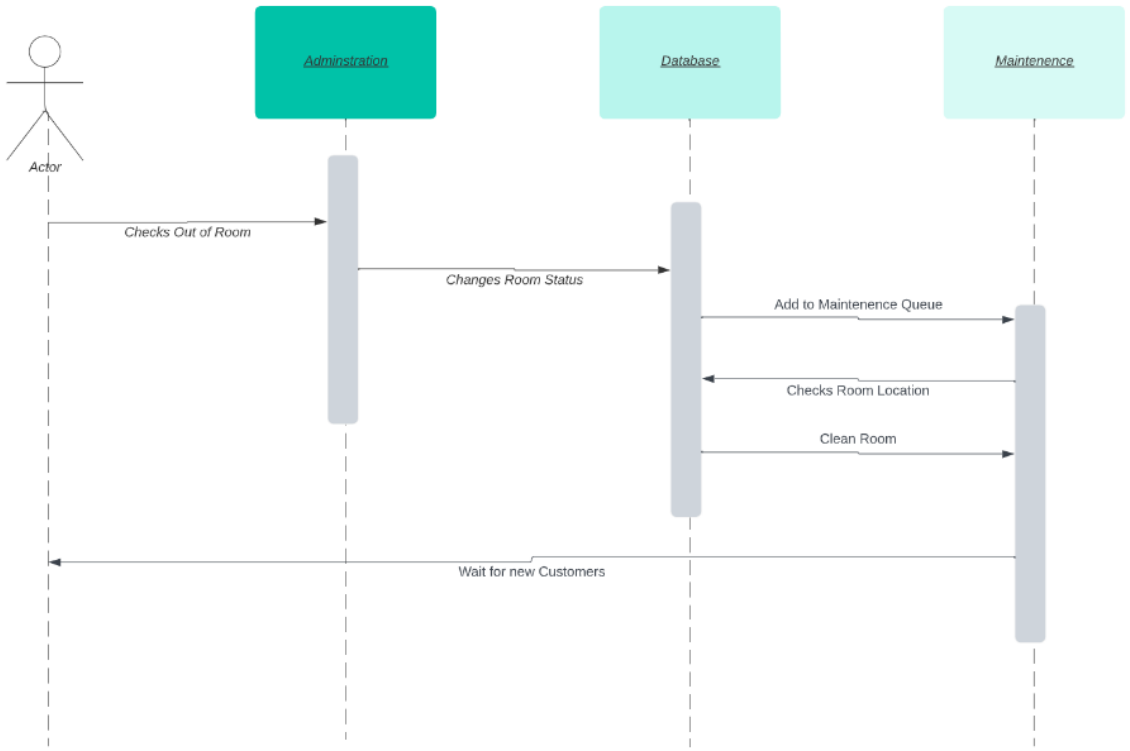
Key Code Generator Sequence Diagram

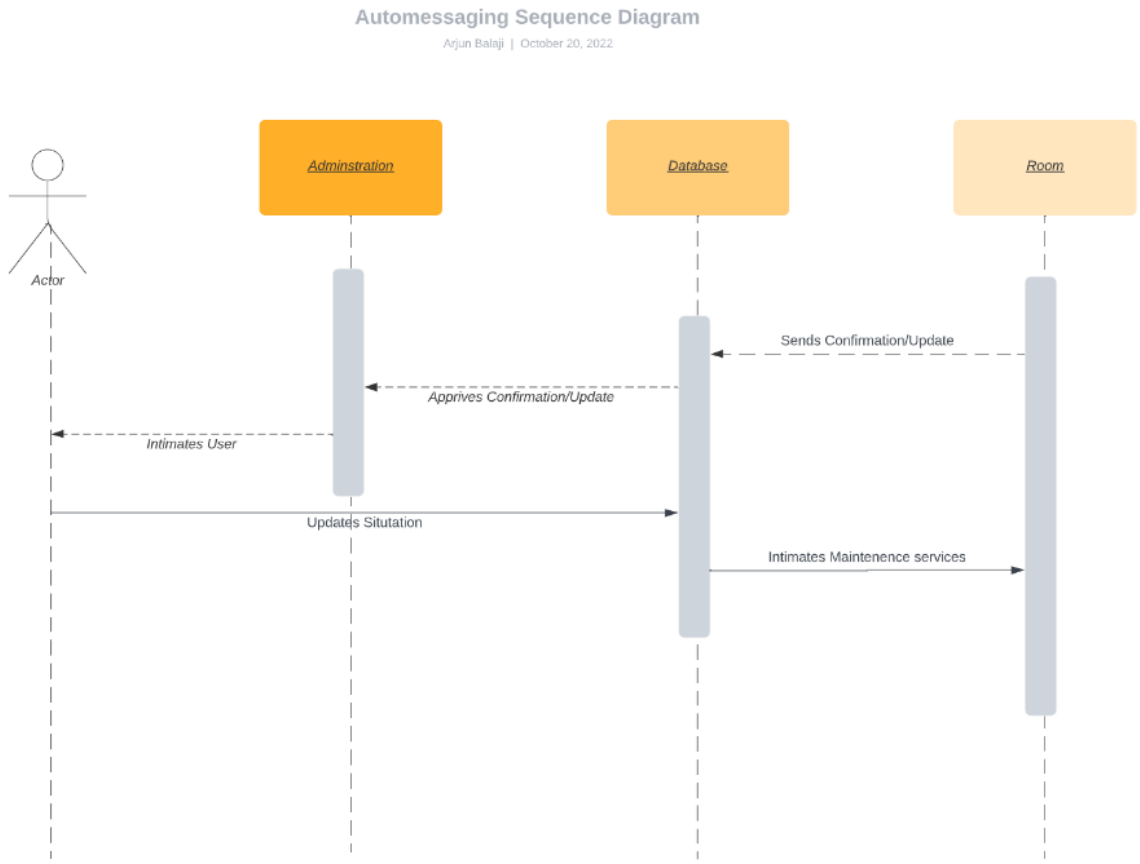
Arjun Balaji | October 20, 2022



Maintenece/Room Service Sequence Diagram

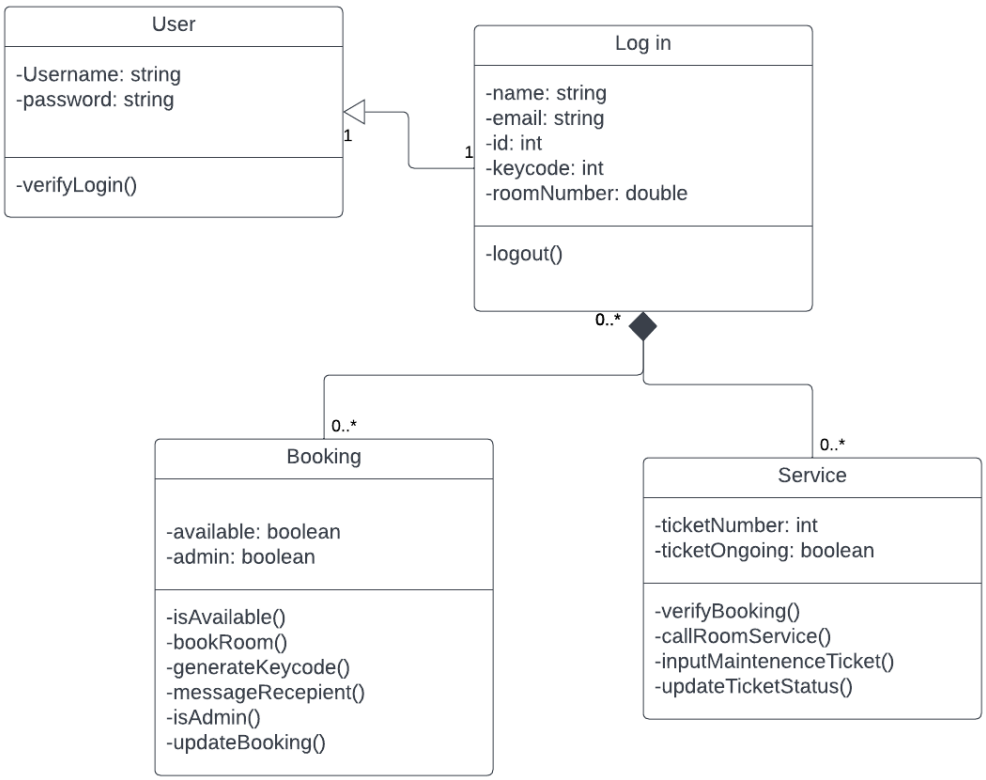
Arjun Balaji | October 20, 2022





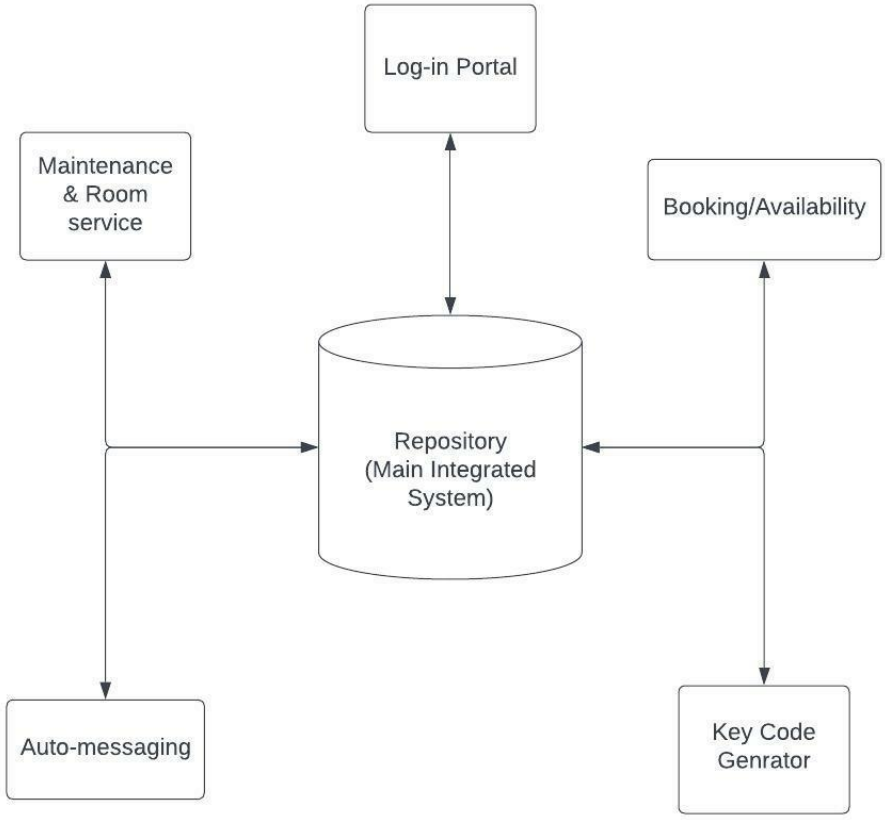
Original

CLASS DIAGRAM



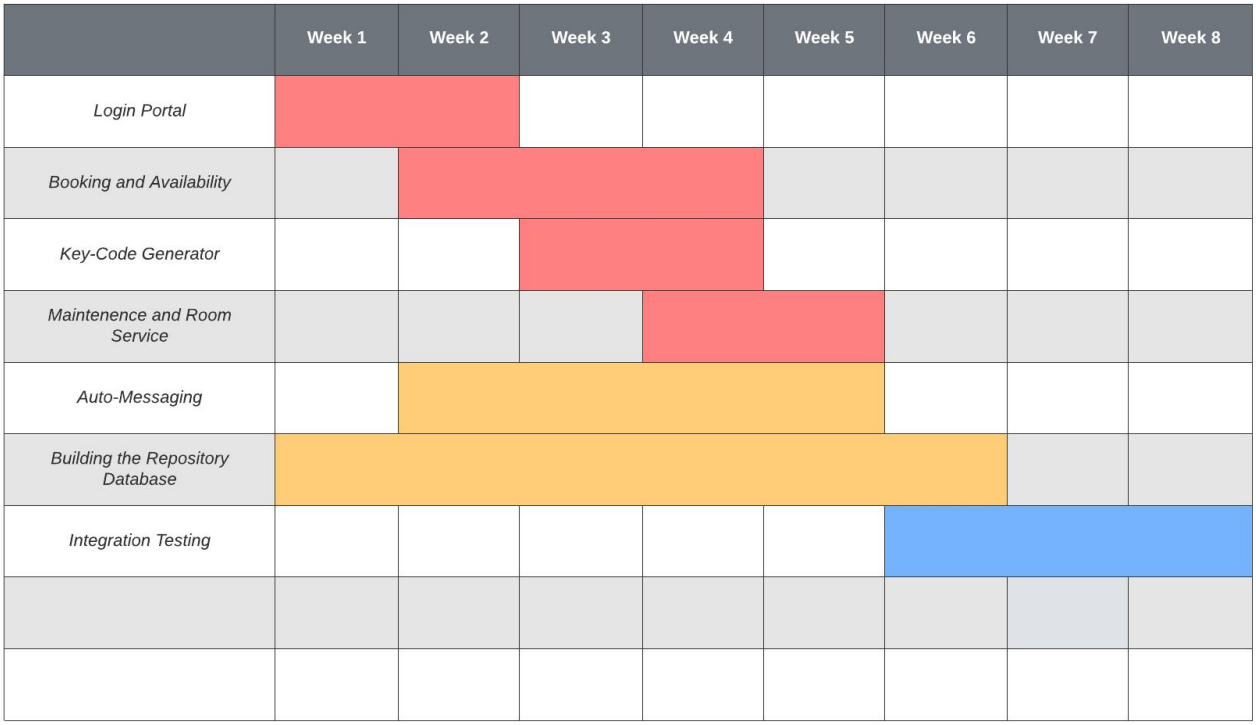
Original (with editing access)

ARCHITECTURAL DESIGN


Log-in Portal
Maintenance & Room service
Booking/Availability
Repository (Main Integrated System)
Auto-messaging
Key Code Genrator

Original

Project Scheduling



Cost/Effort Estimation

FUNCTION POINT METHOD

	Function Category	Count	Complexity			Count x Complexity
			Simple	Average	Complex	
1	Number of user input	9	3	4	6	27
2	Number of user output	6	4	5	7	24
3	Number of user queries	18	3	4	6	54
4	Number if data files and relational tables	50	7	10	15	350
5	Number of external interfaces	5	5	7	10	25

GFP **480 FP**

PROCESSING COMPLEXITY

1. Does the system require reliable backup and recovery? 5
2. Are data communications required? 4
3. Are there distributed processing functions? 2

4. Is performance critical? 4
5. Will the system run in an existing, heavily utilized operational environment? 5
6. Does the system require online data entry? 5
7. Does the online data entry require the input transaction to be built over multiple screens or operations? 5
8. Are the master files updated online? 4
9. Are the inputs, outputs, files, or inquiries complex? 2
10. Is the internal processing complex? 5
11. Is the code designed to be reusable? 3
12. Are conversion and installation included in the design? 5
13. Is the system designed for multiple installations in different organizations? 3
14. Is the application designed to facilitate change and ease of use by the user? 5

PCA = 0.65 + 0.01 * (5 + 4 + 2 + 4 + 5 + 5 + 5 + 4 + 2 + 5 + 3 + 5 + 3 + 5) = **1.22**

FP = GFP * PCA = 480 + 1.22 = **585.6 FP**

E = FP/productivity = 585.6/ 60 functions per person ≈ **10 person-weeks**

HARDWARE COSTS

Amazon RDS for SQL Servers	
price per GB	$0.12
IOPS	3000
Throughput	125 MB/S
Estimated storage	1000
price per month	$115.00
price per year	$1,380.00

SOFTWARE/PERSONNEL COSTS

Gross Function Point	480
Process Complexity Adjustment	1.22
Function Point	585.6
Estimated Effort	9.76
Labor Rate	$1,866.67
Estimated Development Cost	$18,218.67

Estimated Maintenance Cost Per Year	$60,000.00

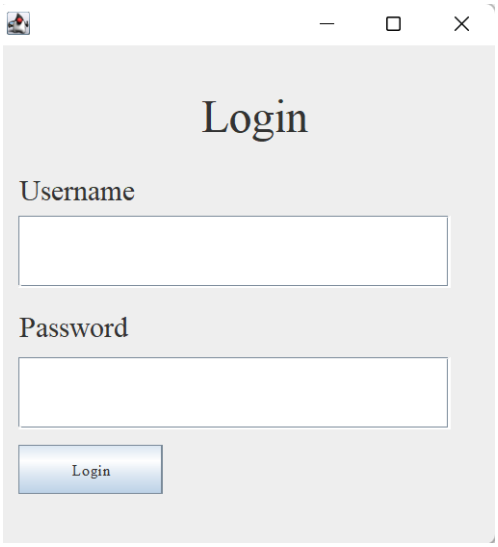
TOTAL BUDGET FOR FIRST YEAR

Hardware Price per year	$1,380.00
Estimated Development Cost	$18,218.67
Estimated Maintenance Cost Per Year	$60,000.00
Total	**$79,598.67**

Test Plan

We are using the black box testing, also known as functional testing, to consider all the different combinations of input values that may cause problems for each unit of software. In order to determine the different classes of input values we will use equivalence partitioning.

I have developed a login system using an SQL database of usernames and passwords. The possible input conditions are valid, invalid, and empty for both fields - username and password. Each possible combination will be tested with JUnit. The test cases are as follows:



Username	Password	Junit Results
Valid	Valid	
Valid	Invalid	
Valid	Empty	
Invalid	Valid	
Invalid	Invalid	
Invalid	Empty	
Empty	Valid	
Empty	Invalid	
Empty	Empty	

When the entire software system is complete, we will implement white box testing in order to make sure each software unit that interacts with the repository does not disrupt the other units. Data flow processing will be used to find define-use chains for each variable in the repository. The testing criteria

will be all p-use chains in order to verify that each operation does not disrupt the subsequent operations.

Software Comparison

Hotels.com, a top global supplier of hotel accommodation, provides booking services via its own network of regional websites. Travelers may choose from one of the largest online collections of hotels on Hotels.com, which includes both independent and well-known chain hotels as well as self-catering in more than a million properties worldwide. The business provides a one-stop shop for information on hotel rates, features, and availability. This is one of the top hotel reservation and booking applications, and a good comparison for our hotel management software. The Suite Software team decided to create an application for hotel management because of other competing management software, such as hotel.com. Although applications like hotel.com offer a platform for hotels and their users to reserve rooms, they do not provide any additional features or assistance to help their users and hotels better manage accommodation after booking a hotel room. Using hotel.com will fulfill the use case of booking and reservation, but most hotels still must find other applications to keep communication with their customers for messaging, key code generation, maintenance, and room service. Unlike Hotels.com, the Suite Software will not only provide booking and reservations to hotels but also become a "one-stop shop" for all communication and needs. The Suite software aims to integrate booking, a platform for direct communication between customers and hotels, key code generation for accessing rooms, and even the ability to request maintenance and room service. Contrary to most travel management software, our team hopes the Suite Software can become the only software both hotels and customers need to rely on during their stay.

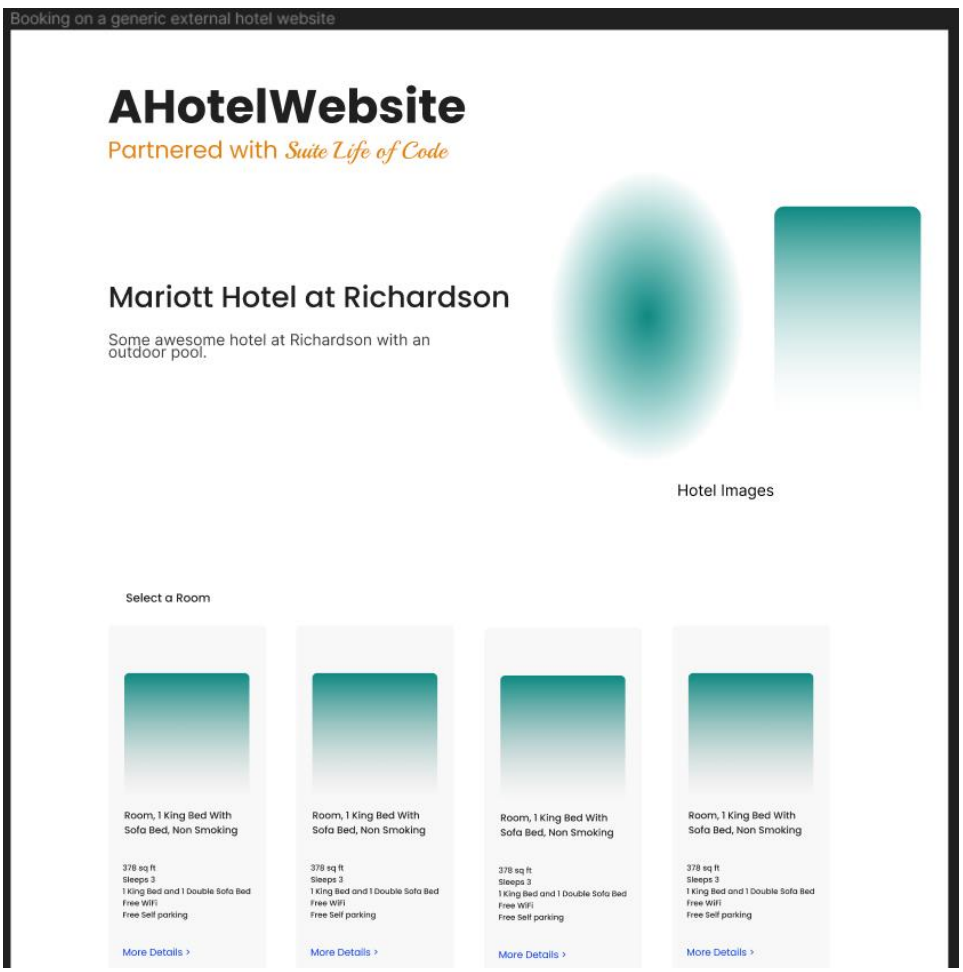
Demo

GUI Demo made wih Figma:

https://www.figma.com/proto/TsQlBs5u1PSv0skahJmJQ2/Team-Project?node-id=142%3A188&scaling=scale-down-width&page-id=1%3A2

At least one view has been created for every use-case, per the sequence diagram.


Login
Suite Life of Code
Username:
Password:
Sign In
Forgot password?
Reset your password


Booking on a generic external hotel website
AHotelWebsite
Partnered with Suite Life of Code
Mariott Hotel at Richardson
Some awesome hotel at Richardson with an outdoor pool.
Hotel Images
Select a Room
Room, 1 King Bed With Sofa Bed, Non Smoking
378 sq ft
Sleeps 3
1 King Bed and 1 Double Sofa Bed
Free WiFi
Free Self parking
More Details ›
Room, 1 King Bed With Sofa Bed, Non Smoking
378 sq ft
Sleeps 3
1 King Bed and 1 Double Sofa Bed
Free WiFi
Free Self parking
More Details ›
Room, 1 King Bed With Sofa Bed, Non Smoking
378 sq ft
Sleeps 3
1 King Bed and 1 Double Sofa Bed
Free WiFi
Free Self parking
More Details ›
Room, 1 King Bed With Sofa Bed, Non Smoking
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Sleeps 3
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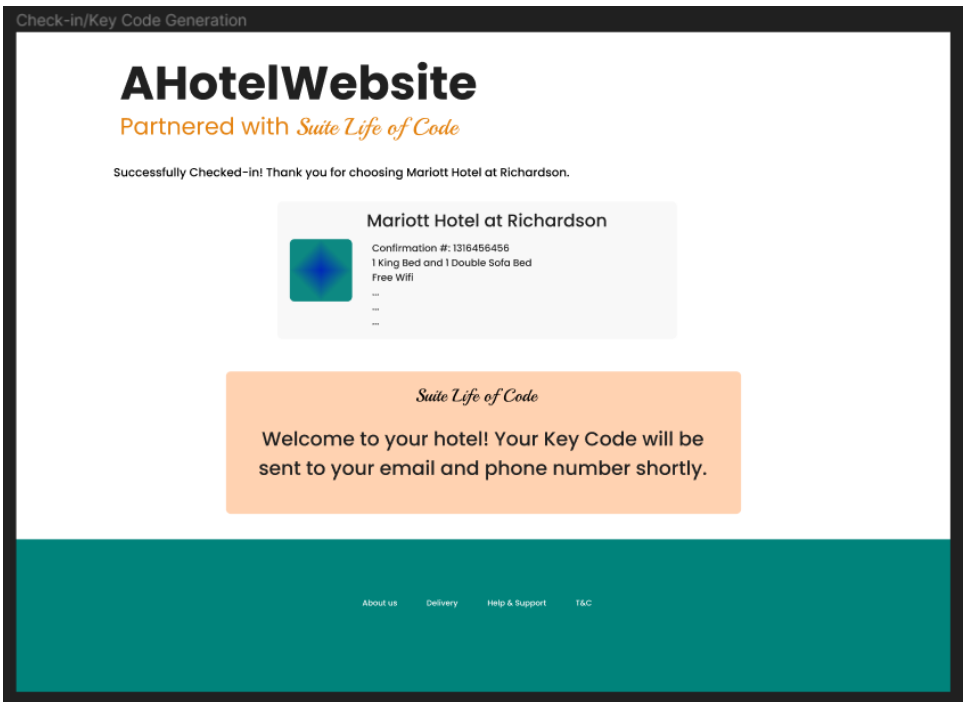
Free WiFi
Free Self parking
More Details ›


Check-in/Key Code Generation
AHotelWebsite
Partnered with Suite Life of Code
Successfully Checked-in! Thank you for choosing Mariott Hotel at Richardson.
Mariott Hotel at Richardson
Confirmation #: 1316456456
1 King Bed and 1 Double Sofa Bed
Free Wifi
Suite Life of Code
Welcome to your hotel! Your Key Code will be sent to your email and phone number shortly.
About us
Delivery
Help & Support
T&C


Key Code Generator
AHotelWebsite
Partnered with Suite Life of Code
KEY CODE GENERATOR
XXXX - XXXX
About us
Delivery
Help & Support
T&C

Checked-out of hotel (Client Persepective)

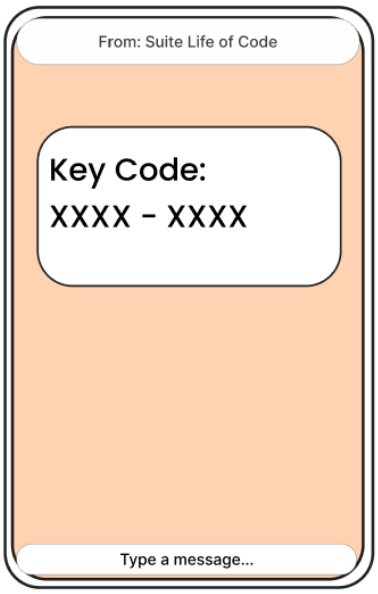
AHotelWebsite

Partnered with *Suite Life of Code*

Successfully Checked-out!
Thank you for choosing
Mariott Hotel at Richardson.

About us Delivery Help & Support T&C

Automessaging



Conclusion

As you can see, our hotel management system provides the perfect solution to enhancing the experience for both the hotel customers and its workers.

The Suite software helps to enhance the hotel experience by providing key features such as booking rooms and checking room availability, key code generation for accessing rooms, auto-messaging, and the ability to request maintenance and room service.

Works Cited

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