PNG - STOCK WEBSITE

SOFTWARE ENGINEERING PROJECT

Submitted by :

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Acknowledgment

The contentment that is achieved on the successful completion of any task is incomplete without mentioning the names of the people who made it possible with their consistent guidance, support, and indispensable encouragement.

The Project was jointly undertaken by Kunal Saini and Himanshu Tiwari as their 4th semester Software Engineering Project, under the able guidance and supervision of Dr. Aparna Datt. Our primary thanks to her, who poured over every inch of our project with proper attention and helped us throughout the working of the project. It's our privilege to acknowledge our deepest sense of gratitude to her for her inspiration which has helped us immensely. We are extremely grateful to her for her unstilted support and encouragement in the preparation of this project.

Certificate

This is to certify that the project entitled,
“PNG -Stock Website” has been done by Kunal Saini and Himanshu Tiwari Of Bachelor Of Science in Computer Science during semester IV from P.G.D.A.V College(Day), the University of Delhi under the supervision of Dr. Aparna Datt.

Dr. Aparna Datt

Problem Statement For PNG Stock Website

A Software/website has to be developed to provide high-quality png images. It should be designed to provide functionalities as discussed further.

Login authentication will be needed to access our site. Only those people can access our site who've created an account. Different types of PNGs like informative, explanatory, in-demand, and logo PNGs will be provided. It'll be possible to download these high-quality PNGs available on our site. On this website, high-quality PNGs will be provided free of cost.

The current scenario is that no website is providing such high-quality PNGs for free. Such sites need membership either annually or for a month. But, not all people, especially developers can't afford this membership and are bound to some limited graphical elements because developers don't know how to create PNGs.

For this problem, our project will come out as a solution as nowadays, many people are engaging and showing their interest in Graphic Designing and for Developers, it'll be a great step to help them by providing free PNGs to make their projects good and level up their confidence.

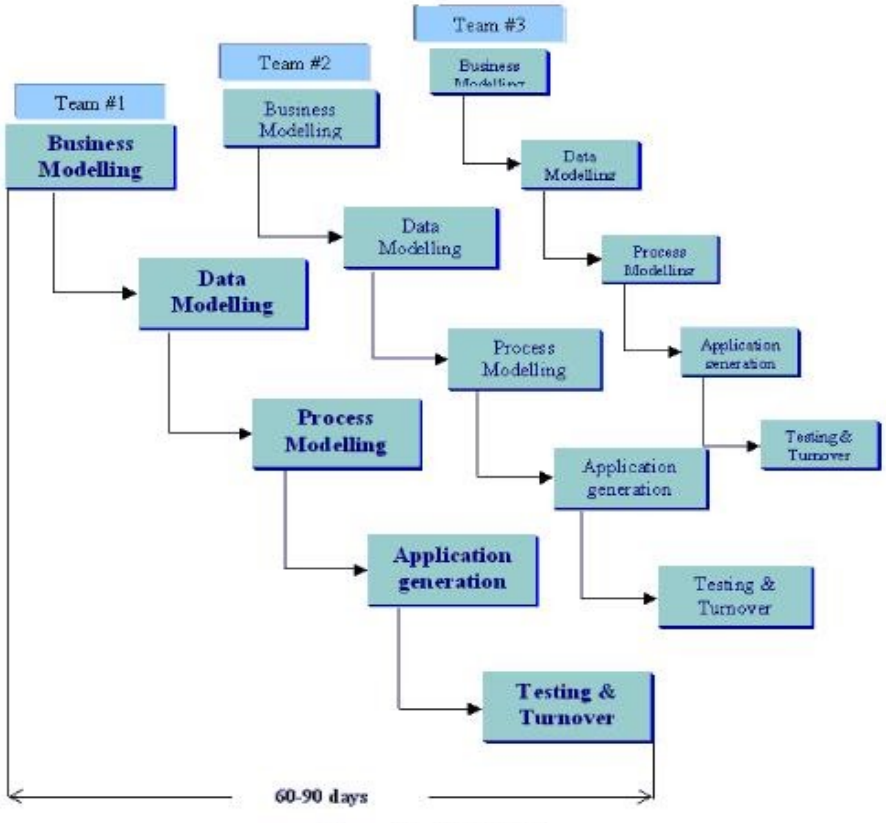
SOFTWARE PROCESS MODEL

The SDLC model that we used in our model is the “Rapid Application Development Model”.

RAD MODEL

The RAD model is the “Rapid Application Development” model. It is a type of incremental model. In the RAD model, the components or functions are developed in parallel as if they were mini-projects. The developments are time-boxed, delivered, and then assembled into a working prototype. This can quickly give the customer something to see and use and to provide feedback regarding the delivery and their requirements.

Diagram of RAD-Model :



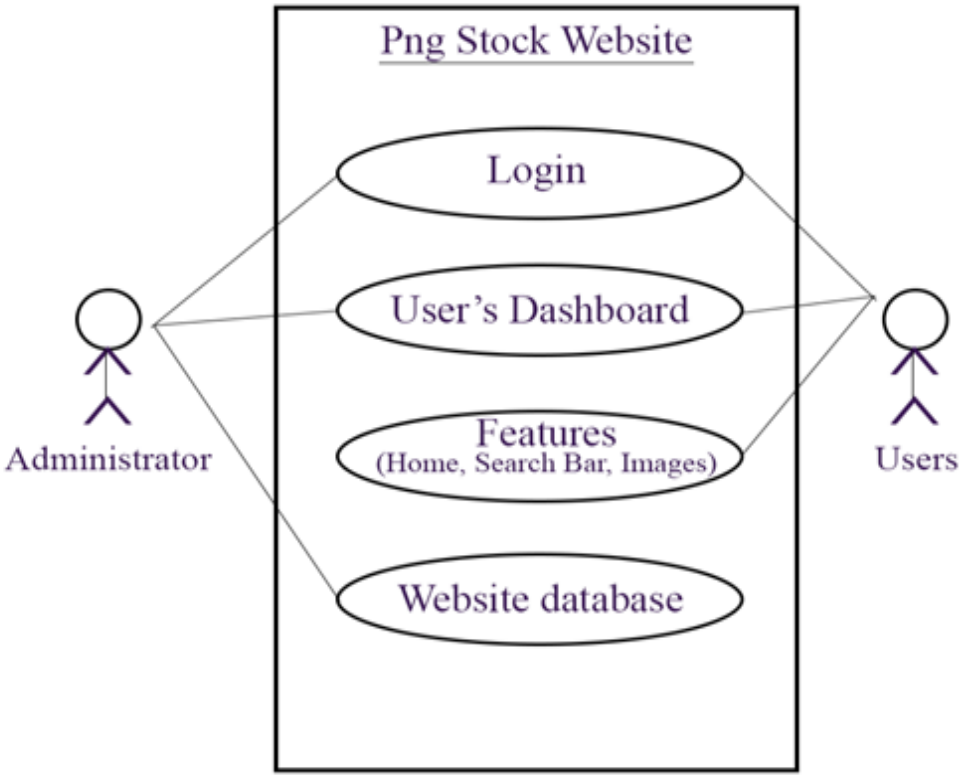
The phases in the rapid application development (RAD) model are :

- **Business modeling:** The information flow is identified between various business functions.
- **Data modeling:** Information gathered from business modeling is used to define data objects that are needed for the business.
- **Process modeling:** Data objects defined in data modeling are converted to achieve the business information flow to achieve some specific business objective. Descriptions are identified and created for CRUD of data objects.
- **Application generation:** Automated tools are used to convert process models into code and the actual system.
- **Testing and turnover:** Test new components and all the interfaces.

Why use the RAD Model in this project?

- Reduced development time.
- Increases the reusability of components.
- Quick initial reviews occur.
- Encourages customer feedback.
- Integration from the very beginning solves a lot of integration issues.

USE CASE DIAGRAM :



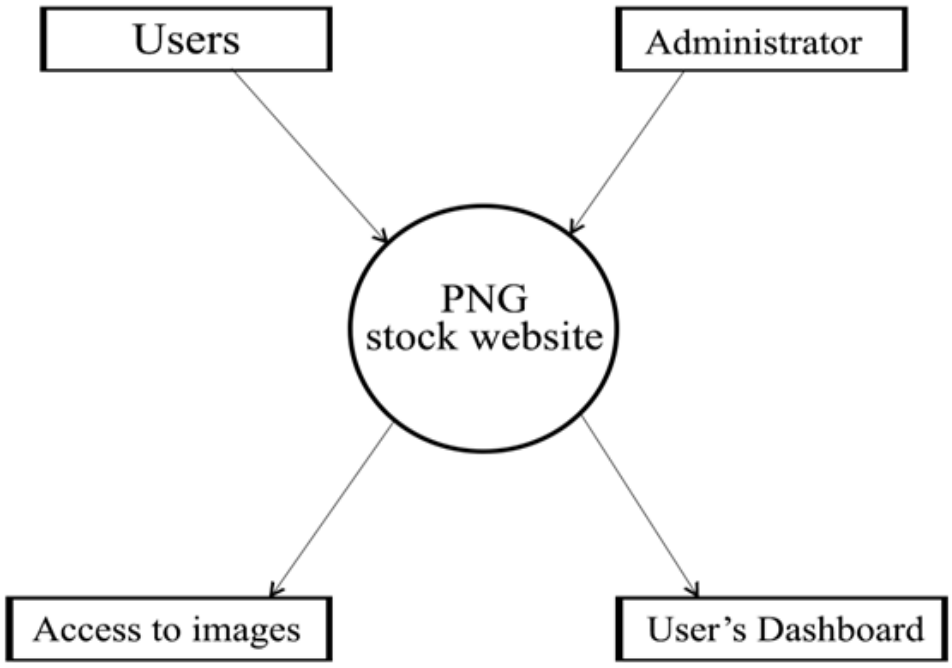
Use Case Diagram for PNG Stock Website

DATA FLOW DIAGRAMS :

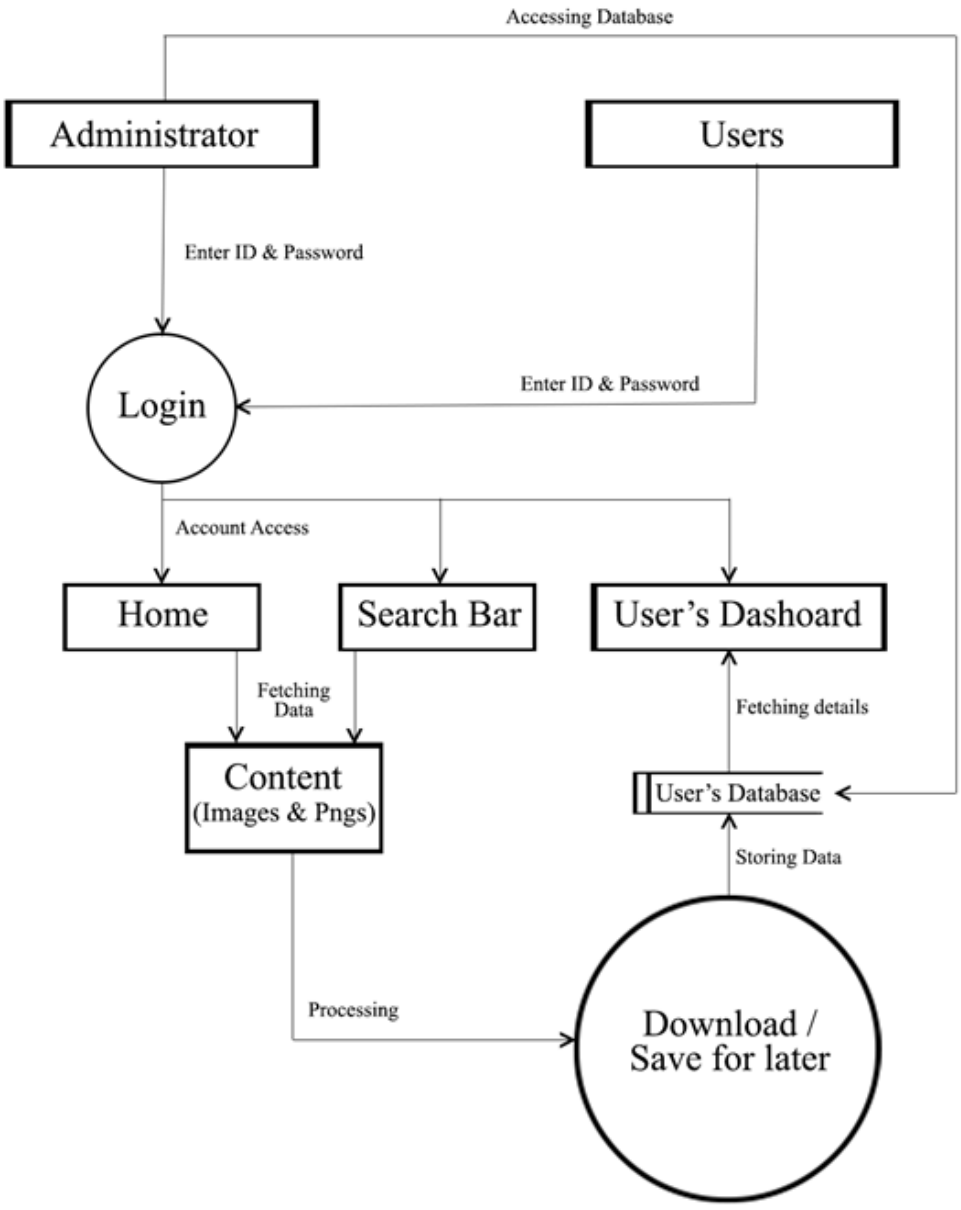
A Data Flow Diagram is a graphical representation of the “flow” of the data through an information system, modeling its process aspects. A DFD is often used as a preliminary step to create an overview of the system, which can later be elaborated.

• DFD can also be used for the visualization of data processing.

• A DFD shows what kind of information will be input to and output from the system, where the data will come from and go to, and where the data will be stored. It doesn’t show information about the timing of the process or information about whether processes will operate in sequence or parallel.



0 LEVEL DFD


Accessing Database
Administrator
Users
Enter ID & Password
Login
Enter ID & Password
Account Access
Home
Search Bar
User's Dashoard
Fetching Data
Fetching details
Content (Images & Pngs)
User's Database
Storing Data
Processing
Download / Save for later

1 LEVEL DFD

SOFTWARE REQUIREMENTS SPECIFICATION

What is SRS?

A software requirements specification is a description of a software system to be developed. It lays out functional and non-functional requirements and may include a set of use cases that describe user interactions that the software must provide.

Why SRS?

To fully understand one's project, they must come up with an SRS listing out their requirements, how they are going to meet it and how they will complete the project. It helps the team to save upon their time as they can comprehend how are going to go about the project. Doing this also enables the team to find out about the limitations and risks early on.

1. Introduction

This document lays out the plan for the development of the "PNG Stock Website". Himanshu Tiwari and Kunal Saini are involved in the process of development of this project. This document is for Devs who're involved in the process of the Stock Images website's improvement. This will include a glance at various factors like system functionality, goals and scopes, risks involved, etc.

2. Overall Description

Nowadays, many people are engaging in Graphic Designing and here is the main issue they face, there are limited graphical elements or we can say it's trivial. They usually cost people to buy such good quality elements especially High-Quality PNGs and it is

the main aim of our project to fulfill such requirements of PNGs of the Designers as well as developers so that they can improve their skills and will stay encouraged in the field and it'll be free of cost.

2.1 Customers

Everyone who wants high-quality PNGs for their respective projects can make use of our website.

2.2 Functionality

- **Login Module:** Users should be able to log in to our website through their respective ID and password.
- **Dashboard:** They will be provided with a dashboard to keep track of their data.
- **Search Module:** They will also be provided with the search bar to search for various PNGs according to their requirements.
- **Download Module:** They can download the PNGs or can save them to their respective dashboard for later use.

2.3 Platform

It'll be launched as a website commercially.

2.4 Development Responsibility

All the responsibility and credits of the development of this project go to Himanshu Tiwari and Kunal Saini, in complete guidance of our Assistant Professor Dr. Aparna Datt.

3. Goals and Scope

All goals and scope of the project are as per the following :

- ➢ Users should be able to log in to our website through their respective ID and password.
- ➢ They will be provided with a dashboard to keep track of their data.
- ➢ They will also be provided with the search bar to search for various PNGs according to their requirements.
- ➢ They can download the PNGs or can save them to their respective dashboard for later use.

4. Deliverables

We'll deliver the following during the flow of the development :

- ➢ Feature Specification
- ➢ Product Design
- ➢ Test Plan
- ➢ Development Document
- ➢ Pseudo Code

5. Risk Management

5.1 Risk Identification

There are many famous websites like Adobe stock images, Pinterest, and many more, on which people trust blindly. So, what would be the reason for them to access our site?

5.2 Risk Mitigation

We are providing the things free of cost, of which all other sites are taking charges. This will give our project a boost.

6. Technical Process

Following would be the skills & resources we would use for the development of our software within the specific tenure :

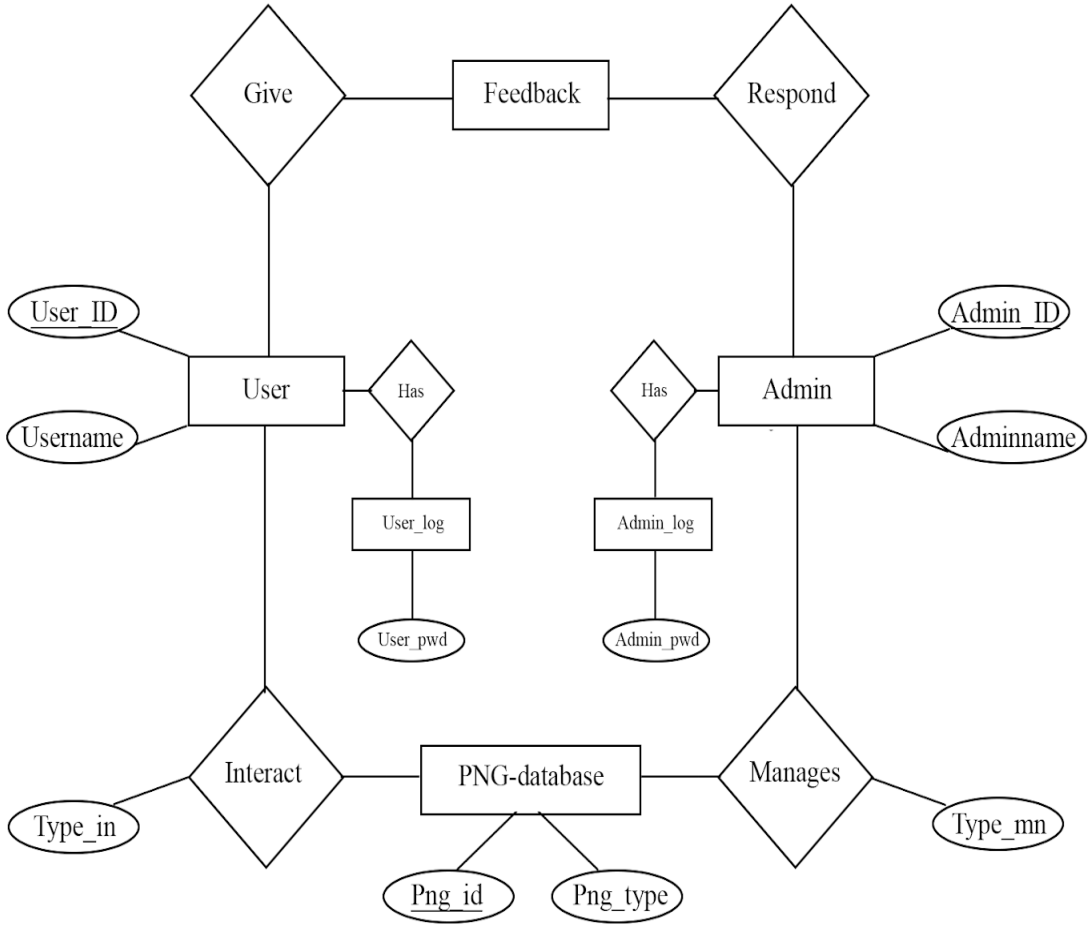
Web Development Major Resources :
FreeCodeCamp - https://www.freecodecamp.org/
W3Schools - https://www.w3schools.com/
JSON APIs - https://jsonplaceholder.typicode.com/

Web Development Skills :
HTML, CSS, JavaScript, Jquery, Bootstrap, JSON, AJAX, Node-JS, MySQL

Graphic Design Major Resources :
Freepik - https://www.freepik.com/
UxWing - https://uxwing.com/

Graphic Design Skills: Adobe Photoshop
Database: MySQL

ENTITY RELATIONSHIP DIAGRAM :



ER DIAGRAM FOR PNG STOCK WEBSITE

TESTING

- ➢ Testing is the process of executing a program with the intent of finding an error. A good test case has a high probability of finding - undiscovered error.
- ➢ Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design, coding.
- ➢ The purpose of product testing is to verify and validate the various work products viz. units, integrated unit, final product to ensure that they meet their requirements.

TESTING TO BE HELD IN OUR PROJECT :

- ➢ **Acceptance testing :**
    - **Alpha testing:** When software testing is performed internally within the organization. Our project will be tested by the developers of the organization who developed the website.
    - **Beta testing:** When software testing is performed for the limited number of people who’re the outsiders for our organization and need our PNG-Stock Website.

Design of Database Tables

The data to be used in the system are stored in various tables. The number of tables used and their structure is decided upon keeping in mind the logical relation in the data available.

The database design specifies:

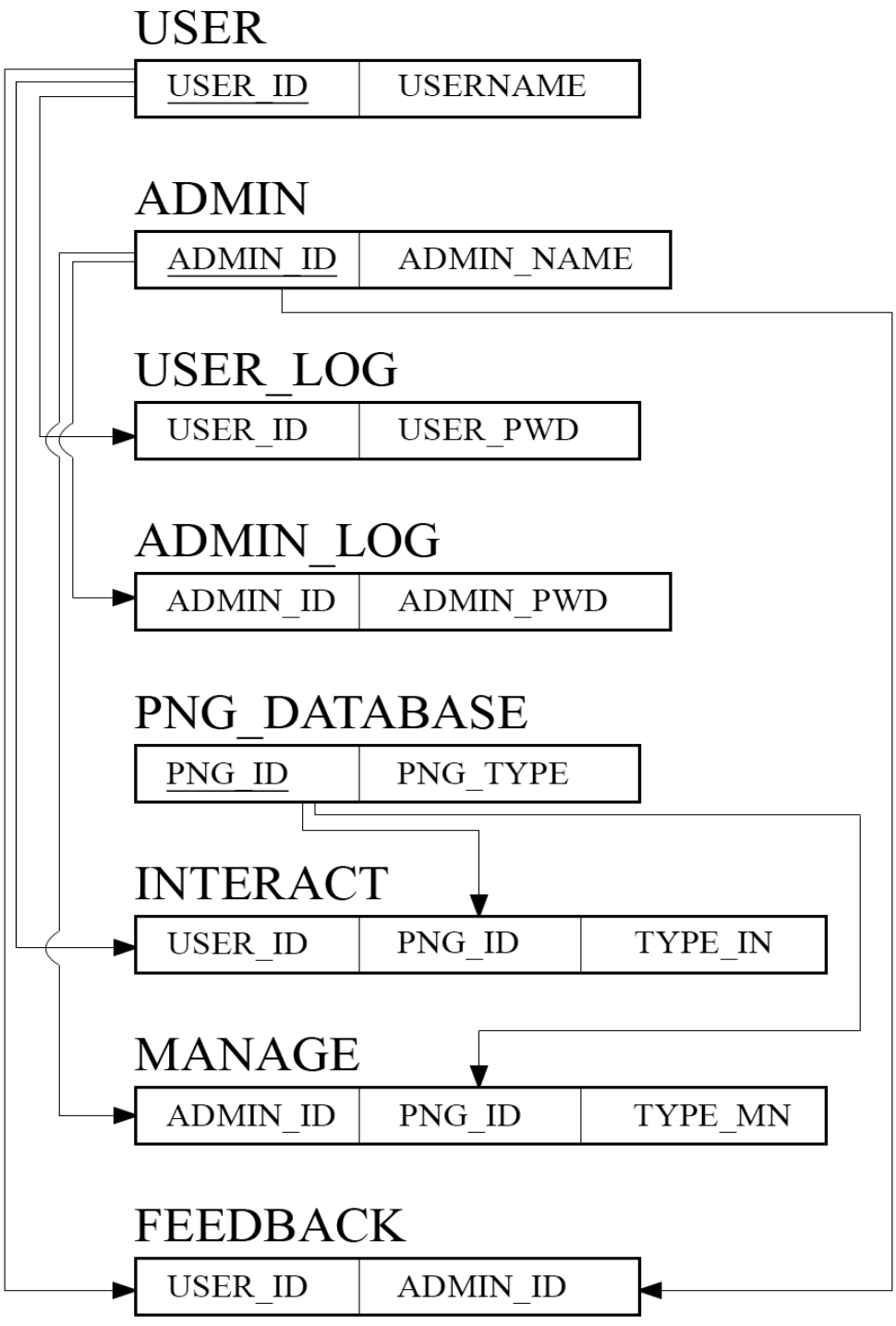
- ➢ The various tables to be used.
- ➢ Data to store in each table.
- ➢ Format of the fields and their types.

Tables in the database :

To develop the PNG-STOCK WEBSITE, we have to create the tables mentioned below :

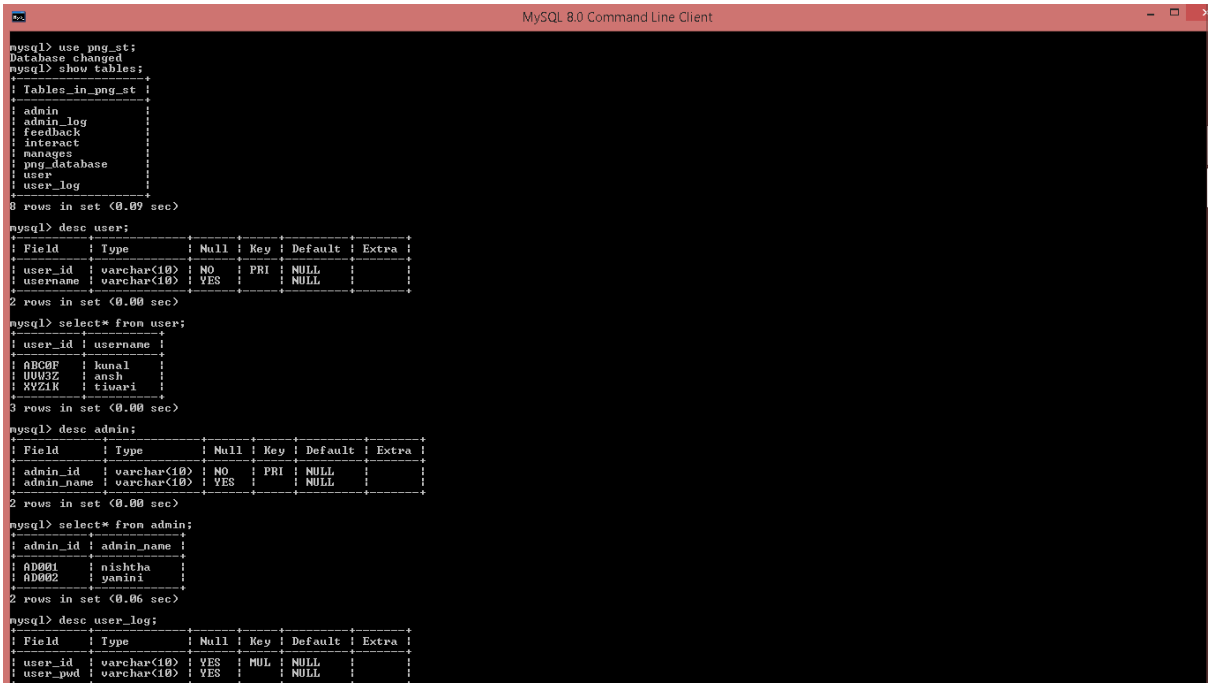
- ➢ USER
- ➢ ADMIN
- ➢ USER_LOG
- ➢ ADMIN_LOG
- ➢ PNG_DATABASE
- ➢ INTERACT
- ➢ MANAGE
- ➢ FEEDBACK

RELATIONAL DATABASE SCHEMA FOR PNG-STOCK WEBSITE

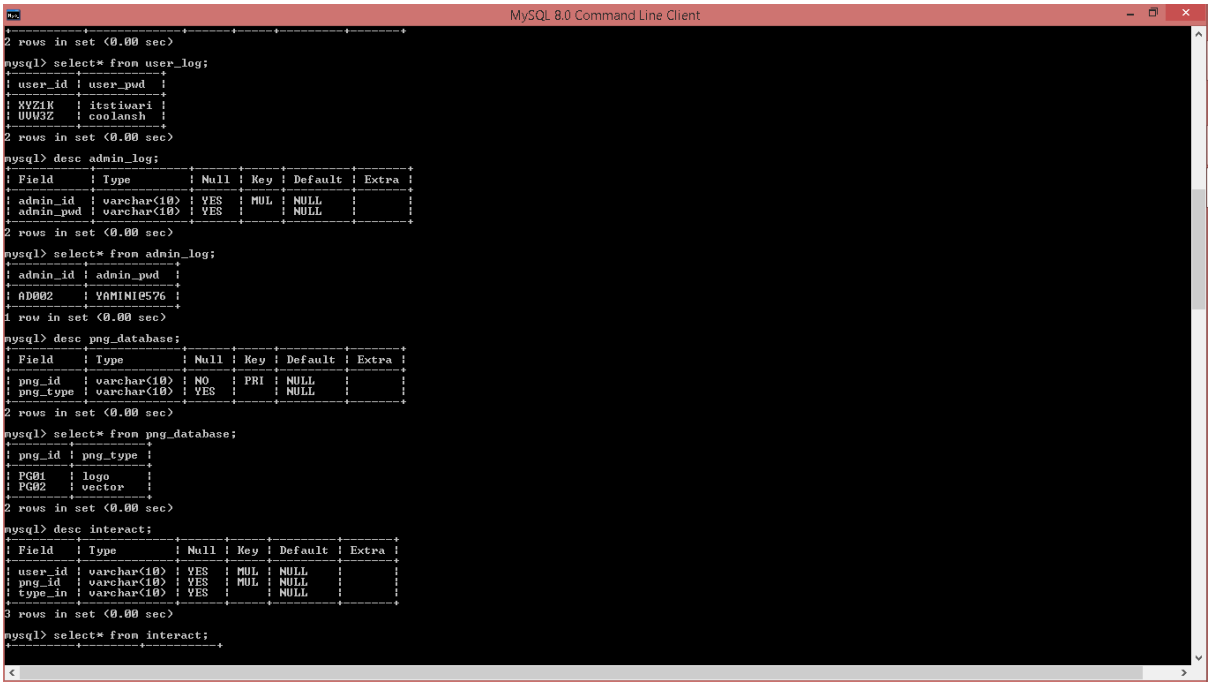


TABLES IN SQL SERVER

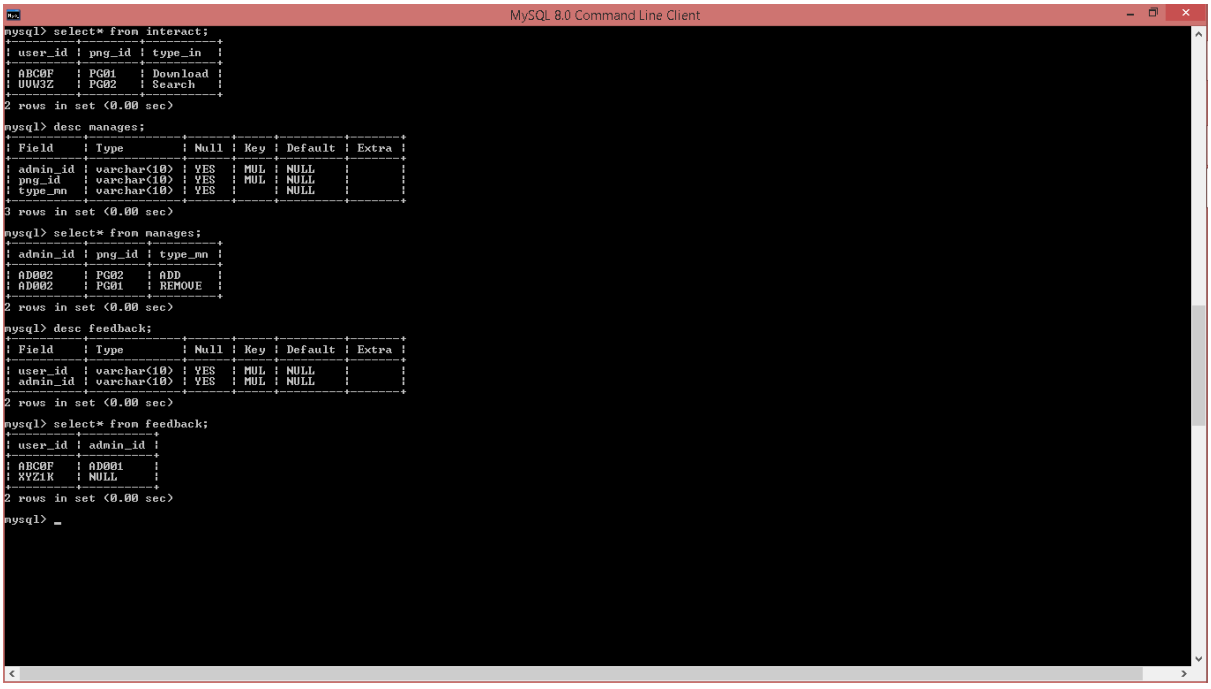
1.



2.



3.



Function Points

Function-oriented software metrics use a measure of the functionality delivered by the application as a normalization value. Since ‘functionality’ cannot be measured directly, it must be derived indirectly using other direct measures. Function points are derived using an empirical relationship based on countable(direct) measures of software‘s information domain and assessment of software complexity. Information domain values are defined in the following manner:

● Number of user inputs: Each user input that provides distinct application-oriented data to the software is counted. Inputs should be distinguished from inquiries, which are counted separately.

● Number of user outputs: Each user output that provides application-oriented information to the user is counted. In this

context, output refers to reports, screens, error messages, etc. Individual data items within a report are not counted separately.

● Number of user inquiries: An inquiry is defined as an online input that results in the generation of some immediate software response in the form of online output. Each distinct inquiry is counted.

● Number of files: Each logical master file (i.e., a logical grouping of data that may be one part of a large database or a separate file) is counted.

● Number of external interfaces: All machine-readable interfaces (e.g., data files on storage media) that are used to transmit information to another system are counted.

Once function points have been calculated, they are used to normalize measures for software productivity, quality, and other attributes:

- o Errors per FP
- o Defects per FP
- o $/FP
- o Pages of documentation per FP
- o FP per person-month

Formula:-

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

FP = Count Total * [0.65 + 0.01 * ∑ (Fi)]

where,

▪ Count Total = Sum of the products obtained from multiplying counts of each information domain value by a **weighting factor** depending on their complexity level (simple, average, or complex). We have Considered the complexity level as simple.

▪ Fi (i=1 to 14) = “Complexity Adjustment Values” based on responses to a set of 14 questions; each answered using a scale ranging from 0 to 5:

0=Noinfluence
1=Simple
2=Moderate
3=Average
4=Significant
5= Essential

INFORMATION DOMAIN VALUE	COUNT		WEIGHTING FACTOR				
			SIMPLE	AVERAGE	COMPLEX		
EXTERNAL INPUTS (EIs)	2	*	3	4	6	=	6
EXTERNAL OUTPUTS (EOs)	3	*	4	5	7	=	12
EXTERNAL INQUIRIES (EQs)	3	*	3	4	6	=	9
INTERNAL LOGICAL FILES (ILFs)	5	*	7	10	15	=	35
EXTERNAL INTERFACE FILES (EIFs)	0	*	5	7	10	=	0
COUNT TOTAL							62

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

1. Does the system require reliable backup and recovery?

   ANS: 5

2. Are specialized data communications required to transfer information to or from the application?

   ANS: 1

3. Are there distributed processing functions?

   ANS: 4

4. Is performance critical?

   ANS: 5

5. Will the system run in an existing, heavily utilized operational environment?

   ANS: 2

6. Does the system require online data entry?

   ANS: 4

7. Does the online data entry require the input transaction to be built over multiple screens or operations?

ANS: 2

8. Are the ILFs updated online?

ANS: 4

9. Are the inputs, outputs, files, or inquiries complex?

ANS: 1

10. Is the internal processing complex?

ANS: 3

11. Is the code designed to be reusable?

ANS: 3

12. Are conversion and installation included in the design?

ANS: 4

13. Is the system designed for multiple installations in different organizations?

ANS: 4

14. Is the application designed to facilitate change and ease of use by the user?

ANS: 4

TOTAL: 42

● Once this much data is collected now we head on to Function points: - Formula: -

FP = Count Total x [0.65 + 0.01 x ∑ (Fi)]
Where, Count Total= 62
∑(Fi) = 42

Thus, FP is = 62 * [0.65 + (0.01 * 42)]
= 66.34

Pseudocode for User Login Module

```
read User_Id;
read Username;
read User_Pwd;
if(existingUser){
   if(credentials = = correct)
   {
       login successful;
       redirect to home page;
   }
   else{
       error: login with correct credentials;
   }
}
else{
   signup;
}
```

CYCLOMATIC COMPLEXITY

Cyclomatic complexity is a software metric that provides a quantitative measure of the logical complexity of a program. When used in the context of the basis path testing method, the value computed for cyclomatic complexity defines the number of independent paths in the basis set of a program and provides you with an upper bound for the number of tests that must be conducted to ensure that all statements have been executed at least once.
Lower the Program's cyclomatic complexity, lower the risk to modify, and easier to understand.
Cyclomatic Complexity(CC) can be calculated in 3 different ways :

1. The number of regions in the flow graph is cyclomatic complexity.

2. CC for a flow graph G is:

   V(G) = E - N + 2

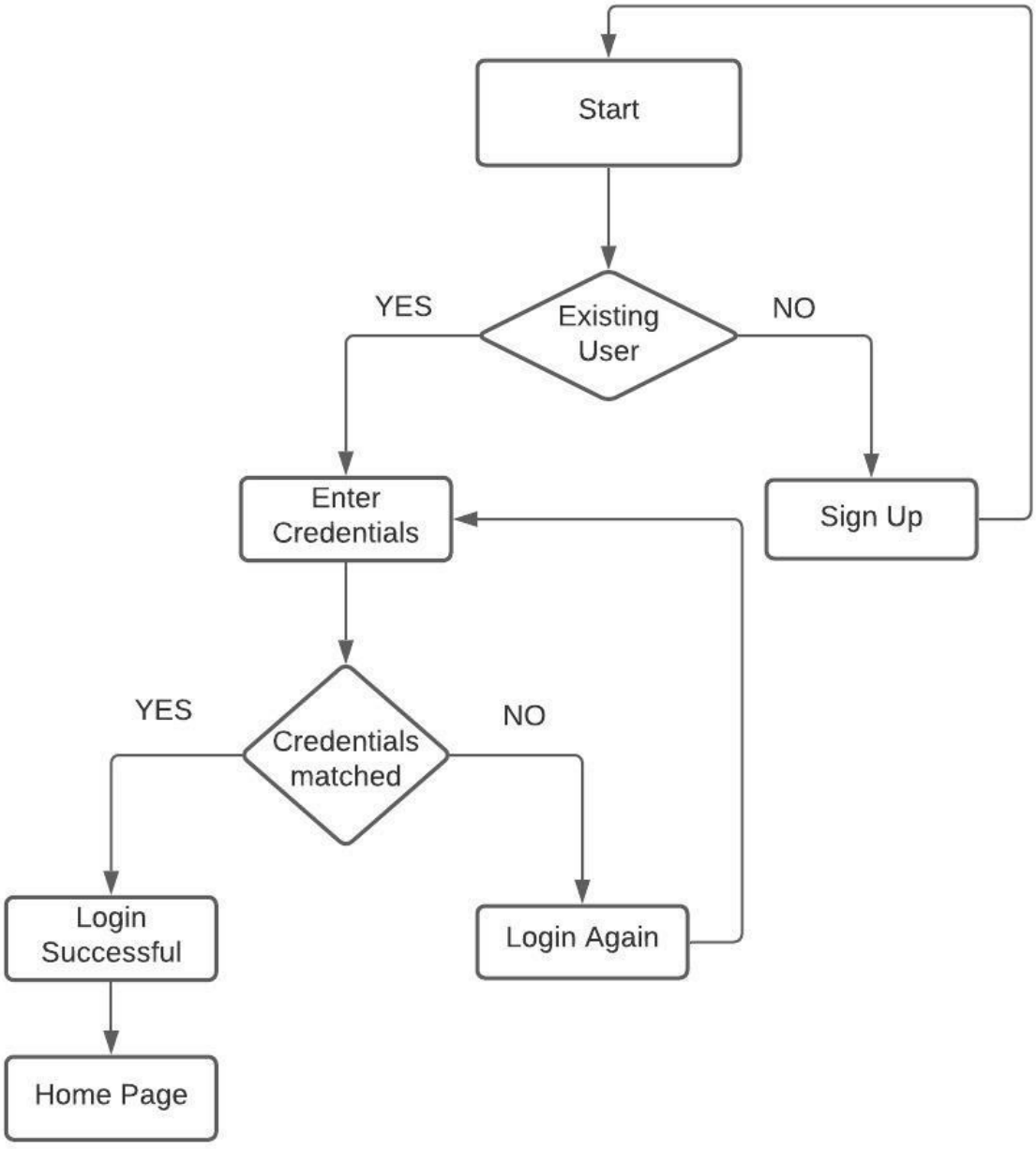
   Where E is the number of graph edges and
   N is the number of graph nodes

3. CC for a flow graph G is :

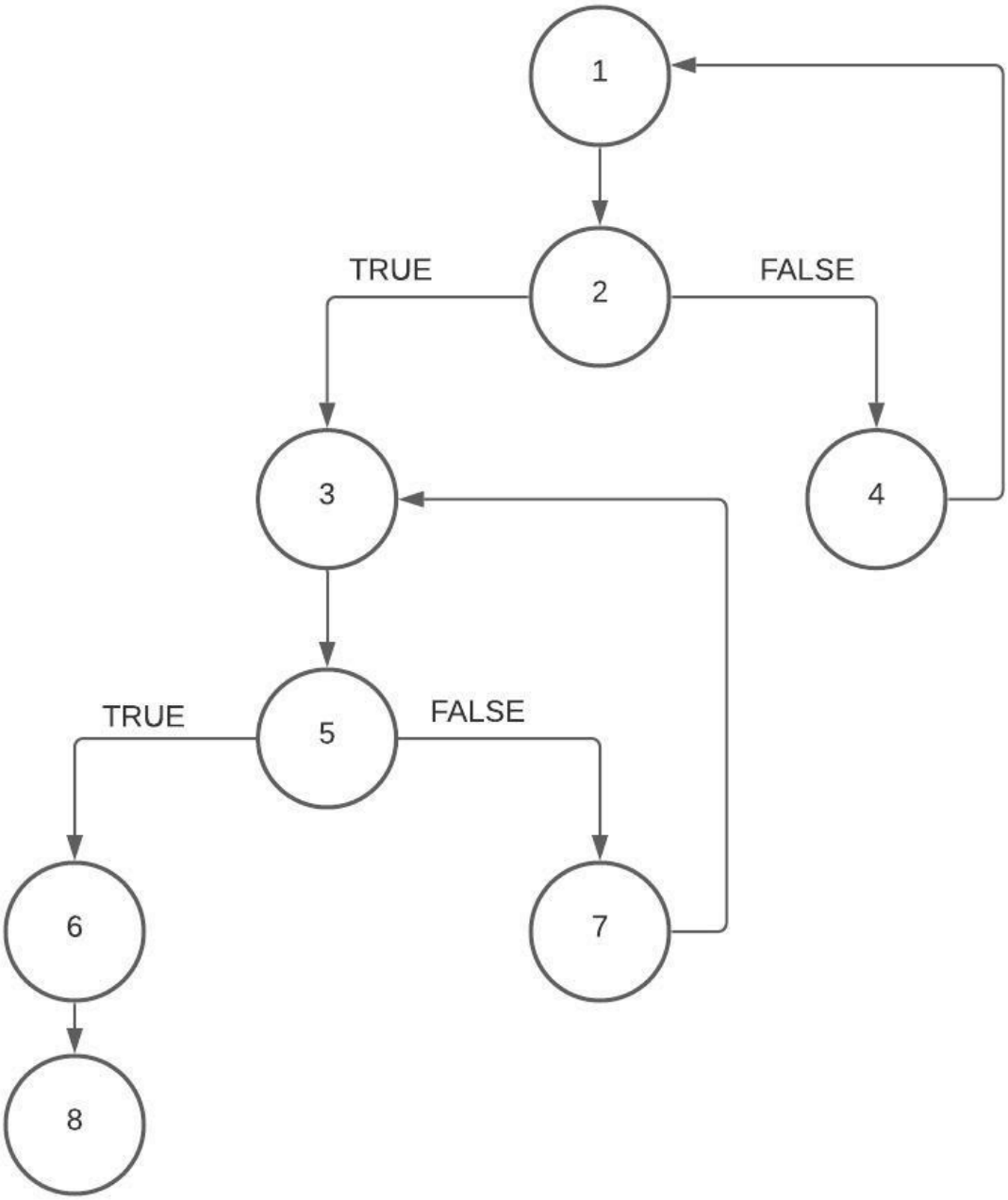
   V(G) = P + 1

   Where P is the number of predicate nodes in the graph G

Flow chart of the Login module



Control Flow Graph Of Login Module



Cyclomatic Complexity of login module using 3 methods as mentioned above:

- Using Region method:
  Regions in the above graph : 3

  R1: 1,2,4

  R2: 3,5,7

  R3: Entire Outer Region
  - Using formula :
    V(G) = E - N + 2
    V(G) = 9 - 8 + 2 = 3

  - Using formula :
    V(G) = P + 1
    V(G) = 2 + 1 = 3

So Cyclomatic complexity of Login Module = 3

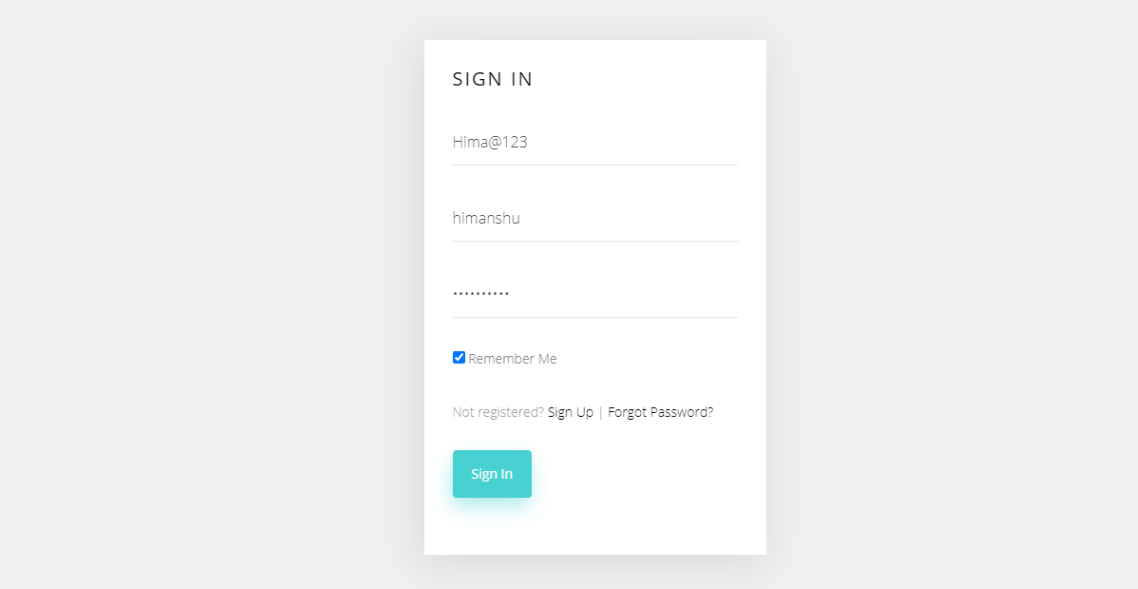
TEST CASES

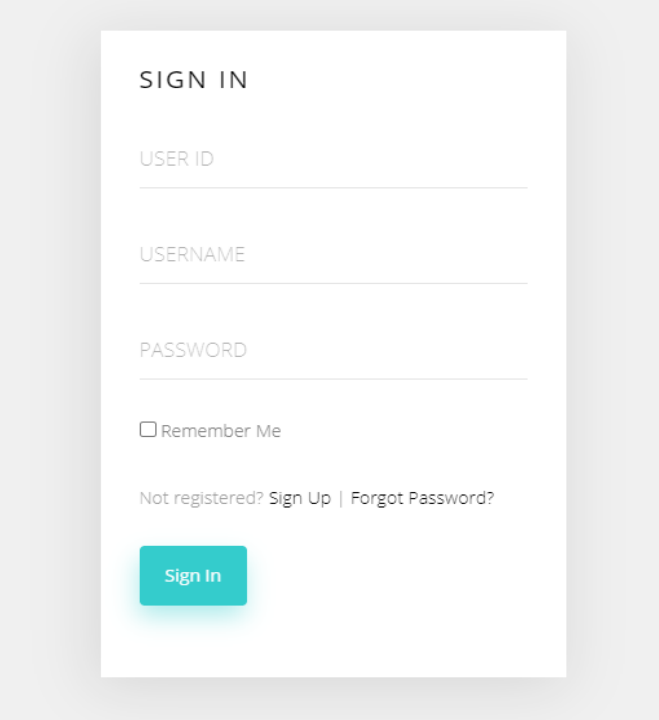
S.no.	Input	Expected Output	Actual Output
1.	Valid and correct User_ID Correct Username Correct User_pwd	**Access granted**	**To be observed after execution**
2.	Valid and correct User_ID Correct Username Incorrect User_pwd	**Error message**	**To be observed after execution**
3.	Valid and correct User_ID Incorrect Username	**Error message**	**To be observed after execution**
4.	Incorrect User_ID	**Error message**	**To be observed after execution**
5.	Valid and correct Admin_ID Correct Adminname Correct Admin_pwd	**Access granted**	**To be observed after execution**
6.	Valid and correct Admin_ID Correct Adminname Incorrect Admin_pwd	**Error message**	**To be observed after execution**
7.	Valid and correct Admin_ID Incorrect Adminname	**Error message**	**To be observed after execution**
8.	Incorrect Admin_ID	**Error message**	**To be observed after execution**

Screens:

Home Screen

Login Screen





Pseudocodes

Pseudocode for Header on Home Screen

```
<div class="site-header">
<div class="main-navigation">
<div class="responsive_menu">
  <ul>
    <li><a class="show-1 templatemo_home" href="#">Gallery</a></li>
    <li><a class="show-2 templatemo_page2" href="#">Our team</a></li>
    <li><a class="show-3 templatemo_page3" href="#">Services</a></li>
    <li><a class="show-5 templatemo_page5" href="#">Contact</a></li>
  </ul>
    </div>
    <div class="container">
      <div class="row templatemo_gallerygap">
        <div class="col-md-12 responsive-menu">
          <a href="#" class="menu-toggle-btn">
            <i class="fa fa-bars"></i>
          </a>
        </div> <!-- /.col-md-12 -->
        <div class="col-md-3 col-sm-12">
    <a href="#"><img src="images/Untitled-1.png" alt="Png stock"></a>
        </div>
        <div class="col-md-9 main_menu">
          <ul>
            <li><a class="show-1 templatemo_home" href="#">
                <span class="fa fa-camera"></span>
                Gallery</a></li>
            <li><a class="show-2 templatemo_page2" href="#">
                <span class="fa fa-users"></span>
                Our team</a></li>
            <li><a class="show-3 templatemo_page3" href="#">
                <span class="fa fa-cogs"></span>
                Services</a></li>
            <li><a class="show-5 templatemo_page5" href="#">
                <span class="fa fa-envelope"></span>
                Contact</a></li>
          </ul>
```

```
          </div> <!-- /.col-md-12 -->
        </div> <!-- /.row -->
      </div> <!-- /.container -->
    </div> <!-- /.main-navigation -->
  </div> <!-- /.site-header -->
  <div id="menu-container">
    <!-- gallery start -->
    <div class="content homepage" id="menu-1">
      <div class="container">
        <div class="row templatemorow">
          <div class="hex col-sm-6">
            <div>
              <div class="hexagon hexagon2 gallery-item">
                <div class="hexagon-in1">
                  <div
class="hexagon-in2"style="background-image:url(images/gallery/1.jpg);">
                    <div class="overlay">
                      <a href="images/gallery/1.jpg"data-rel="lightbox"
class="fa fa-expand"></a>
                    </div>
                  </div>
                </div>
              </div>
            </div>
          </div>
          <div class="hex col-sm-6">
            <div>
              <div class="hexagon hexagon2 gallery-item">
                <div class="hexagon-in1">
                  <div class="hexagon-in2" style="background-image:
url(images/gallery/2.jpg);">
                    <div class="overlay">
 <a href="images/gallery/2.jpg" data-rel="lightbox" class="fa
fa-expand"></a>
                    </div>
                  </div>
                </div>
              </div>
            </div>
          </div>
          <div class="hex col-sm-6  templatemo-hex-top2">
            <div>
              <div class="hexagon hexagon2 gallery-item">
```

```
                <div class="hexagon-in1">
                  <div class="hexagon-in2" style="background-image:
url(images/gallery/3.jpg);">
                    <div class="overlay">
                      <a href="images/gallery/3.jpg"
data-rel="lightbox" class="fa fa-expand"></a>
                    </div>
                  </div>
                </div>
              </div>
            </div>
            <div class="hex col-sm-6  templatemo-hex-top3">
              <div>
                <div class="hexagon hexagon2 gallery-item">
                  <div class="hexagon-in1">
                    <div class="hexagon-in2" style="background-image:
url(images/gallery/4.jpg);">
                      <div class="overlay">
                        <a href="images/gallery/4.jpg"
data-rel="lightbox" class="fa fa-expand"></a>
                      </div>
                    </div>
                  </div>
                </div>
              </div>
            </div>
```

Pseudocode for Login Screen

```
<div class="row">
<div class="col-md-4 col-md-offset-4">


                <!-- Start Sign In Form -->
<form action="#" class="fh5co-form animate-box"
data-animate-effect="fadeIn">
                    <h2>Sign In</h2>
                    <div class="form-group">
                <label for="username" class="sr-only">User ID</label>
```

```
<input type="text" class="form-control" id="username" placeholder="User
ID " autocomplete="off">
                    </div>
                    <div class="form-group">
                <label for="username" class="sr-only">Username</label>
<input type="text" class="form-control" id="username"
placeholder="Username" autocomplete="off">
                    </div>
                    <div class="form-group">
                <label for="password" class="sr-only">Password</label>
<input type="password" class="form-control" id="password"
placeholder="Password" autocomplete="off">
                    </div>
                    <div class="form-group">
<label for="remember"><input type="checkbox" id="remember"> Remember
Me</label>
                    </div>
                    <div class="form-group">
<p>Not registered? <a href="sign-up.html">Sign Up</a> | <a
href="forgot.html">Forgot Password?</a></p>
                    </div>
                    <div class="form-group">
          <input type="submit" value="Sign In" class="btn btn-primary">
                    </div>
                </form>
```

Pseudocode for JS in Login Screen

```
;(function () {


    'use strict';

    // Placeholder
    var placeholderFunction = function() {
   $('input, textarea').placeholder({ customClass: 'my-placeholder' });
    }

    // Placeholder
    var contentWayPoint = function() {
```

```
        var i = 0;
        $('.animate-box').waypoint( function( direction ) {

 if( direction === 'down' && !$(this.element).hasClass('animated-fast')
) {

                i++;

                $(this.element).addClass('item-animate');
                setTimeout(function(){

                 $('body .animate-box.item-animate').each(function(k){
                        var el = $(this);
                        setTimeout( function () {
                            var effect = el.data('animate-effect');
                            if ( effect === 'fadeIn') {
                                el.addClass('fadeIn animated-fast');
                            } else if ( effect === 'fadeInLeft') {
                               el.addClass('fadeInLeft animated-fast');
                            } else if ( effect === 'fadeInRight') {
                              el.addClass('fadeInRight animated-fast');
                            } else {
                                el.addClass('fadeInUp animated-fast');
                            }

                            el.removeClass('item-animate');
                        },  k * 200, 'easeInOutExpo' );
                    });

                }, 100);

            }

        } , { offset: '85%' } );
    };
    // On load
    $(function(){
        placeholderFunction();
        contentWayPoint();

    });

}());
```

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