Design Decisions

Integrity

Integrity is an Insurance claim processing system built on the Hyperledger Sawtooth platform

Submitted By:

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- **Introduction**

1.1 Document Scope
This document shares the information about how we came to this idea of developing software & what is the study we made behind before we started making the application. All the technologies we chose and the process flow of the application. How the application makes use of the Hyperledger Sawtooth platform efficiently so that a full-fledged application can be used for Insurance claim processing system in a fair and transparent manner.

1.2 Project Overview
We are building an Insurance claim processing system on Sawtooth platform. That means a new insurance policy can be taken and claimed by verification from the police department . The application using most of the features of Blockchain which make it Transparent, Distributed and Tamper-proof. We have developed the application with HTML for front-end and javascript sdk for sawtooth back-end.

The application got 4 main tabs, New Policy, Claim Policy, Police complaint registration and Claim verification. These help the users to interact with the policy smoothly. The UI is really simple so that anyone even if he is not into computers can operate with ease. We hope this project will change the present Insurance-claiming systems to an all new level.

Also, we are sharing the GitLab repository for this application here. Link: https://gitlab.com/shscs911/integrity
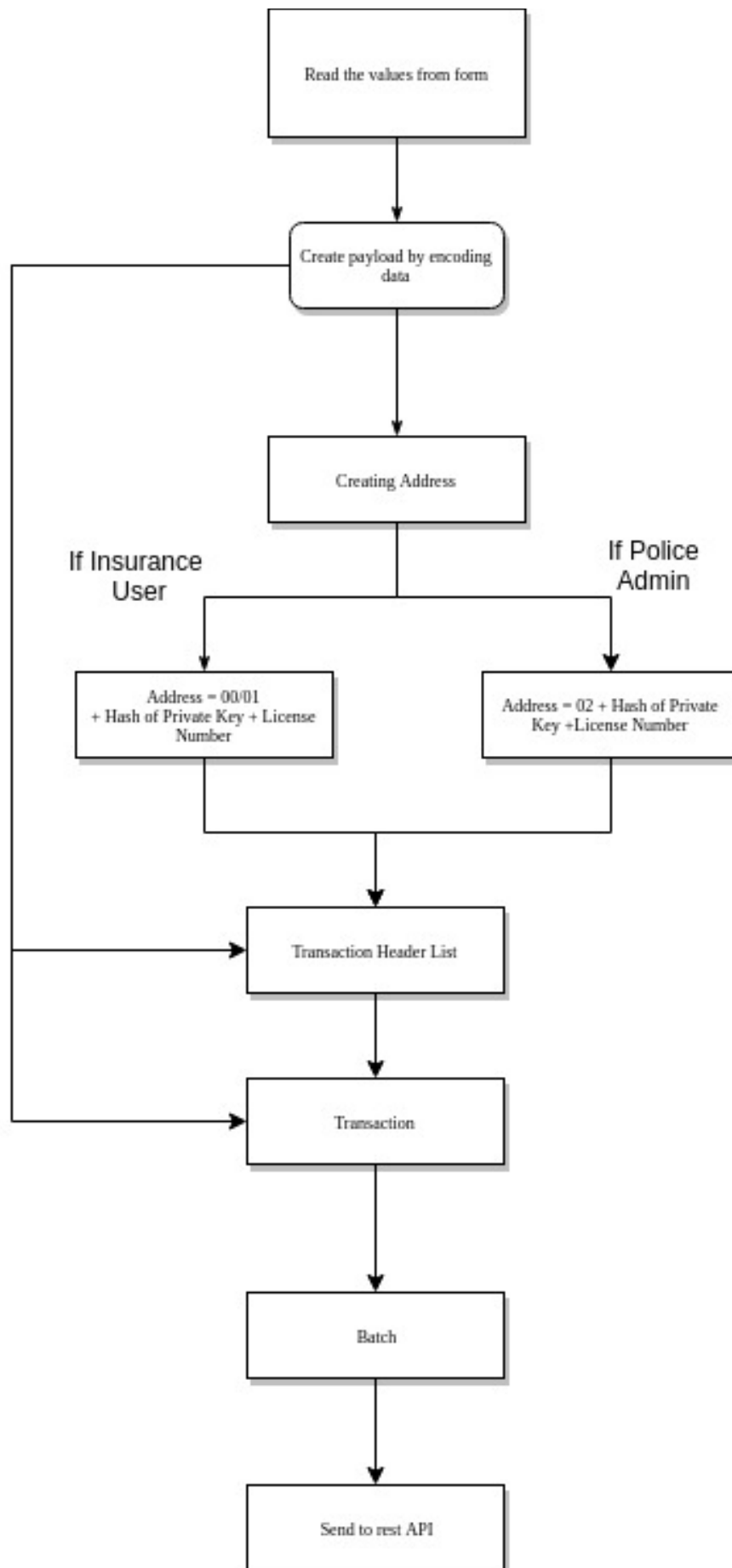
2 High-Level Design

2.1 *Goals and Guidelines*

The Goals & Guidelines of our project is described below: The present system of Insurance we have, are making us pay for the premium and when a claim is produced there will be claim-disputes.

- λ Since everything is blockchain based, we can ensure that this is secure in nature and transparent since all the people using the application can see their policy details provided to file a claim any time.

- λ There is no central system, no middle man, User is happy in such a claiming process which gives out the claim amount in a proper way.

2.2 *Architectural Strategies*

- λ We decided to pursue the Insurance claim processing taking into account the Blockchain properties like distributed ledger technology and immutability of the blockchain.

- λ A set of fixed number of fields are made available and users take the new policy for a fixed amount and whenever he/she needs a claim a complaint should be filed to the police and wait for verification. At the same time the claim is filed.

```
┌─────────────────────────┐
│                         │
│  Read the values from   │
│         form            │
│                         │
└───────────┬─────────────┘
            │
            ▼
╭─────────────────────────╮
│  Create payload by      │
│     encoding data       │
╰───────────┬─────────────╯
            │
            ▼
┌─────────────────────────┐
│    Creating Address     │
└───────────┬─────────────┘
            │
```

If Insurance User   If Police Admin

```
┌─────────────────────────┐   ┌─────────────────────────┐
│    Address = 00/01      │   │  Address = 02 + Hash of  │
│ + Hash of Private Key + │   │   Private Key +License   │
│  License Number         │   │         Number           │
└─────────────────────────┘   └─────────────────────────┘

┌─────────────────────────┐
│ Transaction Header List │
└───────────┬─────────────┘
            │
            ▼
┌─────────────────────────┐
│       Transaction       │
└───────────┬─────────────┘
            │
            ▼
┌─────────────────────────┐
│          Batch          │
└───────────┬─────────────┘
            │
            ▼
┌─────────────────────────┐
│     Send to rest API    │
└─────────────────────────┘
```

2.3   *High-Level Deployment*

Below describes how to deploy the application in an environment.

- Installing Integrity to use on your machine is simple. First clone the repository by

`git clone`

- Next, navigate to the cloned directory

`docker-compose up`

3 Glossary

- Hyperledger Sawtooth: Hyperledger Sawtooth is an enterprise blockchain platform for building distributed ledger applications and networks. The design philosophy targets keeping ledgers distributed and making smart contracts safe, particularly for enterprise use.

- Docker: Docker is a platform for developers and sysadmins to **develop, deploy, and run** applications with containers.

- Docker Compose: Compose is a tool for defining and running multi-container Docker applications. With Compose, you use a YAML file to configure your application's services. Then, with a single command, you create and start all the services from your configuration.

- NPM: npm (originally short for Node Package Manager) is a package manager for the JavaScript programming language. It is the default package manager for the JavaScript runtime environment Node.js

- Node.js: It is an open-source, cross-platform JavaScript run-time environment that executes JavaScript code outside of a browser.