**Security and Data Integrity Analysis**

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**Executive Summary:**

The purpose of this document is to discuss and analyze potential issues related to security and data integrity. Regarding security, the document will identify data that may be considered personal and explain why this data should be considered so, followed by explaining what users should be able to access which data and why. The document will also discuss potential security vulnerabilities of the project and their impact on data integrity, privacy, and each stakeholder, and will focus particularly on security issues which can be prevented or controlled by the developers. Regarding data integrity, this document will discuss entity and referential integrity constraints, including primary and foreign keys, value restrictions, and methods for handling violations (as well as the reasoning behind them). This document will also discuss the business rule constraints between tables and how they will be enforced.

**Privacy Analysis:**

**Security Analysis:**

**Entity Integrity Analysis:**

* For the Company table, the primary is id, which must be a unique integer. Name must be a 20 character varchar and cannot be null, along with address and city. State will be a state code so it must be a 2 character char which can’t be null. Similarly, zipcode must be a 5 digit decimal which can’t be null. Email must be a 40 character varchar which can’t be null. Password\_digest must be a 50 character varchar which can’t be null. Creation\_time will be a timestamp which can’t be null.
* For the Customer table, the primary key is also id and is a unique integer. fName and lName are 20 character varchars which can’t be null, and email is a 40 character varchar which also can’t be null.
* For the Item table, the primary key is also id and a unique integer. Name is a 20 character varchar which can’t be null. Description is a text which can’t be null. dateCreated is a datetime which can’t be null. Price is a non-null decimal with 20 digits, 2 of which are to the right of the decimal point. Qty is an int which can’t be null.
* For the Receipt table, the primary key is receipted, which is also a unique integer. Companyid and customerid are unique integers and foreign keys who reference the primary keys of the Company and Customer tables, respectively. Issued\_date is a date which can’t be null.

**Referential Integrity Analysis:**

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