**Chapter 1**

**INTRODUCTION**

1. **Introduction**
   1. **About The Company**

**National Information Center (NIC)**

National Informatics Centre (NIC) under the Ministry of Electronics and Information Technology (MeitY) is the technology partner of the Government of India. It was established in 1976 with an objective to provide technology-driven solutions to Central and State Governments in various aspects of development. NIC has been instrumental in adopting and providing Information and Communication Technology (ICT) and eGovernance support to Central Government.

NIC has also developed several digital platforms for the socio-economic development of the country with ‘One-Nation One-Platform’ initiative to empower citizens digitally. Its services have created a perfect interaction of the Government with citizens, Government employees and businesses. With an objective of focused study of new technology, explore and experiment their use in governance, NIC has set-up Centre of Excellence (CoE) in Data Analytics, Artificial Intelligence, Blockchain and Application Security.

National Information Centre (NIC) Mantralaya, New Raipur Chhattisgarh. NIC has played an important role of an active catalyst and facilitator in informatics development programmed in Governments at the national, state and district levels, during the last 27 years.

The efforts of NIC Chhattisgarh for providing start-of-the art e-Governance solutions to state government, district government and citizen of Chhattisgarh have been recognized with various prestigious awards at National, State and District level. Chhattisgarh state center (CGSC), of NIC was setup at Raipur, in the year 2001 to provide the ICT (Information & Communication Technologies) services to government departments and organizations.

NIC Chhattisgarh, Department of Electronics And Information Technology, Government of India is providing network backbone and e-Governance support to Chhattisgarh State Government and Districts .National Informatics Center is a premier organization in the field of Information Technology (IT) in India. NIC implementing IT

Projects for both Central Government and State Government in the areas of:

(a) Central sector

(b) State sector

(c) District

District centers are operational in the districts with state of the art VC studios, high speed NICNET connectivity and DIO/DIA to manage the district centers activities and support various e- Governance initiatives for achieving targeted goal of delivering efficient citizen services to the common public in the State.

NIC has been instrumental in adopting Information and Communication Technology to reach out to India i.e. by implementing IT applications in Social and Public Administrations.

NIC supporting several services & projects such as bio-metric attendance, cloud, e-office, messaging, network, cyber security, VC, Webcast data center.

* 1. **About the Project**

**Project Title: “Uni-Connect”.**

**Chapter 2**

**System Analysis**

**Chapter 3**

**System Planning**

**Chapter 4**

**Feasibility Study**

**Chapter 5**

**System Requirement**

**Specification**

**Chapter 6**

**System Design**

**Chapter 7**

**System Testing**

**System Testing**

System Testing is the testing of a complete and fully integrated software product. Usually, the software is only one element of a larger computer-based system. Ultimately, the software is interfaced with other software/hardware systems. System Testing is actually a series of different tests whose sole purpose is to exercise the full computer-based system. System testing of software or hardware is testing conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements.

Testing is the process of detecting errors. Testing performs a very critical role for quality assurance and for ensuring the reliability of software and application.

**White Box Testing:** To follow the concept of white box testing we have tested each form we have created independently to verify that Data flow is correct. All conditions are exercised to check their validity. All loops are executed on their boundaries.

**Black Box Testing:** The Testing Method focuses on the functional Requirements of the software. Here each module will be treated as a black box that will take some input and generate output. Output for a given set of Input combinations is forwarded to other modules.

**Unit Testing:** Each module has been tested by giving different sets of inputs. The inputs are validated when accepting from the user.

**Validation Testing:** In the present system, validations are been written for Reference, Pay Type etc., entries and proper error messages are displayed when any validation error occurs. Validations such as a Text field should accept only Character data but no any other Characters and only Number data but no any other Characters.

**Testing Strategies:**

Testing is a set of activities that can be planned in advanced and conducted systematically. A strategy for software testing must accommodation low-level tests that are necessary to verify that a small source code segment has been correctly implemented as well as high-level tests that validate major system functions against customer requirements.

Software testing is one element of verification and validation. Verification refers to the set of activities that ensure that software correctly implements as specific function. Validation refers to a different set of activities that ensure that the software that has been built is traceable to customer requirements.

The main objective of software testing is to uncover errors. To fulfil this objective, a series of test steps unit, integration, and system tests are planned and executed. Each test step is accomplished through a series of systematic test technique that assist in the design of test cases. With each testing step, the level of abstraction with which software is considered is broadened.

**UNIT TESTING:**

Unit testing is usually performed by the developer who writes different code units that could be related or unrelated to achieve a particular functionality. Here individual units/components of a software/system are tested. The purpose is to validate that each unit of the software performs as designed. The unit-testing we have is white box oriented and some modules steps are conducted in

parallel.

Test

No.

Test Cases Input Value Expected Output Pass/Fail

1 Login with wrong

Username and

Password

Username: User1

Password: User1@123

Incorrect Username

or Password

Pass

2 Login with Right

Username and

Password

Username: Right Username

Password: Right Password

Login success and

User redirected to

the User

Dashboard.

Pass

3 Adding member

with some wrong

input

Name: Deepak Mishra

Email Id: Deepak

Mobile No.: 89597944811

Password : user

Show error message

for all fields that are

incorrect or invalid.

Pass

4 Adding member

with right input

Name: Deepak Mishra

Mobile No.: 8959794481

Email :deepak@gmail.com

Password : Admin@123

Save data and show

success message.

Pass

5 Select files Select files and submit Files uploaded Pass

Above test cases proved that all the functions, loops, conditions are working fine in this project.

**System Testing:** System testing can be considered as a black-box test technique. Black box

Testing technique does not require internal knowledge of the code.

System testing is actually a series of different tests (i.e., performance, security, recovery)

whose primary purpose is to fully exercise the computer-based system. Although each test

has a different purpose, all work to verify that system elements have been properly integrated

and perform allocated functions.

Test No. Test Case Objective Actual Output Expected Output

1 Correct Workflow? Each module is correctly

connected with each other.

Yes

2 Behaviours? Behaviours of the system is user

friendly.

User Friendly

3 Bug Free? Changes can be made easily. Yes

Performance Testing:

➢ Better response time because website take less time to load because using of lazy

loading.

➢ No refreshing the website while doing any action.

➢ Process activities like redirecting other pages and file uploading etc. on the website are

tested.

➢ Interoperability verified i.e.; an application should be able to inter-operate with the

other computer and mobile devices.

Security testing:

➢ Authentication: Only the authenticated user should be able to Login.

➢ Authorized: User should be able to log into those modules only for which he is

authorized or for which the user has been provided access to.

➢ Password: Password requirements are verified i.e., password should be as per how the

requirement defines i.e., length, special characters, numbers etc.

➢ Internal links to the web application are not accessible if placed directly in the browser.

➢ All the communication are encrypted.

**Chapter 8**

**Input-Output**

**Forms**

**Chapter 9**

**System Security**

**Introduction:** The protection of applications that include hardware, software, data, procedures and people against unauthorized use or natural disaster is known as Application Security.

Application security refers to various validations on data in the form of checks and controls to avoid the application from failing. It is always important.

**9.1 Security:**

➢ A secure login and logout facility is provided. Only Registered User can login into the application.

➢ Parameterized queries are used to prevent SQL injection.

➢ Internal pages are only accessible when the user is authenticated.

➢ Here I am using two types of validation i.e., client-side validation and server-side validation to ensure security and to ensure that only valid data is entered and only valid operations are performed on the system.

**9.1.1 Client-Side Validation:** Client-side validation saves server time and loads to handle invalid data. Some checks imposed are:

➢ TypeScript is used to ensure that all required fields are filled with valid data only. Maximum lengths of the fields of the forms are appropriately defined.

➢ Forms cannot be submitted without filling up the mandatory data so that manual mistakes of submitting empty fields that are mandatory can be sorted out at the client-side to save the server time and load.

**9.1.2 Server-Side Validation:** Server-side validation is also used to protect against malicious users, who can easily bypass our Client-Side scripting language and submit dangerous input to the server. Some of the server-side checks imposed is:

➢ Server-side constraint has been imposed to check for the validity of primary key and foreign key. If any attempt does not satisfy this key, then a proper error message are showing to the user.

➢ Forms cannot be submitted without filling up the mandatory data so that manual mistakes of submitting empty fields that are mandatory can be sorted out at the server-side.

➢ User is intimating through appropriate messages about the successful operations or exceptions occurring at server side

**Chapter 10**

**Limitation/Future**

**Enhancement**

**Limitation / Future enhancement**

**10.1 Limitation of system**

• This is a web-based application, so this need internet facility.

• This application needs high performance processor and RAM.

• Data processing can be slow if internet will be slow

**10.2 Future enhancement:**

It is not possible to develop a system that meets all the requirements of the user. User requirements keep changing as the system is being used. Some of the future enhancements that can be done to this system are:

• **Remote access:** Database access from anywhere cloud services provide.

**• Network Management:** The new system introduces enhanced functionality.

The above-mentioned points are the enhancements which can be done to increase the ability and usage of this project

**Chapter 11**

**Conclusion**

**Conclusion:**

1. After reviewing the current study and studying it thoroughly, the system was analyzed according to it and work on establishing a system that manages human resources according to the foundation of any institution.

2. Using the system, the HR manager can rely on it to effectively handle and control employee data, as well as manage leave and resource records.

3. By utilizing the program, the HR manager can easily oversee all records and financial matters for every employee.

4. Admin can manage his data easily.

**Chapter 12**

**References and Bibliography**

**Bibliography**

While developing this project, I have used some websites which helped me in our development process.

**WEB REFERENCES:**

1. https://angular.io/docs

2. https://stackoverflow.com

3. https://nodejs.org/en/docs

5. https://github.com/topics/

6. https://mariadb.org/documentation/