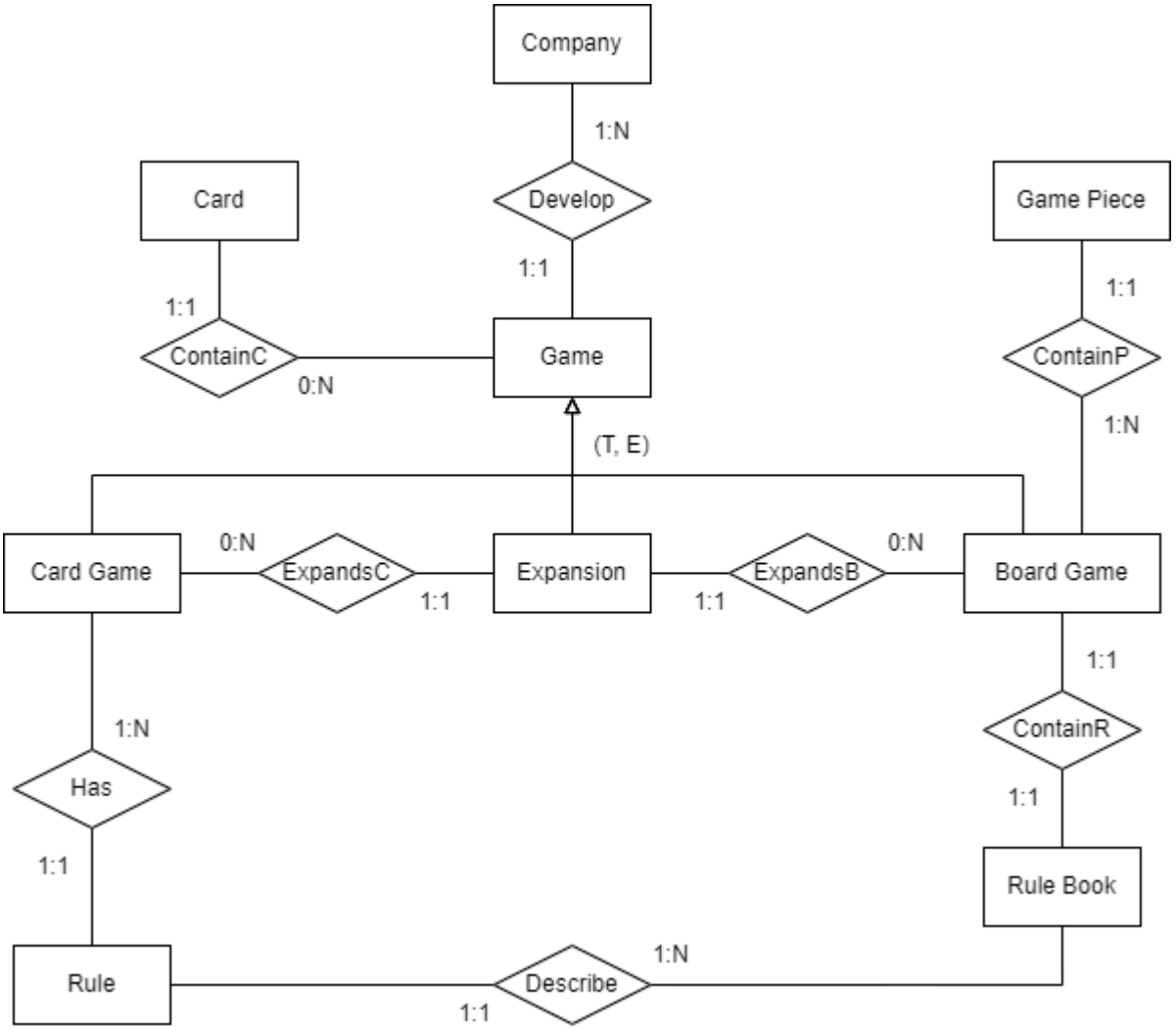
Consider the following ER Diagram



The following attributes describe the entities. The primary keys are underlined.

- **Company** - Code, Name, Founding Date
- **Game** - Number of Players, Minimum Age, Publication Date
    - **Card Game** - Name, Set Number, (...)
    - **Board Game** - Name, Duration (in Minutes), Description, (...)
    - **Expansion** - Name, Expansion Number, Description, (...)
- **Card** - Card Number, Name, Type, Description
- **Game Piece** - Piece Number, Color, Description
- **Rule Book** - Rulebook Code, Title, Introduction
- **Rule** - ID, Rule Number, Description

Databases (1 PT)

(Usual Exercise) - (1 PT)

Neo4j (4.5 PT)
Consider the Board Game, Expansion, Game Piece, Rule Book, and Rule entities.

(Usual Exercise) - (1 PT)

Q1 - Write a Cypher query to collect the number of board games with a duration greater than 10 minutes for which at least three expansions were released (1.5 PT)

Q2 - Write a Cypher query to collect the rule books assigned to board games with at least 10 game pieces, including at least two whose description is “Player Marker”. Among those, consider only board games for which at least one and at most three expansions were created. (2 PT)

MongoDB (5.5 PT)
Consider the Card Game, Card, Expansion, and Rule entities.

(Usual Exercise) - (1 PT)

Q1 - Write a query to collect all the card games whose set number is greater than 10 and for which at least one card has its type equal to “sorcery”. Perform the query starting from the Card_Game_Collection. (1 PT)

Q2 - Write a query to count the number of cards for each card type, finally returning only the types whose count is greater than 100 or less than 10. Perform the query starting from the Card_Game_Collection. (1.5 PT)

Q3 - Write a query to count the number of card games with at least three expansions, one of which should be named “Ice Age”, and at least one card named “Mystic Remora”, whose type is “Enchantment”. Perform the query starting from the Card_Game_Collection. (2 PT)

Elasticsearch (4 PT)
Consider the Board Game entity.

(Usual Exercise) - (1 PT)

Q1 - Write a query to collect all the board games whose description includes the word “hero” and does not include the word “adventure”. The word “hero” should not increase the final score. Finally, assign a higher score to board games whose minimum age is greater than 18. (1.5 PT)

Q2 - Write a query to count the number of board games for each duration. Only consider those that were published over the last 10 years. (1.5 PT)

Redis (4 PT)
Consider the Card entity and perform the following operations.

Q1 - Create a new key-value pair name whose value is “Magic, The Gathering” (0.5 PT)

Q2 - Check whether a key-value pair with key “Magic” exists. (0.5 PT)

Q3 - Create a list and add two elements, one with the value “Human” and the other with the value “Vampire”. (1.5 PT)

Q4 - Return all the elements of the list and the number of elements it contains. (1.5 PT)