4 WALLS

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CERTIFICATE

This is to certify that **AARUSH ITTAN, ABHISHEK TIWARI , NAMAN JAIN and PAVITRA KAPOOR** , the students of B.Sc. (H) COMPUTER SCIENCE of RAMANUJAN COLLEGE, DELHI UNIVERSITY, with roll number **2019/1401, 1403, 1425 and 1428** respectively have made the project titled **" 4 WALLS"** in their individual capacities under my supervision for the fulfilment of VIth Semester practical examination.

(Dr. Kamlesh Kumar Raghuvanshi)

ACKNOWLEDGEMENT

We would like to express our very great appreciation to Dr. Kamlesh Kumar Raghuvanshi for his valuable and constructive suggestions during the planning and development of this project work. His willingness to give his time so generously has been very much appreciated.

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Abstract- *In* the current era, the web applications which are *used by the user for various rental purposes like room accommodations, paying guest services, food services, and other day-to-day activities are present in different applications with their respective modules. These modules are not only complicated but also discreet which make the whole task time-consuming and lethargic. In order to eradicate these problems, we need a solution such that the user is able to complete as well as modify his/her rental accommodations.*

Introduction

In India, there is a very big problem that we need to go outside of our native place for better higher education. The first problem we face is to find a PG nearby college and then to figure out the best from the worst. The space in PG is very less and their conditions (especially food condition) are so bad that it is not at all convenient for students to study there and the ones which are little bit better are very expensive . The market need is online availability of all the PGs and Flats, so that the customers can compare the properties easily, they don't have to roam around and reach at the right place easily.

Let us consider an example where a first year student belonging to a different state or locality comes to a particular place. Certainly he doesn't have any knowledge about the place. He needs to roam around for hours in order to search a place for shelter, a place where edible food is available. During the time of examination or assignments he /she have to look out for various stationary shops and other day-to-day activities. If all these problems are solved by browsing a particular application, the world of the user will turn out to be very easy and accessible. Our application will provide rental accommodations (paying guest services), food zones, and stationary shops in the proximity of the particular user. Once the user browses our application, he just has to enter his location and everything the user requires for his living will be one click away. The idea is very simple but will turn out to be very helpful and time saver for a particular user because it is completely based on real time issues which a common man faces as an immigrant in a new locality.

Problem Statement

In India, there is a very big problem that we need to go outside of our native place for better higher education. The first problem we face is to find a PG nearby college and then to figure out the best from the worst. The space in PG is very less and their conditions (especially food condition) are so bad that it is not at all convenient for students to study there and the ones which are little bit better are very expensive . The market need is online availability of all the PGs and Flats, so that the customers can compare the properties easily, they don’t have to roam around and reach at the right place easily.

Proposed Solution

Education is all about environment . If we have good environment and a nice food , we can do anything and everything.

The Plan is to make a platform (an application and a web-portal) to connect the PGs' and Flats' owners and the customers . Customers can compare the prices and facilities of different properties without going anywhere . They will also rate the properties , so that it can be useful for others to get to know about the place before visiting it. It will save their effort, time and money. At the same time it will give the property owners , a digital existence where they can market their property more appropriately .

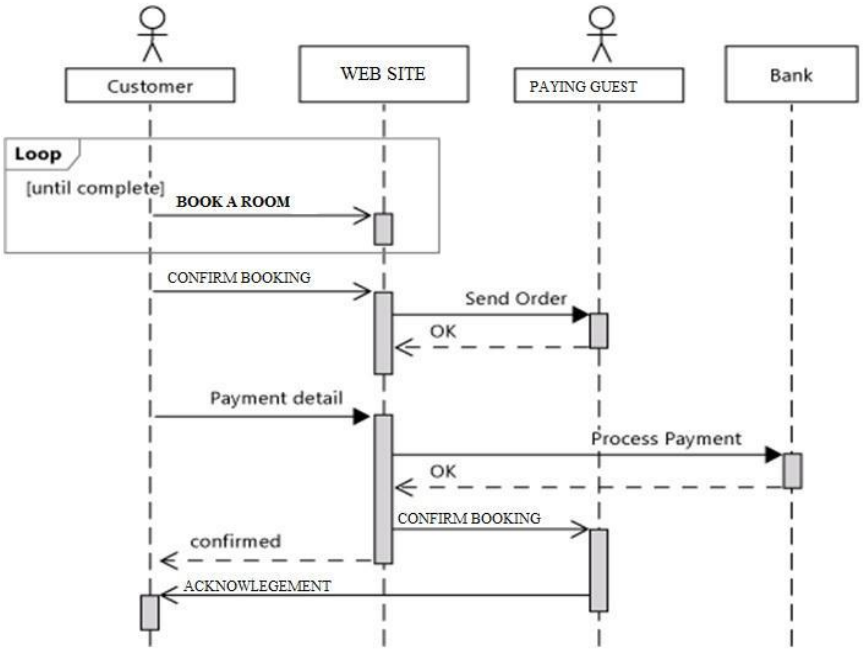


Fig -1: Sequence diagram

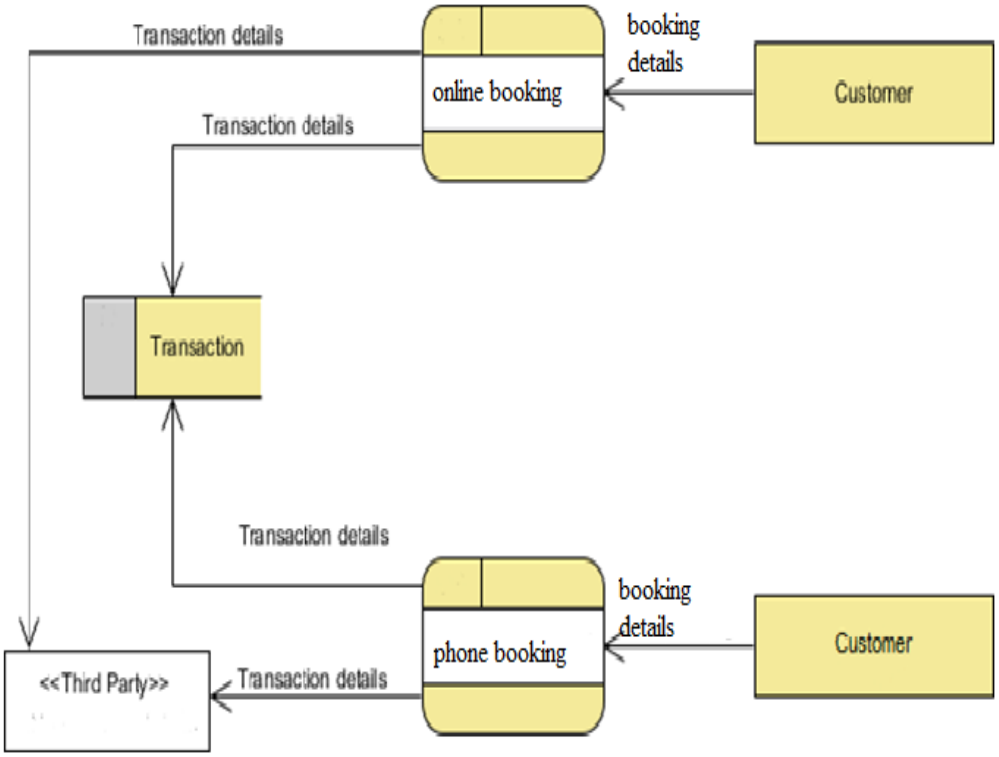


Fig -2: State Diagram

Existing System

In Existing System, various discrete applications solve the purpose of what we are trying to demonstrate in this project , partially , but no one is completely focused and occupied this niche. They are just adding this plan as one of the feature in their platform but no one is completely committed towards this problem. No one is completely ruling this market gap. Our plan is just to solve this problem and market our service in the best possible way .

Therefore the existing system though solves the problem but does it in a way which is hectic, lethargic and time consuming which gives us a hint to design an application.

Scope

This idea will help the new students or any individual , who is new to a particular city , currently Delhi, in searching for a new accommodation. This project will allow the users to connect with the new PG owners or flat owners for finding a suitable place based on their needs . The user can choose from a wide number of accommodations. Users can read the reviews for a particular PG/flat. The owners can also have their profile shared over the internet for a better reach and can also make the payment process online for secure and better records. This will benefit both the owner and the tenant.

Modules

6.1 User Module

I. Registration:

1. Registers user details for using files. Only registered user can able to login in cloud server.
2. The registered user includes credentials like Name, Address, Contact info, Photographs and other supplementary details.
3. The user creates a user name and password on the basis of which he is authenticated. Once authenticated, he/she can login into the system.

II. Location tracking:

1. The user can upload his current location status on the basis of which, search results are fetched dynamically.
2. The location can be entered even manually .
3. Another way of locating himself is by the use of automatic location tracker which is the GPS (Global Positioning System).

III. Browsing:

1. Browsing the website using the location, the user can reserve a paying guest accommodation(s).
2. Once the location of the paying guest is determined, the food zones nearby the location can be tracked down.
3. The browsing further facilitates the user to find the location of various stationary shops in the proximity of the current location.

6.2Host Module

I. Host registration:

1. A host on our website can advertise his/her rental services, restaurants and stationary shops.
2. For a particular service, the respective hosts can create their own profile where they upload various details like Name, Address, Tariffs, Pictures and Availability.
3. The website features a separate module for host which is created by the generating their respective user name and password.

II.

III. Updates:

1. The host generates a notification regarding the update of availability for a particular accommodation.
2. The inauguration as well as closure of a particular service can be introduced in the updates.
3. Tariffs, which are the most important entity of the service, can be dynamically altered by the host.

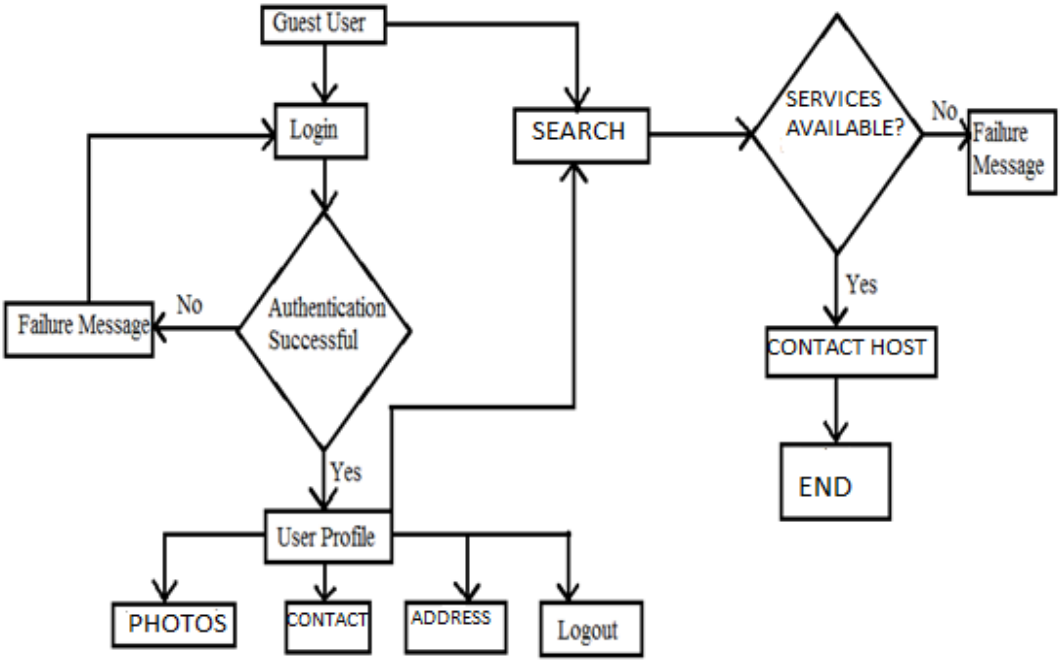
IV. Communication:

1. For the reservation, the host can establish an end-to- end communication using the contact information provided by the user in his profile.
2. He can further extend the communication to those clients who have previously visited the avail the service describing any alteration in the tariff.

V. Advertisement:

1. For advertisement purposes, the website can facilitate the host to announce various discounts and drop-in tariff during the peak seasons.

Data Flow Diagram



Framework for Product Metrics:-

- Measures,Metrics,and Indicators: -

Although the terms measure, measurement, and metrics are often used interchangeably, Within the software engineering context, a measure provides a quantitative indication of the extent, amount, dimension, capacity, or size of some attribute of a product or process. Measurement is the act of determining a measure. The IEEE Standard Glossary of Software Engineering Terminology [IEE93b] defines metric as "a quantitative measure of the degree to which a system, component, or process possesses a given attribute. An indicator is a metric or combination of metrics that provides insight into the software process, a software project, or the product itself. An indicator provides insight that enables the project manager or software engineers to adjust the process, the project, or the product to make things better.

Function-Based Metrics: - The function point (FP) metric can be used effectively as a means for measuring the functionality delivered by a system.

Information domain values are defi ned in the following manner: -

- Number of external inputs (EIs).
- Number of external outputs (EOs).
- Number of external inquiries (EQs).
- Number of internal logical files (ILFs).
- Number of external interface files (EIFs).

To compute function points (FP), the following relationship is used:

$FP = \text{count total} * [0.65 + 0.01 * \Sigma(F_i)]$

The Fi (i = 1 to 14) are value adjustment factors (VAF) based on responses to the following questions : -

Calculation of **complexity adjustment valu**es are: -

		GRADE VALUE
1.	Does the system require reliable backup and recovery?	1
2.	Are specialized data communications required to transfer information to or from the application?	5
3.	Are there distributed processing functions?	3
4.	Is performance critical?	2
5.	Will the system run in an existing, heavily utilized operational environment?	4
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?	1
8.	Are the ILFs updated online?	4
9.	Are the inputs, outputs, files, or inquiries complex?	2
10.	Is the internal processing complex?	1
11.	Is the code designed to be reusable?	4
12.	Are conversion and installation included in the design?	2
13.	Is the system designed for multiple installations in different organizations?	1
14.	Is the application designed to facilitate change and ease of use by the user?	5
	ΣF=	40

- Computing Function points:-

Information Domain Value			Weighting	factor	
	Count	Simple	Average	Complex	
External Inputs	4	3	4	6	12

(EIs)					
External Outputs (EOs)	3	4	5	7	12
External Inquiries (EQs)	3	3	4	6	9
Internal Logical Files (ILFs)	1	7	10	15	7
External Interface Files (EIFs)	4	5	7	10	20
			Count	total	60

FP = count total *[0.65 + 0.01 * Σ(F_i)].....(a)

The count total shown in above Figure must be adjusted using Equation (a). For the purposes of this example, we assume that **Σ(Fi) is 41** (a moderately complex product). Therefore,

FP = 60 *[0.65 + 0.01 * 40] = 63

NOTE:-

Assume that past data indicates that one FP translates into 60 lines of code (an object-oriented language is to be used) and that 12 FPs are produced for each person-month of effort.

Once function point has been calculated it can be used to normalize measures for software quality, productivity and other attributes such as:

- Errors per FP
- Defects per FP
- $ per FP

RISK MANAGEMENT

Identifying potential risks and developing a plan to mitigate, monitor and manage risks is of paramount importance. Risk analysis enables to build a risk table by providing detail guidelines in identification and analysis of risk. Points to be considered are

- Risk avoidance
- Risk monitoring
- Risk management and contingency plan.

For all activities that lie above the cut-off point, a mitigation plan has been developed to mitigate the risk. A plan of action is structured, and the risk is being monitored at all the phases, i.e. a number of factors are considered.

In our context the risks for which a mitigation plan has been put into place are:

1. Lack of clear product vision.
2. No of people may be inadequate to do the job.
3. Delivery date may extend.
4. Lack of documentation.
5. Customer may change the requirements.
6. End users may resist the system.

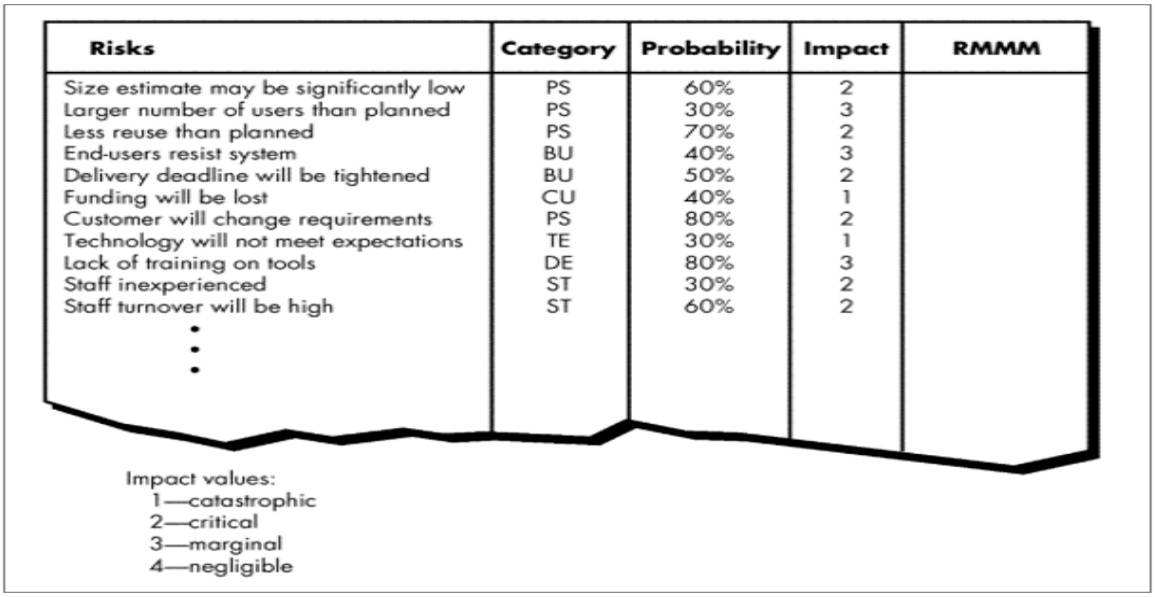
Impact Values for RISK TABLE

1- Catastrophic

2- Critical

3- Marginal

4- Negligible



Risks	Category	Probability	Impact	RMMM
Size estimate may be significantly low	PS	60%	2	
Larger number of users than planned	PS	30%	3	
Less reuse than planned	PS	70%	2	
End-users resist system	BU	40%	3	
Delivery deadline will be tightened	BU	50%	2	
Funding will be lost	CU	40%	1	
Customer will change requirements	PS	80%	2	
Technology will not meet expectations	TE	30%	1	
Lack of training on tools	DE	80%	3	
Staff inexperienced	ST	30%	2	
Staff turnover will be high	ST	60%	2	
•				
•				
•				

Impact values:
1—catastrophic
2—critical
3—marginal
4—negligible

For our project the RISK TABLE is as follows:

Risks	**Category**	**Probability**	**Impact**	**RMMM**
Lack of clear product vision.	PS	60%	2	• Ensure that requirements are clearly understood. • Constantly monitoring and revising the requirements.
Delivery deadline may be tightened.	BU	80%	2	• Schedule made should be realistic and

				achievable. • Monitor that efforts put are according to schedule.
No. of people may be inadequate to do the job.	PS	60%	2	• Organize task network. • Assign backup staff member as third party for testing and review.
Customer will change requirements.	PS	60%	2	• Update the employers regularly about the status and working assumptions. • Get Customers' feedback periodically
End user may resist the system.	BU	40%	1	• Involve the end users in development of the system. • Develop techniques to evoke favourable responses from the users.

Project Design

The project design specification includes input design specification and output design specification.

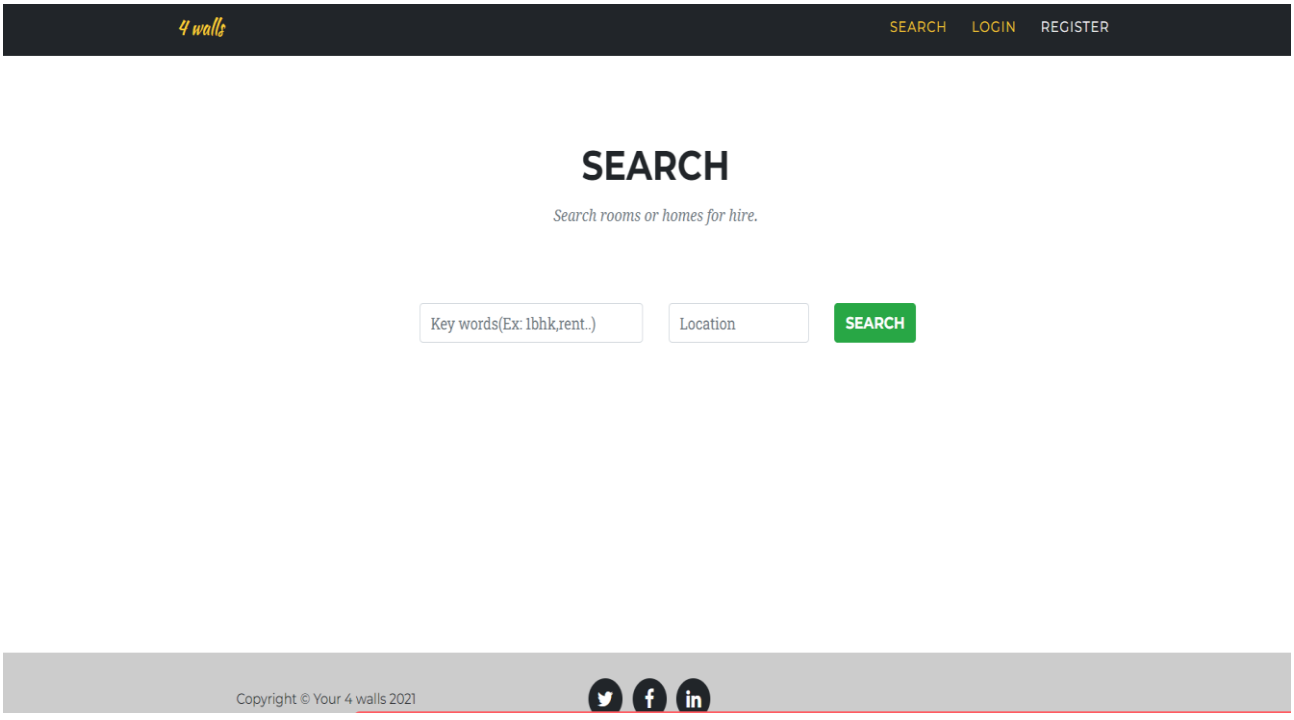
Input Design

Input design is the process of converting user-originated inputs to a computer-based formats. Input data are collected and organized into groups of similar data. Once identified, appropriate data are selected for processing the input forms are designed using GU controls. So, error may be avoided.

Here is a preview of what the web app may look like. These are just examples of what the interface may look like and the real design may be changed according to the requirements at the given time.

A web based design tackles the problem of storage space requirement by a normal application and its design processing is not limited by user device or OS , so this promises uniformity across all platforms.

WEB BASED DESIGN



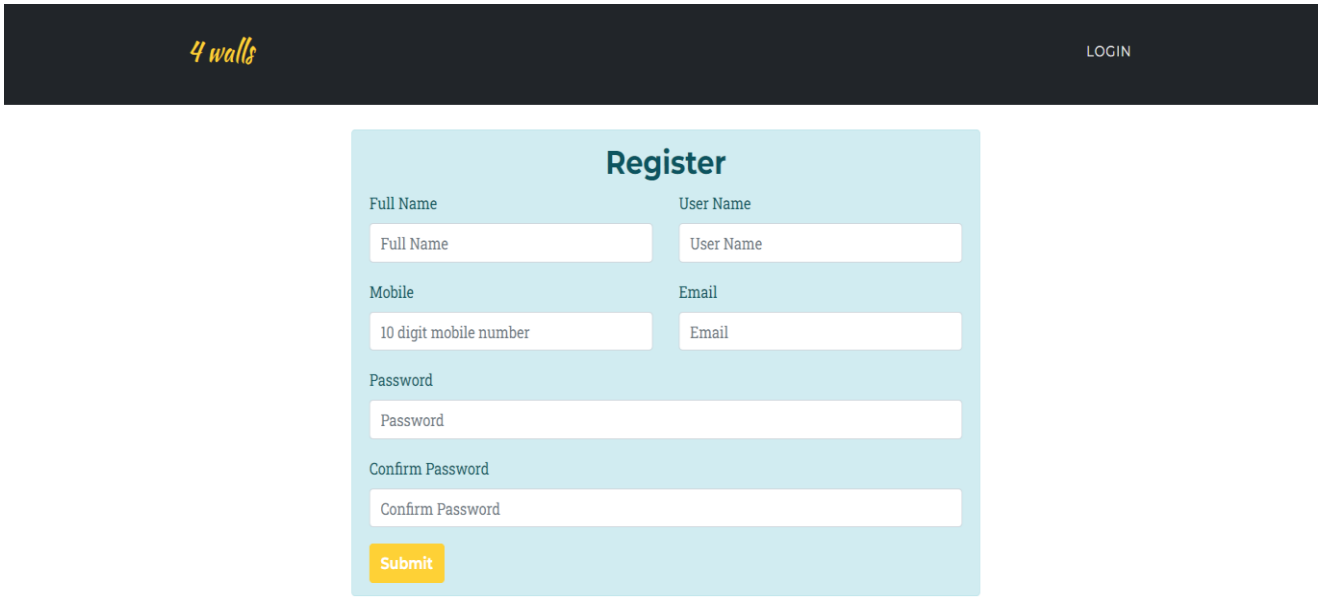


Fig 3 : Registration form
New user / new Host

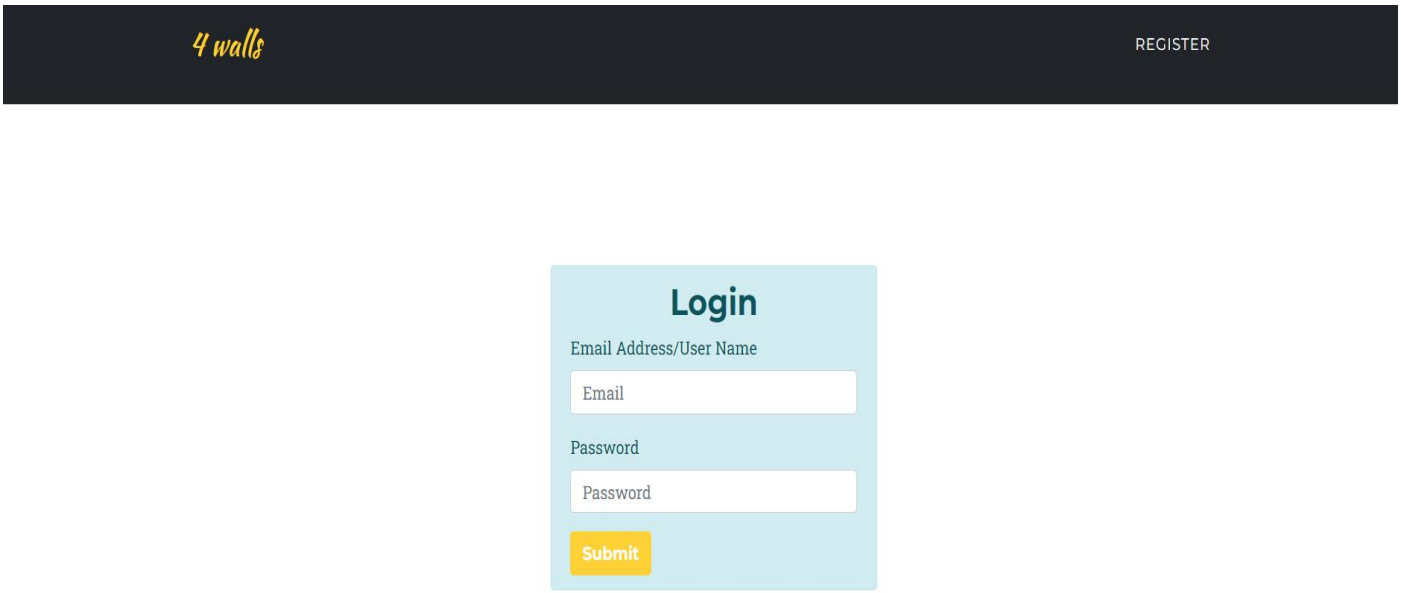


Fig 4 : Login Form

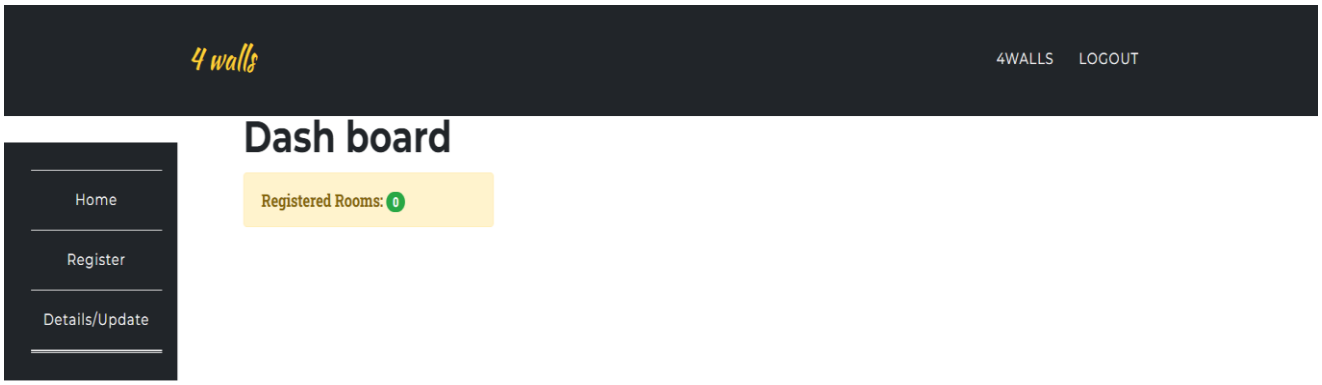


Fig 5 : Home Page / Dashboard of a User

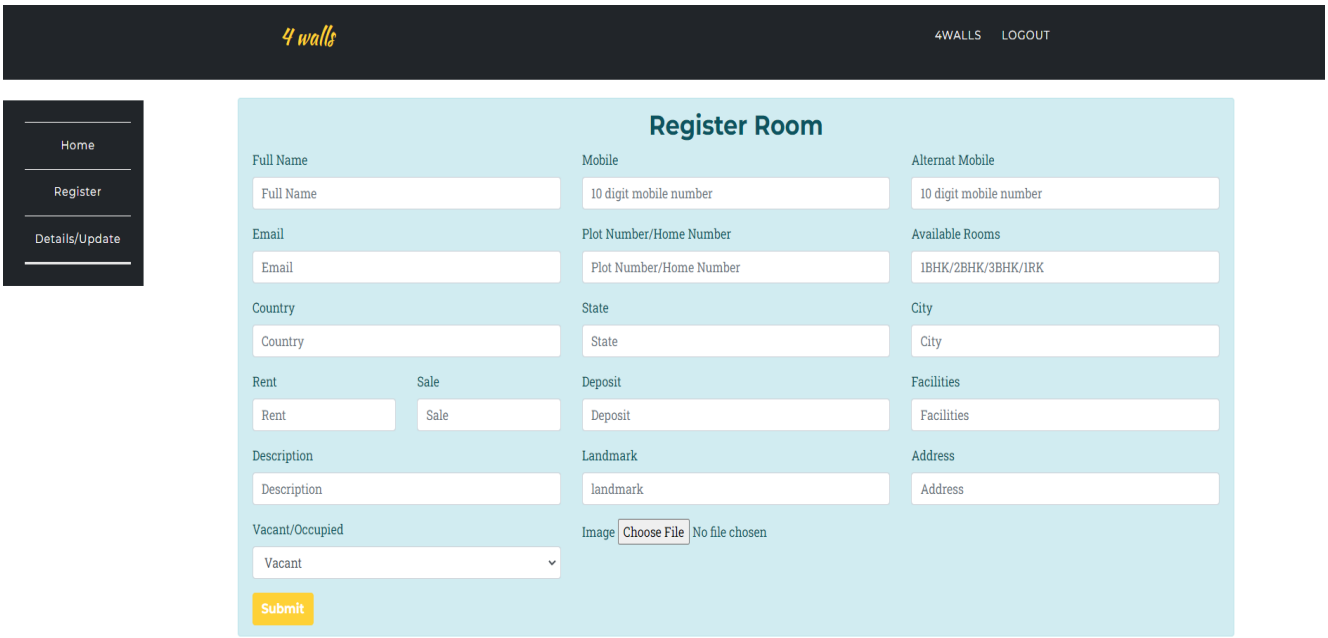
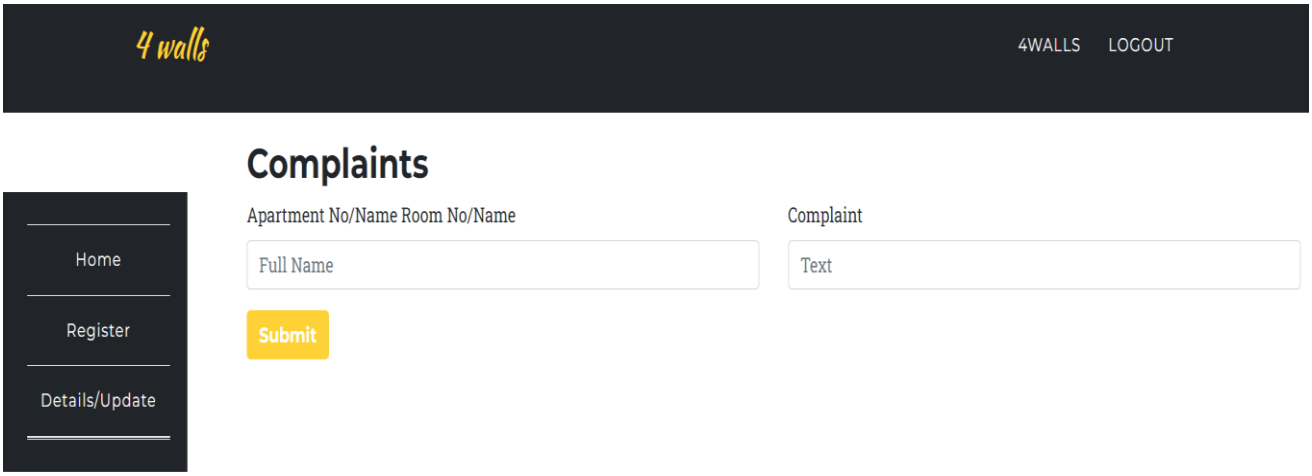


Fig 6 : Registration form for room details



Output Design

The output design phase is another very important one. The outputs are mainly used to communicate with user, processing the input data given by the user etc. It is documented in each stage of the project to ensure error free output. Output screens are designed in very simple and understandable format.

The following images are the output screens of the apartment details filled by the owner with all the details required for the user and with multiple pictures of the apartment .

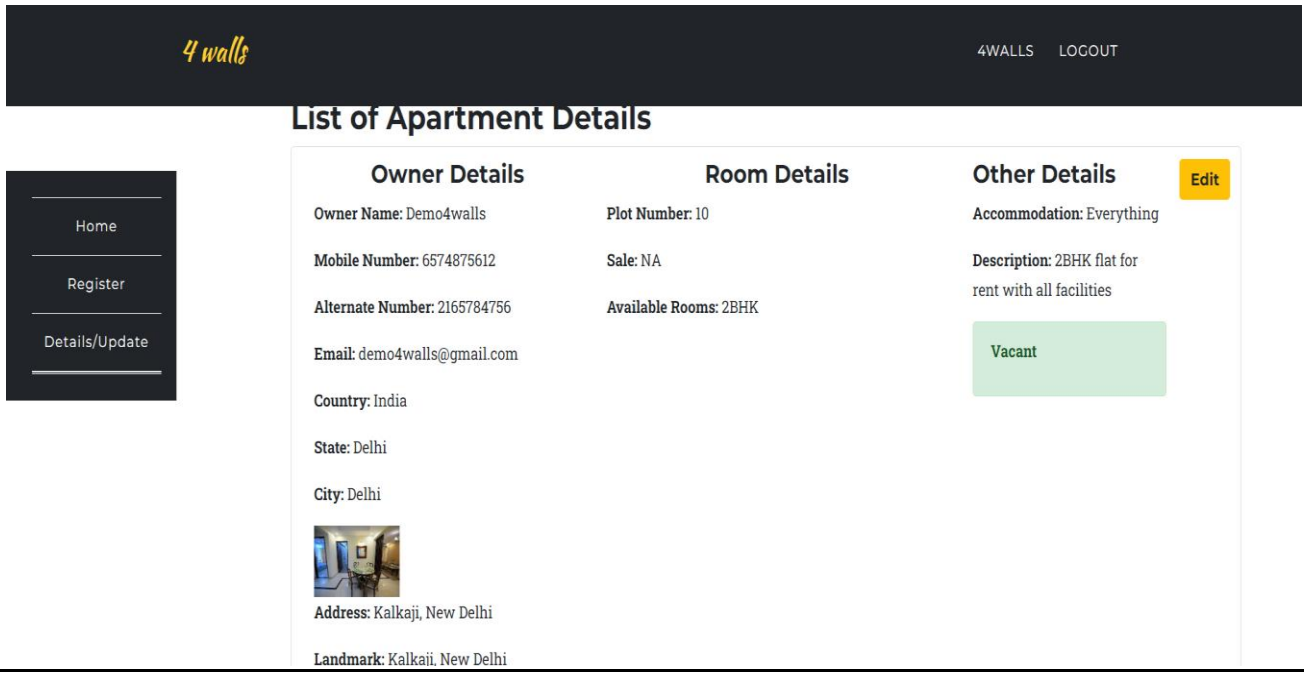
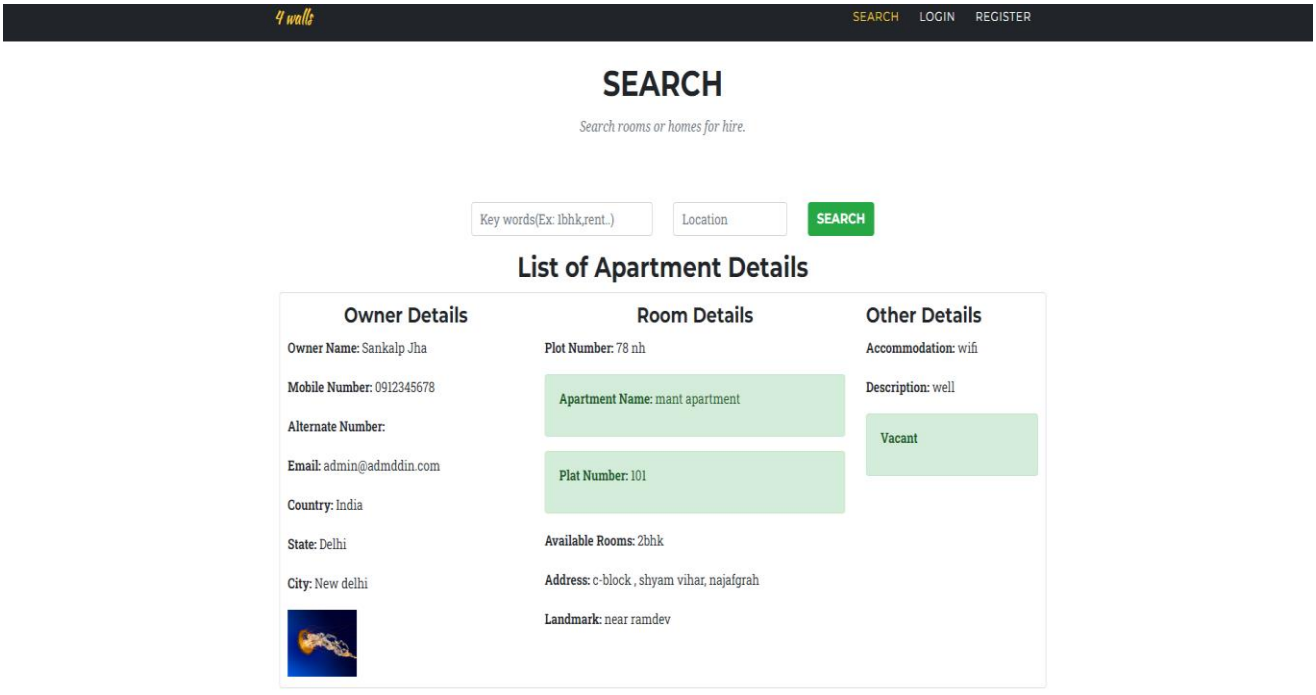
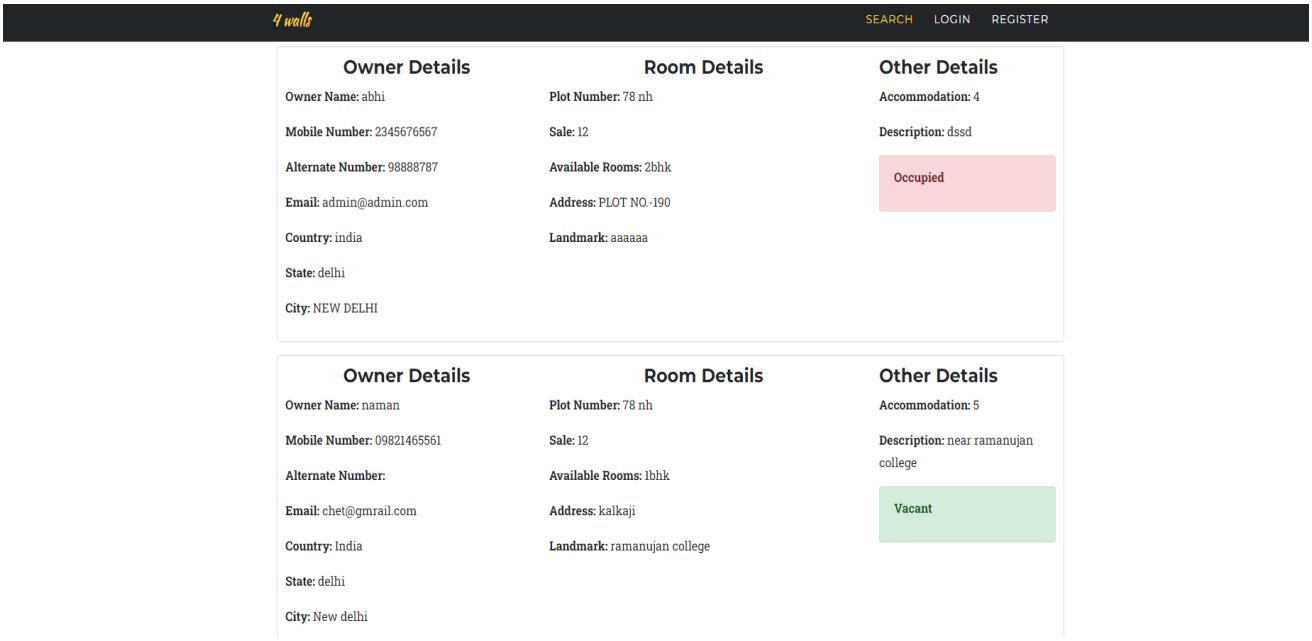


Fig -6: Apartment detail report




4 walls
SEARCH
LOGIN
REGISTER
Owner Details
Owner Name: abhi
Mobile Number: 2345676567
Alternate Number: 98888787
Email: admin@admin.com
Country: india
State: delhi
City: NEW DELHI
Room Details
Plot Number: 78 nh
Sale: 12
Available Rooms: 2bhk
Address: PLOT NO.-190
Landmark: aaaaaa
Other Details
Accommodation: 4
Description: dssd
Occupied
Owner Details
Owner Name: naman
Mobile Number: 09821465561
Alternate Number:
Email: chet@gmrail.com
Country: India
State: delhi
City: New delhi
Room Details
Plot Number: 78 nh
Sale: 12
Available Rooms: 1bhk
Address: kalkaji
Landmark: ramanujan college
Other Details
Accommodation: 5
Description: near ramanujan college
Vacant

Website Link

LINK : https://do-it-yourself-clot.000webhostapp.com/index.php

Testing

The testing phase is an important part of software development. It is the processes of finding errors and missing operations and also complete verifications to determine whether the objectives are requirements are satisfied.

Basis Path Testing

Basis path testing is a white-box testing technique first proposed by Tom McCabe. The basis path method enables the test-case designer to derive a logical complexity measure of a procedural design and use this measure as a guide for defining a basis set of execution paths. Test cases derived to exercise the basis set are guaranteed to execute every statement in the program at least one time during testing.

Path testing is an approach to testing where you ensure that every path through a program has been executed at least once.

Aim is to derive a logical complexity measure of a procedural design and use this as a guide for defining a basic set of execution paths.

TOPICS UNDERS THIS TESTING

- Flow Graph Notation
- Independent Program Paths
- Deriving Test Cases
- Graph Matrice

Flow Graph Notation

A simple notation for the representation of control flow, called a flow graph (or program graph). The flow graph depicts logical control flow using the notation. Each structured construct has a corresponding flow graph symbol.

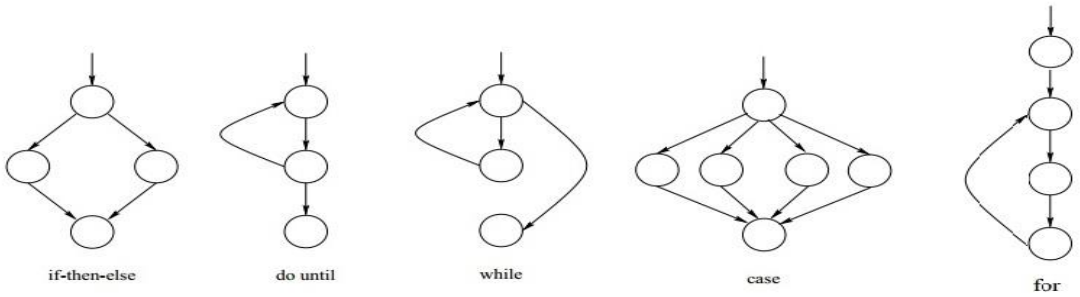
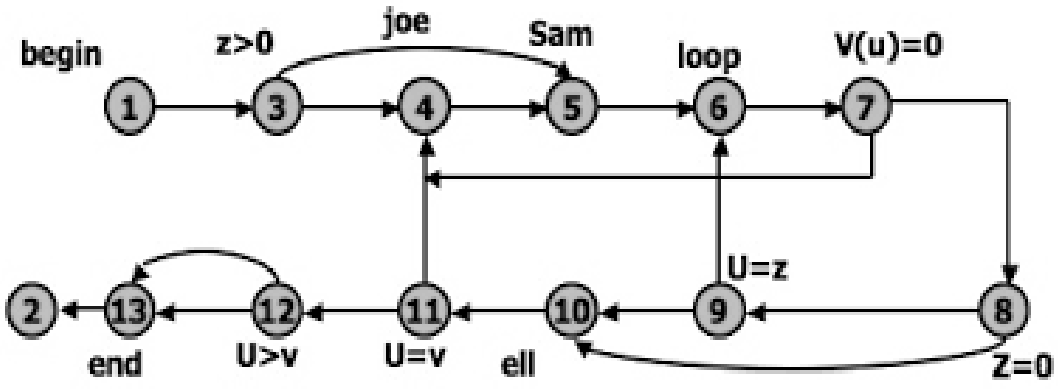


Figure 1: Flow graph representation.

- Arrows called edges represent flow of control
- Circles called nodes represent one or more actions.
- Areas bounded by edges and nodes called regions.
  - A predicate node is a node containing a condition
  - Any procedural design can be translated into a flow graph.
  - Note that compound Boolean expressions at tests generate at least two predicate node and additional arcs.



Independent Program Paths

An independent path is any path through the program that introduces at least one new set of processing statements or a new condition.

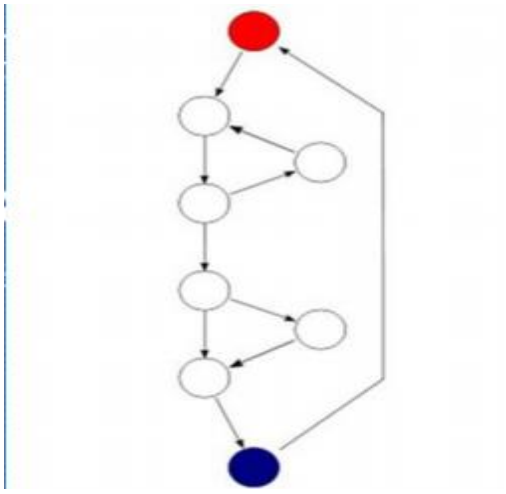
Cyclomatic complexity is a software metric that provides a quantitative measure of the logical complexity if a program

Mathematically, the cyclomatic complexity of a structured program is defined with reference to the control flow graph of the program, a directed graph containing the basic blocks of the program, with an edge between two basic blocks if control may pass from the first to the second. The complexity M is then defined as:

- $M = E - N + 2P$

Where,

- E = the number of edges of the graph
- N = the number of nodes of the graph
- P = the number of connected components.



For this graph,

E = 10,

N = 8 and

P = 1,

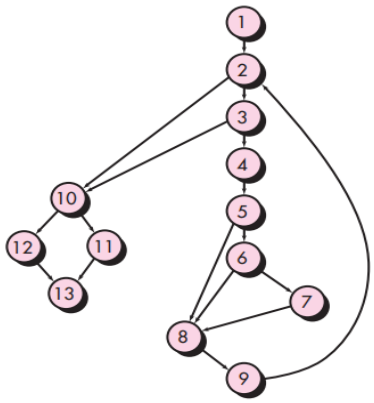
so, the cyclomatic complexity of the program is-

= 10 - 8 + 1 = 3.

Deriving Test Cases

The following steps can be applied to derive the basis set:

- Using the design or code as a foundation, draw a corresponding flow graph.
- Determine the cyclomatic complexity of the resultant flow graph.
  Determine a basis set of linearly independent paths.



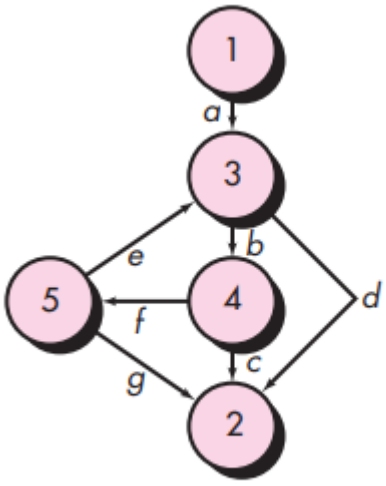
Path 1: 1-2-10-11-13
Path 2: 1-2-10-12-13
Path 3: 1-2-3-10-11-13
Path 4: 1-2-3-4-5-8-9-2-…
Path 5: 1-2-3-4-5-6-8-9-2-. . .
Path 6: 1-2-3-4-5-6-7-8-9-2-. . .

- **Prepare test cases that will force execution of each path in the basis set.**

Data should be chosen so that conditions at the predicate nodes are appropriately set as each path is tested. Each test case is executed and compared to expected results. Once all test cases have been completed, the tester can be sure that all statements in the program have been executed at least once.

Graph Matrices

• A graph matrix is square matrix whose size is equal to the number of nodes on the flow graph
• Each row and column correspond to an identified node, and matrix entries correspond to connections between nodes.



Flow graph

Node \ Connected to node	1	2	3	4	5
1			a		
2					
3		d		b	
4		c			f
5		g	e		

Graph matrix

Each node on the flow graph is identified by numbers, while each edge is identified by letters. A letter entry is made in the matrix to correspond to a connection between two nodes. For example, node 3 is connected to node 4 by edge b.

The link weight is 1 (a connection exists) or 0 (a connection does not exist). But link weights can be assigned other, more interesting properties:

• The probability that a link (edge) will be execute.
• The processing time expended during traversal of a link

- The memory required during traversal of a link
- The resources required during traversal.

FUTURE SCOPE

- Proper consideration has been given for enhancements in future throughput the development of the software. But the system can be extended, as the software is constantly evolving and always has a scope for future enhancement.
- The current system was mainly designed to find the nearby PG’s and flats for the students at a very minimal cost and compairing the properties very efficiently. In the future the system can be enhanced to include other more facilities that students usually requires like stationary , grocery , pharmacy and many more. Present system has not included such a provision. All the functions have been done carefully and successfully in the software, and if any development is necessary in future. It can be done without affecting the design by adding additional modules to the system.

Conclusion

Web application abridges the gap between the user and the hosts. This integrates basic amenities for the users especially the students in one platform. It further extends the feature of advertising the hosts' accommodation facilities over the website application. All in all this application will turn out to be a boon for all the students by providing them with a portable all-in-one application.

None of the applications in the existing system support such a user friendly atmosphere where all the three features are merged into one integrated platform. There are many conclusive features in the website which suggests there can be further development and an outlook can be created for business perspective using various hosting platforms. The inclusion of cloud services makes it all the more remarkable. The integration of these platforms can make a subtle environment where a user can incur less data and also save time. The evidence that the website uses the positioning system can serve as a tool which will be serving as a boon for the website in the layout. The portable and the easy approach of the website will lead to the future development of website. This website culminates all the day-to-day issues which can be taken up as an idea for business perception. In the long run this website can serve as a potential business supplement. Since the communication between the client and the host is subjunctive and very wide open this may lead to data transparency. This application not only serves the issues but also looks after the choices or preferences of the clients using this application in a new location. From the managerial point of view it is rightly said “Time is Money”. Finally to wrap the content of the report, it suggests a method to reduce the time and data of an individual which serves as an asset to the being.

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