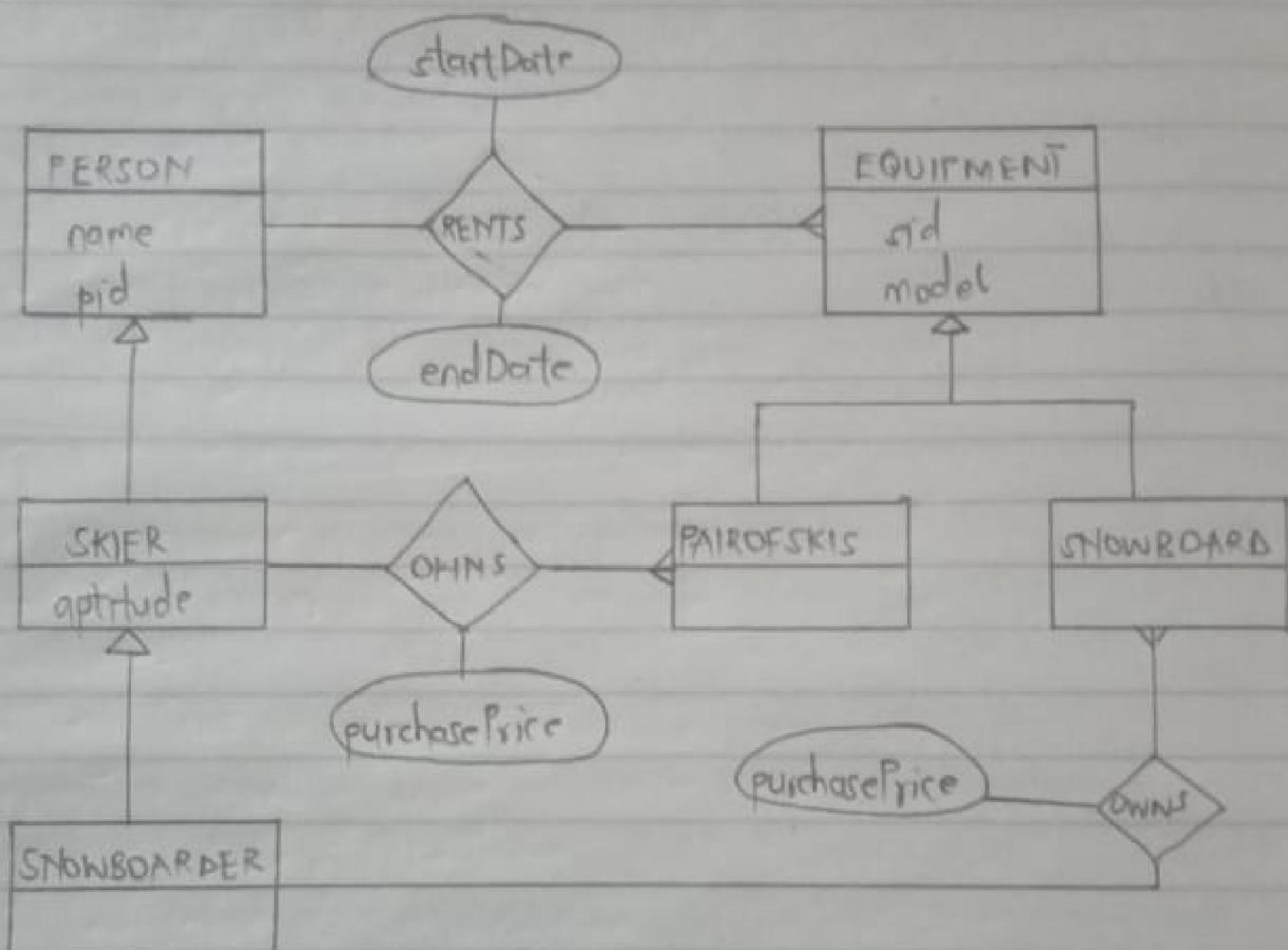


3.



(e)

Relational model is an approach for organizing and managing data in databases

(i) Data types

(ii) Primary keys

(iii) Relationships between tables

(iv) Data organization into tables, rows, columns

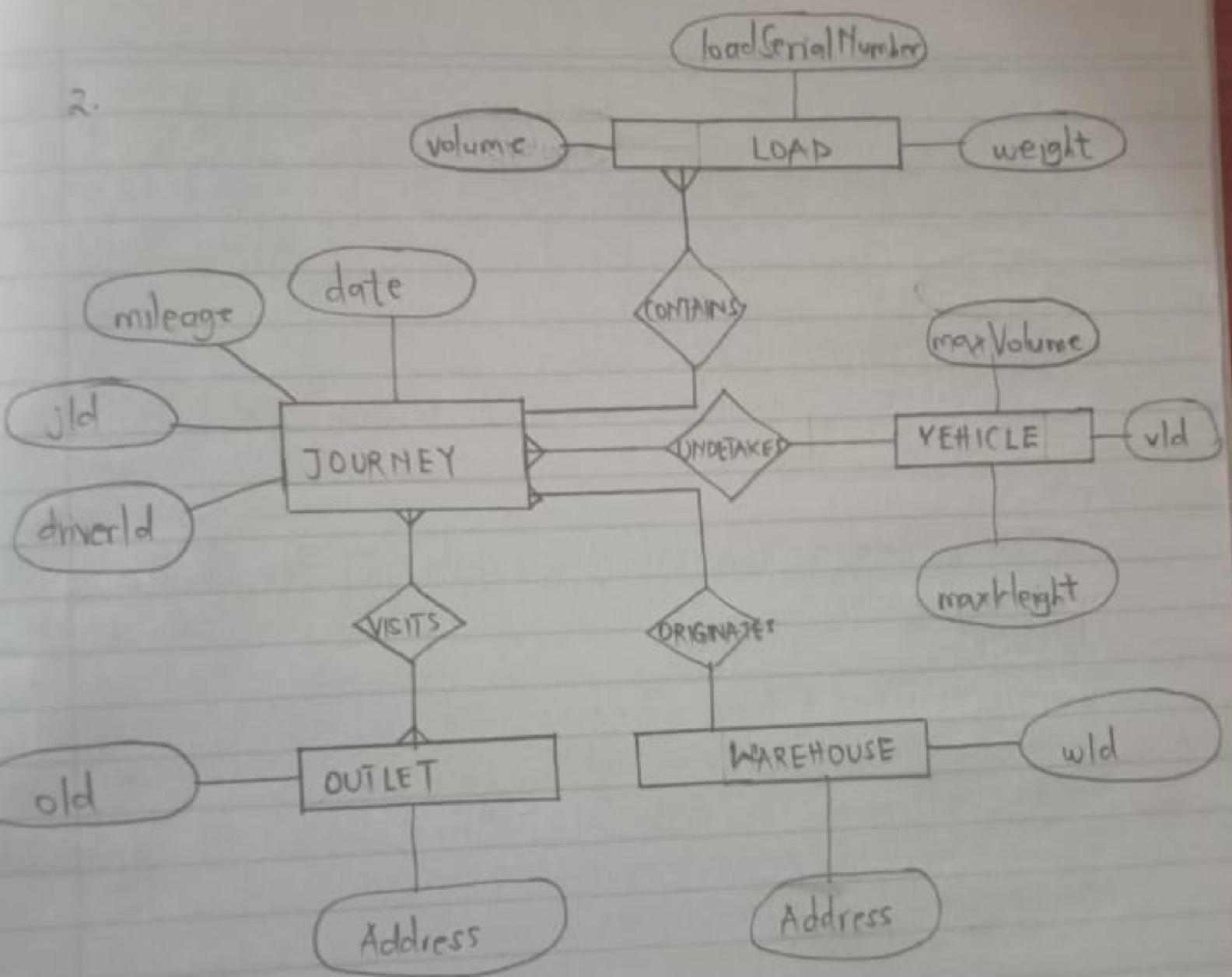
(f)

(i) They provide a graphical representation of the database making it easier to understand and discuss the structure of the database.

(ii) They focus on representing entities and their relationships at a conceptual level allowing database designer to focus on the logical structure of the data without thinking about its implementation.

(iii) They serve as documentation for the database structure.

(iv) They help in the process of database normalization



- (b)
- (i) ~~Data~~ Protection of data from unauthorized access, modification or destruction. Lack of data security could lead to data breaches and data corruption.
 - (ii) Ensuring data accuracy and consistency. Lack of data integrity could lead to inconsistent data and difficulty in data analysis.
 - (iii) Fast retrieval and updates. If not implemented it could lead to slow performance and scalability issues.
 - (iv) Regular backing up of data and recovery procedure. Lack of data backup could lead to permanent data loss.
 - (v) While strong entities can stand alone and maintain their integrity, weak entities rely on the presence of their associated strong entity.
 - (vi) Strong entities have their own primary keys which uniquely identify each entity instance whereas weak entities derive their identity from their relationship with the identifying owner entity.

Q

(a)

- (i) A relational database schema defines how data is organized in the database e.g. a library database schema could have a table like Books, and the Books table a column like BookId.
- (ii) Domain defines the acceptable range or format of data that a particular column can hold e.g. the Age column could have a domain of integers between 1 and 120.
- (iii) A relational instance is a snapshot of a relational database at a particular point in time and contains the actual data stored in the tables.
- (iv) Relational cardinality refers to the relationships between tables based on their foreign key connections.
- (v) The relational degree refers to the maximum number of attributes present in a single relation within a relational database schema.