Database Design in 3NF

addresses (id, customer_id, is_billing, recipient, street_1, street_2, city, state, zip, active)

customers (id, first_name, last_name, email, phone, active)

orders (id, customer_id, address_id, date, grand_total, payment_receipt)

Underlines:
Solid underlined fields are primary keys;
Dotted underlined fields are foreign keys;
Double underlined fields are composite keys that are both primary and foreign keys.

Database Design Notes:

1. Strictly speaking, having zip code in the locations table creates a transitive dependency, but given the limited size of the system there is no need to normalize and move zip code and primary city & state into its own table.

2. Zip codes must be saved as strings rather than integers since zip codes in the Northeast US start with a leading zero that would not be saved if the data type were integer.

3. All phone numbers are saved as a string of numbers without any other characters. Phone numbers include area code, prefix, and suffix as a single numerical string.

4. All active fields should default to true in the database; all other booleans should default to false. No other defaults should be set in the database.

5. Under orders, it should be noted that grand total is a redundant field as it can easily be recalculated. Creating this summary field, however, will speed up a number of queries and improve overall performance. A trigger would be needed unless the application developers can guarantee referential integrity.