



Tribhuvan University

Institute of Science and Technology

DECLARATION

I hereby declare that a Intern work entitled “**Web Application Using React**” submitted to the Institute of Science and Technology, Tribhuvan University, is an original piece of work done in the form of college Intern report for Bachelor in Computer Science and Information Technology Program under the supervision of Mr. Hiranya Prasad Bastakoti.

Signatures of candidate:

Date: Sept 2023

ACKNOWLEDGEMENT

The report is prepared in the partial fulfillment of the requirements for the degree of Bachelor in Computer Science and Information Technology for my internship. The internship opportunity I had with **Tinker Technology** was a great chance for learning and professional development. And also, for having a chance to meet so many wonderful people and professionals who led me through this internship period.

At first, I express my sincere gratitude towards my Mentor/ Senior Application Developer, **Mr. Ram Krishna Mahat**, for his continuous support and making it much easier for me to adjust to the workspace. His careful and precious guidance was extremely valuable for my study both theoretically and practically.

I would also like to thank my supervisor **Mr. Hiranya Bastakoti** who supervised me with the internship as well as this report and the principle of our college, **Er. Anil Lal Amatya** for his continuous encouragement and support for our growth.

At last, I perceive this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way.

Thanking you,

Dinesh Lohani (T.U. Roll No. 20989/075)

ABSTRACT

The work described in this report is the activities that were performed for the development of a web application for SSf (social security fund), during that 12-week internship period under a real-world work-life scenario. This report aims to present the entire roles and responsibilities that were performed during an internship period along with the description of the steps followed during the software development life cycle, including the description of the project and the major objectives behind the development of the particular project i.e. SSF web application.

This internship report recounts my three-month experience as a web developer intern, focusing on learning and using React. The report discusses the projects I worked on during this time, explaining the steps I took to build them, the problems I encountered, and how I solved them to improve the performance of web applications. Working with React not only improved my technical skills but also gave me a deep understanding of modern web development. This report highlights how React helps in creating web applications that are easy to use and engaging for users, emphasizing its importance in today's software development landscape.

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List of Abbreviations

API : Application programming interface

CEO : Chief Executive Officer

CSS : Cascading Style Sheets

CTO : Chief Technology Officer

Dev/ops : Development and Operations

HR : Human Resources

HTML : Hypertext Markup Language

HTTP : Hypertext Transfer Protocol

IT : Information Technology

JS : Java Script

JSOM : JavaScript Object Notation

KYC : Know Your Customer

MIS : management information system

SSF : Social Security Fund

UI/UX : User Interface / User Experience

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

Social Security Fund (SSF) web application aims to provide contributor's details, verify contributor, status. This system is the complete online service for the employees. The vision of the government is to provide comprehensive social security coverage to the population and create a safe and secure work environment. The system will also generate timely monitoring reports to track all contributors' collections. This system handle both frontend and backend in real time and will have necessary security checks to insure all operations are record securely. This web application provides formal as well as informal employee's registration. We can also include feature of MIS (management information system) in the dashboard which contains functionalities like verify reject registration, verify reject KYC and Verify reject collection. We can also access daily reports for government of Nepal.

Admin panel keep tracks of all the records of employers, contributors and users records. We can verify employee details, perform KYC verification, and view reports from the admin panel. Employee registration, informal registration, self-employment registration, user manual, and language change can be done directly from the dashboard. When logging in from the login credentials of a contributor on the dashboard, the contributor's dashboard opens, which includes options such as profile management, contributor KYC form submission, collection records, collection reports, and password change. You can fill in person details, address, contact information, personal details, roles, contact person information, relative details, and bank information in the registration forms.

1.2 Problem Statement

In response to the pressing challenges faced in managing social security contributions and ensuring comprehensive coverage for all citizens, the proposed Social Security Fund (SSF) web application

aims to revolutionize the existing system in Nepal. By creating a unified platform, the application seeks to streamline the fragmented registration processes for formal, informal, and self-employed contributors, offering a user-friendly and efficient experience. One of the key objectives is to implement robust verification procedures and Know Your Customer (KYC) processes, ensuring the accuracy and security of contributor details. Real-time data processing capabilities will enable the government to monitor contributors' collections promptly, facilitating timely decision-making and policy implementation. The application also prioritizes data security, implementing stringent measures to protect contributors' personal and financial information. The comprehensive administrative tools provided in the admin panel will empower administrators to efficiently manage employer and contributor records, perform verifications, and access essential reports. Ultimately, the SSF web application aspires to create a secure, transparent, and streamlined social security environment, aligning with the government's vision of providing comprehensive social security coverage and fostering a safe workplace for all.

1.3 Objectives

- Real-time Data Processing
- Unified Registration System
- Enhanced Administrative Tools
- Efficient Verification and KYC

1.4 Scope and Limitations

The SSF web application ambitiously aspires to revolutionize social security services in Nepal by providing a comprehensive platform for contributors. It encompasses real-time contributor details and verification processes, catering to both formal and informal sectors. The application's scope extends to the creation of Management Information System (MIS) tools, allowing functionalities like registration management, KYC verification, and collection record tracking. Moreover, it facilitates seamless user experiences, enabling various registrations, language preferences, and extensive profile management. The system's vision aligns with the government's goal of ensuring comprehensive social security coverage, fostering a safe and secure work environment.

However, the project faces limitations. Resource constraints might hinder the speed and scale of initial implementation, impacting the coverage extension to different sectors. Administrative complexities and evolving policies pose challenges in managing contributor records effectively. Security concerns, despite robust measures, demand continuous vigilance. Adapting to diverse benefit requirements and swiftly evolving international standards can be intricate. Nevertheless, the SSF web application signifies a significant step towards transparent and efficient social security services in Nepal, reflecting the government's commitment to the welfare of its citizens.

1.5 Report Organization

Altogether the report is divided into four different chapters, each representing different phases of the internship report. The chapters can be described as, in **Chapter 1**, it deals with the introductory part of the report and explains what the report is about, what are problem statements, scope and limitation. **Chapter 2** is all about the organization, introduction to the organization, what hierarchy that particular organization follow, working domains of the organization and description of the intern department. **Chapter 3** deals with the internship activities, what are our roles and responsibilities, what are the things we perform over the period of intern and the description of the project we did and the task or activities we performed.

Chapter 4 is all about the conclusion and the things we learned during our internship period.

CHAPTER TWO

ORGANIZATION DETAILS AND LITERATURE REVIEW

2.1. Introduction to Organization

Tinker Technology Pvt. Ltd. is a digital agency with a 2+ year track record helping mission-driven companies, sustainable brands, social enterprises, and large nonprofits solve problems and create positive social and environmental impact. With consultancy, design, and development services in-house, we integrate digital products and services into our clients' business models to achieve measurable results. It has helped hundreds of organizations build long-term success.

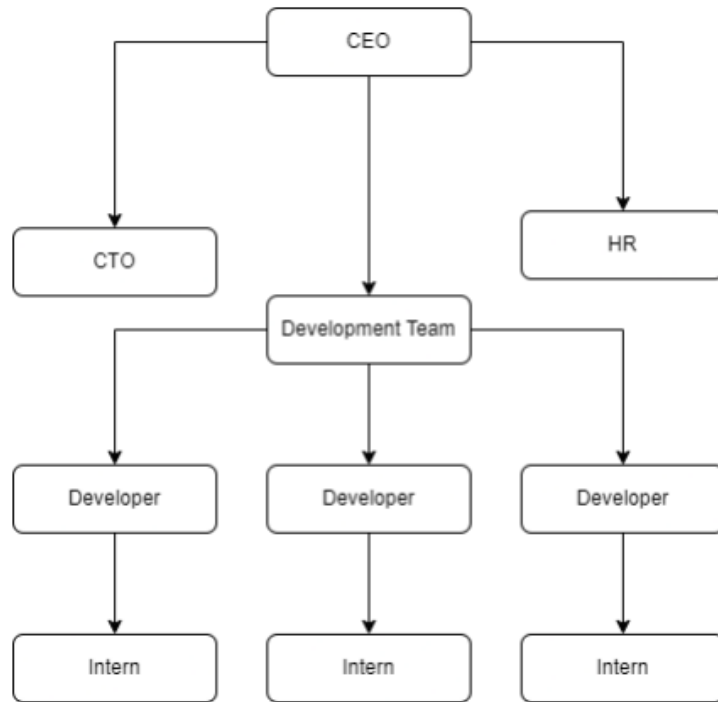
Whatever the finished product may be, our team works with clients to find rich, compelling solutions. But there's much more to our business than creativity. With a name like Tinker Technology, you know you can rely on us to keep projects on schedule, on budget and on track. We pride ourselves on professionalism and responsiveness that equal our creative abilities. We communicate at every project step to assure there are no surprises regarding deliverables, timetables and budgets.

Table 2.1 Contact Details of Company

Company Name	Tinker Technology Pvt. Ltd.
Address	Bhaktapur, Nepal
Contact	+977 9843545455
Mail	info@tinker.com.np
Website	https:// tinker.com.np/

2.2. Organizational Hierarchy

Tinker Technology Pvt. Ltd. is a hierarchical organization that includes a CEO, CTO, and HR manager. There is a development team led by the CEO, which includes a web development team and a mobile development team. Web developers work on the web development team, while web developer interns work under their supervision. There is also a web developer in the development



team, as well as web developer interns.

Figure 2.1 Hierarchical Structure of Organization

2.3. Working Domains of Organization

Tinker Technology Pvt. Ltd. offers a variety of services like Web Development, Design, Build & Deployment and strategy & Consulting. Some of the technologies used by this company are mentioned below:

Website Development

- React
- ASP .Net Core
- Python (Django)
- PHP
- Angular JS
- Vue JS

Database

- SQL (MySQL, SQLite, MS SQL)

Build & Deployment

- Docker

2.4 Description of Intern Department

Tinker Technology has its own organizational hierarchy, for the efficient management and working of the overall organizations. Designing and development team also comprises of interns who develop the system. There are all together two interns working for the department. The intern field of the work is defined with the interest of the intern and the requirement of the organization. The interns are assigned with the respective supervisor according to their field of works. Accordingly, the interns are managed and supervised by the senior developers of the company to complete the daily task that are assigned to them. The intern needs to perform well to complete that task assigned by their supervisor. The intern also needs to provides all the details of the worked done in the company to their supervisors in the daily meetings.

Table: 2.2 Duration of Internship

Start Date	12 th May
End Date	4 th August
Total Duration	12 Weeks
Position	Web Developer Intern
Supervisor	Mr. Ram Krishna Mahat
Office Hours	10 AM – 5:00 PM

CHAPTER THREE

INTERNSHIP ACTIVITIES

3.1 Roles and Responsibilities

I was given a variety of responsibilities throughout my internship as a web application developer depending on the needs of the project. The following are a few of the tasks and obligations that I was given:

- Developing a web application using react.
- Working efficiently with GraphQL.
- Used Git for version control, keeping track of code changes, participating in code reviews, and assuring the integrity of the codebase.
- Openly seeking advice and sharing insights while maintaining clear and frequent contact with the team and supervisors about the progress, issues, and ideas.
- APIs and third-party services were successfully incorporated into the system.
- Effectively implementing the UI/UX design into usable web application.
- Assist with finding and fixing faults and problems with the web applications.

3.2 Weekly Log

Table: 3.1 Weekly Log of Internship

Week	Topic	Activity
1 st Week	Gathered information about the project and installed the necessary tools	<ul style="list-style-type: none">- Office information- Git overview- Install and setup git- Install postman API- Set up environment in pc

2 nd Week	Introduction to React	<ul style="list-style-type: none"> - Understand basic web development concepts (HTML, CSS, JavaScript). - Introduction to React, JSX syntax, components, and props. - State and events in React, understanding the component lifecycle.
3 rd week	Advanced React Concept	<ul style="list-style-type: none"> - React Router for navigation, conditional rendering. - Styling in React, CSS-in-JS libraries, responsive design.
4 th week	State Management	<ul style="list-style-type: none"> - Introduction to Redux, actions, reducers, and the store. - React Context API for state management, comparing Redux and Context
5 th week	Testing and Debugging	<ul style="list-style-type: none"> - Unit testing with Jest and React Testing Library - Debugging React applications, using React DevTools and browser developer tools. -
6 th week	Advanced React Patterns	<ul style="list-style-type: none"> - Higher-Order Components and Render Props. - useReducer, useCallback

7 th week	Application Development	<ul style="list-style-type: none"> - Building forms in React, form validation - Json create for validation - API integration with React using fetch
8 th week	Application Development	<ul style="list-style-type: none"> - Authentication and authorization in React applications - Advanced Routing and Navigation
9 th week	GraphQL	<ul style="list-style-type: none"> - Introduction to GraphQL, queries, mutations, and subscriptions.
10 th week	Testing web application and documentation	<ul style="list-style-type: none"> - Conducted manual testing of the web application - Creating project documentation
11 th week	Code revise	<ul style="list-style-type: none"> - Review the necessary Code - Refactor and Optimize
12 th week	Final Project and Advanced Topics	<ul style="list-style-type: none"> - Project presentations, code reviews, and feedback sessions

3.3 Description of the Project(s) Involved During Internship

During my internship, I got the opportunity to work on a major project web application of SSF (social security fund). The SSF web application performs a variety of tasks, including record storage, report organization, monitoring, etc. The application provides several conveniences to its contributors. Instead of filling out forms manually or on paper, contributors have access to online registration forms. This allows contributors to avail services from the comfort of their homes. The vision of the government is to provide comprehensive social security coverage to the population and create a safe and secure work environment through this web application.

Employer contributors are registered by employers who work at an organization. They can login, view collection reports as well as update their KYC information. Self-contributor is enrolled by contributors themselves who are not currently employed by any employers. Informal contributor involved in the informal sector and want to add contributions to SSF. And Migrant Contributors add contribution to SSF through working in foreign countries.

Various contributors can register with SSF through different methods. They can create a temporary login, fill out the necessary forms, and submit them for verification by the admin. Once verified by the admin, they can create a permanent login and access their personalized dashboard. Within the dashboard, contributors can view their profile details, submit KYC forms, fill out collection forms, and access collection reports. The collection reports display the contributions made, account balances, and interest deposited in SSF. Users can view these reports based on their assigned roles.

- Dashboard
- Registration form
- Verify request
- Users Login (Temporary and Permanent)
- Admin Verify (users, contributors and KYC, update, delete)
- Contributor dashboard (profile, KYC reg, collection, reports, change password, logout)
- Report (Transactions, Transactions details, Balance, Interest)
- List

3.4 Task / Activities Performed

During my internship, I was involved in a series of essential tasks and activities as a Web developer. During the internship the intern was first studied about project information, markdown syntax and semantic HTML/CSS, MySql, git, JSON, TypeScript to understand the different languages and work flow. These activities encompassed various aspects of Web application development and deployment, each contributing significantly to the project's success:

- **Project Initialization:**

I started the project by using the react npx create-react-app app_name command to build a new react application, laying the groundwork for the development process.

- **Building the Application:**

Create a Dashboard. Create individual components and place them in the dashboard's navbar one by one. Many different forms were created, including those for showing/hiding lists, creating, updating, deleting, editing, verifying requests, etc. The Login page was designed to interactively capture user data, incorporating TextFormField for data input. I utilized Postman for testing APIs, ensuring the seamless integration of data retrieval from backend systems. To display data from APIs, various widgets were used.

- **API Integration:**

I used Postman to test and evaluate the API and backend endpoints. Also, I used HTTP package for making the API calls, mainly GET and POST request call to the backend.

- **Implementing the State Management:**

I used the Provider package into the application's architecture to retrieve data from APIs, manage state, and present the data on the frontend, assuring a responsive and dynamic user experience.

- **Mode Testing**

I used automated testing with unit tests and selenium to save time and costs while ensuring consistent and reliable results. Load testing is done by running selenium instances over multiple devices. This simulates operations in our application, as well as simulates data being added from multiple locations.

CHAPTER FOUR

CONCLUSION AND LEARNING OUTCOMES

4.1 Conclusion

This internship has been a priceless experience that has advanced my knowledge of Web application development and given me important insights into the workings of the business world. I am quite knowledgeable about how projects are initiated, grown, and modified to meet shifting needs. I've researched architectural best practices, code optimization techniques, and the pursuit of code efficiency in addition to developing web apps.

As part of my career growth, I found my internship experience to be incredibly valuable. The skills and knowledge I gained during this internship will undoubtedly benefit my future opportunities. Apart from working on the project, I also learned several valuable lessons. I learned the importance of teamwork and effective teamwork techniques, the significance of contributing ideas and concepts to the implementation process, and how to collaborate within strict time constraints. Additionally, I gained a deep understanding of the procedures involved in acquiring the necessary data for web development.

This experience has not only provided me with technical abilities, but has also rooted in me a strong feeling of adaptability and ongoing learning, which will certainly affect my future endeavors.

4.2 Learning Outcome

The most important lessons from the worthwhile three-month internship period may be summed up as learning new programming concepts, fixing and debugging errors, getting to know new techniques and modules, keeping to the schedule, maintaining social connections with other employees, and so on. I had learned a lot and had experiences that much exceeded what I had

learned in school. Working on a real-world project was beneficial since it gave me insights into how several project modules operate internally. Additionally, throughout the course of three months, this internship proved to be a crucial tool for enhancing my communication and public relations abilities. In the quick-paced IT field, this increase in self-assurance and enhancement of both professional and soft skills was very helpful.

- **Teamwork Skills:** Successful cooperation in a team setting became regular, highlighting the importance of harmony in achieving project objectives
- **Time Management Skills:** My internship helped me develop good time management skills, which are essential for meeting project deadlines and milestones.
- **Interpersonal Communication Skills:** Regular contacts with coworkers and stakeholders improved my capacity to communicate ideas and information in a clear and efficient manner.
- **Problem Solving Skills:** Overcoming actual challenges during the project enhanced problem-solving skills, which are crucial in the IT sector.
- **Development Skills:** Able to design webpages using the various templates and scripting languages such as JS, HTML, CSS, React and GraphQL

REFERENCES

<https://ssreqtestdemo.tinker.com.np/Modules/REGISTRATION/EmployerLogin.aspx>

[Social Security Fund \(tinker.com.np\)](#)

APPENDIX

Home page

A login form titled 'Employer Login'. It contains three input fields: 'User Name' with the value 'DineshLohani', 'Password' with masked characters '*****', and 'SSID' which is empty. Below the input fields are three buttons: 'Reset Password', 'Login' (with a right-pointing arrow icon), and 'Cancel' (with a left-pointing arrow icon).

Employer Register Page

A registration form for employers. At the top, there is a horizontal menu with tabs: 'Employer' (selected), 'Address', 'Contact', 'Document', 'Executive Head', 'Chairman', 'Contact Person', and 'Query'. Below the menu, the form is titled 'ET_EMPLOYER Config Parent Config'. It includes a 'submissionNo' field with the value '1696220155'. The form is divided into several sections with red borders and error messages. The first section contains 'Name of the institution *' with a text input 'employerNameNep' and a red error message 'नाम required'. The second section contains 'Name*' with a text input 'employerNameEng' and a red error message 'name required'. The third section contains 'Type of organization *' with a dropdown menu showing '--Select--' and a red error message 'संस्थाको प्रकार required'. The fourth section contains 'nature of the institution' with a dropdown menu showing '--Select--' and a red error message 'संस्थाको प्रकृति required'. The fifth section contains 'Nepal Industrial Sector Classification *' with a dropdown menu showing '--Select--' and a red error message 'नेपाल औद्योगिक क्षेत्र वर्गीकरण required'. The sixth section contains 'Calender*' with a dropdown menu showing '--Select--' and a red error message 'क्यालेंडर required'. The seventh section contains 'Notification Source' with a dropdown menu showing '--Select--'. The eighth section contains 'Notification Source *' with a text input 'alertSourceVal'. At the bottom, there are two buttons: 'Create' and 'Delete'. Below the 'Create' button, there is a section titled 'ET_SUBMISSION Config' with a 'save' button. Below the 'Delete' button, there is a section titled 'ET_SUBMISSION Config' with a 'verify_request' button.

Informal Reg page

[illegible]

Contributor reg page

Dashboard

Profile

KYC

Contributors

Collection

Change Password

Reports

logout.2

Profile

Address

Doc

Relative

Bank

Employment

Query

Address

ET_ADDRESS Config Parent Config

Add

xxsn	डेगना प्रकार *	विलस *	स्वधिय ळ *	सडा नं. *	टेलको नाम *	
	temporary					<div>Change</div> <div>Delete</div>
	permanent					<div>Change</div> <div>Delete</div>

ET_SUSMISSION Config

Delete

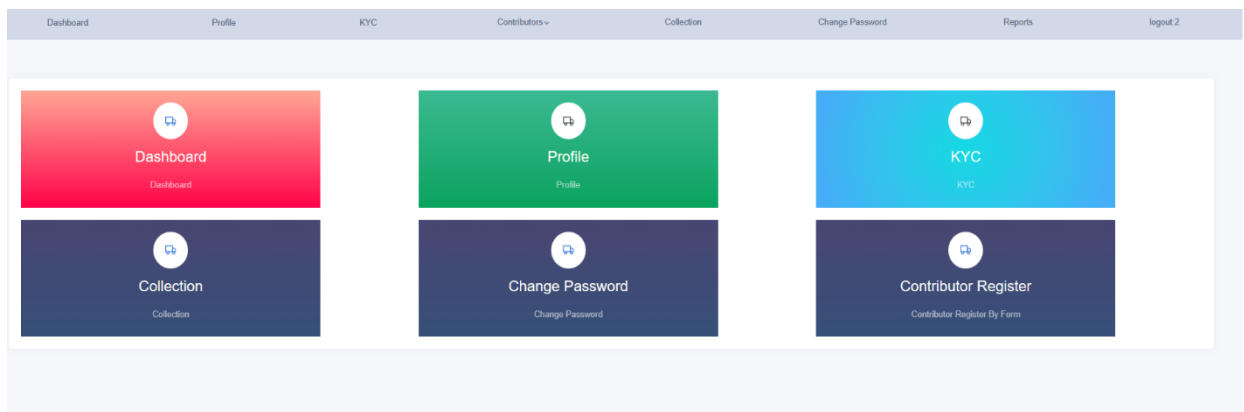
save

ET_SUSMISSION Config

Delete

verify

Employer Dashboard



KYC Page

Employer Address Contact Document **Executive Head** Chairman Contact Person Query

ET_PERSON Config Parent Config
submissionNo: 2

पहिलो नाम *
InameNep
first name nepali required

विवको नाम
mnameNep

धर *
InameNep
last name nepali required

पहिलो नाम अंग्रेजीमा *
InameEng
first name english required

विवको नाम अंग्रेजीमा
mnameEng

धर अंग्रेजीमा *
InameEng
last name english required

देश *
--Select--
country code required

जन्म मिति *
- AD / - BS
date of birth required

लिंग *
--Select--
gender required

मोबाइल नं. *
mobileNo
mobile should be 10 numbers

KYC

Admin page

SSF

Contributor

- Admin
- Verify KYC
- Verify

Reports

- Transaction Head
- Transaction Head Details
- Transactions Reports
- Interest
- Balance

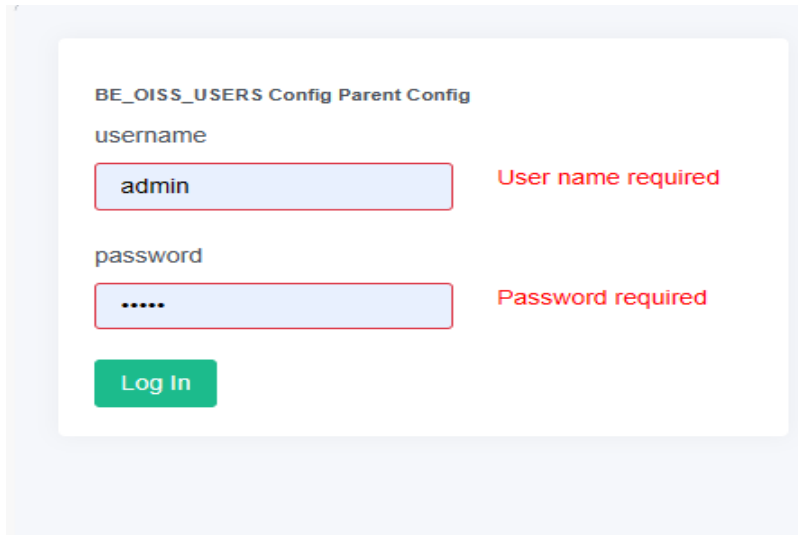
Configuration

- State
- District

ET_GENERAL Config Parent Config

Verify	Count	Action
Employer	0	Verify
Contributor	0	Verify
Migrant	0	Verify
Informal	0	Verify
Self	0	Verify

Permanent Login



BE_OISS_USERS Config Parent Config

username

admin

User name required

password

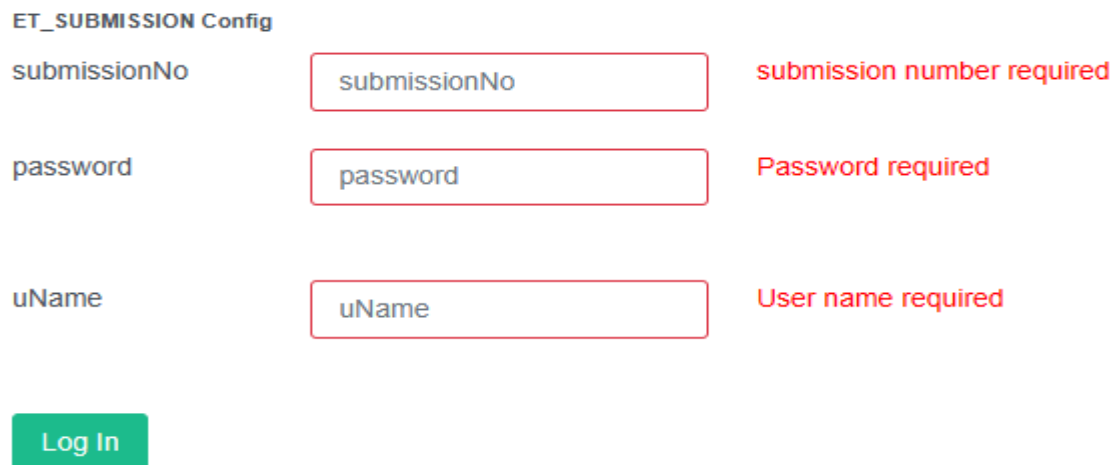
.....

Password required

Log In

This is a screenshot of a web application's login interface. It features a light blue header bar with the text 'BE_OISS_USERS Config Parent Config'. Below this, there are two input fields: 'username' and 'password'. The 'username' field contains the text 'admin' and has a red error message 'User name required' to its right. The 'password' field contains six dots and has a red error message 'Password required' to its right. At the bottom of the form is a green 'Log In' button.

Temporary Login



ET_SUBMISSION Config

submissionNo

submissionNo

submission number required

password

password

Password required

uName

uName

User name required

Log In

This is a screenshot of a web application's login interface. It features a light blue header bar with the text 'ET_SUBMISSION Config'. Below this, there are three input fields: 'submissionNo', 'password', and 'uName'. The 'submissionNo' field contains the text 'submissionNo' and has a red error message 'submission number required' to its right. The 'password' field contains the text 'password' and has a red error message 'Password required' to its right. The 'uName' field contains the text 'uName' and has a red error message 'User name required' to its right. At the bottom of the form is a green 'Log In' button.