# Operations Clean Claims – Uncover

**Minor Project**

IBM Career Education

*Disclaimer*

*This Software Requirements Specification document is a guideline. The document details all the high level requirements. The document also describes the broad scope of the project. While developing the solution if the developer has a valid point to add more details being within the scope specified then it can be accommodated after consultation with IBM designated Mentor.*

# INTRODUCTION

The purpose of this document is to define scope and requirements of a tool for uncovering potential fraudulent entries in the insurance claims.

A large insurance company processing thousands of claims every year is required to go through an annual audit. The previous year's audit had highlighted some tempering of data. This was a serious issue that needed further investigation. Going by the past experience, this year the company wanted to prepare for the audit well in advance and have the data validated. The business analysts and tech team were engaged to come up with a solution that would highlight potential fraudulent claims.

The proposed solution will be based on Benford's law used by Auditors to point out sections of data that need further investigation.

This document is the primary input to the development team to architect a solution for this project.

## System Users

The claim processing management and pre-audit team of the Insurance Company will use the tool – UNCOVER.

## Assumptions

1. The application will be hosted on the Insurance System's application server. The users of this tool shall access the application from Audit menu in the application.
2. The transaction data of insurance claims for at least 6 months shall be uploaded into the system from the backend in CSV format. To simplify the scope of this project, it can be assumed that each claim has fields viz. (a) transaction id, (b) date, (c) insured person name, (d) claim type (auto, life, etc), and (e) claimed amount. In real life, such data will reside in multiple tables in an insurance system.
3. Since UNCOVER is expected to use Insurance System's authentication, for the purpose of this project, entering user name will take you to the user's UNCOVER screen. You may create sample users directly from the backend database.

# REQUIREMENTS

UNCOVER allows the Claims processing department's managers to run this tool for a transaction period.

## Basic System Operation

The following steps outline the basic system operation in context of the end-user:

### Scan Transactions

1. The system displays list of recently uploaded CSV files. User selects the desired CSV file and the desired insurance type (e.g. life, auto, etc.). After this user clicks on the “scan” button.
2. System alerts if the selected CSV has data for less than 6 months and aborts further execution; otherwise it proceeds to scanning process outlined in step #3.
3. One the basis of selected Insurance type, start and end dates, UNCOVER scans through the transactions in the claims database. The tool reads each claim amount and generates a Benford’s frequency distribution.
4. On completion of this step, the Flagging of possible areas to be taken up by the reviewer is done.

### Flag Transactions

1. In this view the tool displays standard Benford’s distribution, the observed Frequency distribution and its percentage deviation from Benford’s distribution.
2. The user makes a decision to flag those rows with unacceptable percentage deviation.
3. The system generates an Index of transactions that belong to the flagged first digit or rows. These transactions are assigned a status as “Pending for Review”.

### Review Transactions

1. The pre-audit user shall review the flagged transactions.
2. “Pending for Review” list is displayed with columns such as ‘Claims Transaction Id, Amount, etc.
3. The user clicks on the transaction id to access the complete record. For the purpose of this project, display a dummy page with Transaction id and Amount.
4. The user updates the status of the index list as either “Reviewed” or “Investigate Required”

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A user-friendly interface needs to be developed to ensure
smooth usage of the system.
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## About Benford’s Law

Benford’s law, also known as the first-digit law, it says that in lists of numbers from many real-life sources of data, the leading digit is distributed in a specific, non-uniform way.

The standard Benford’s Distribution is outlined on the next page.

| Leading Digit | Probability of Occurrence |
|---|---|
| 1 | 30.1% |
| 2 | 17.6% |
| 3 | 12.5% |
| 4 | 9.7% |
| 5 | 7.9% |
| 6 | 6.7% |
| 7 | 5.8% |
| 8 | 5.1% |
| 9 | 4.6% |

Auditors use this law to find patterns in data where there is a possibility of a fraud. Such data is taken up for further investigation. Learn more about Benford's law at http://mathworld.wolfram.com/BenfordsLaw.html URL.

## DEVELOPMENT ENVIRONMENT

UNCOVER will be developed as a web application using Java/JSP and DB2 database. Eclipse will be used as the IDE for the same. You may consider using a JavaScript framework like Prototype/ Scriptaculous/jQuery. JSON specifications can be found at http://www.json.org/ URL.