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| Attributes | Reasons |
| farm Id | It serves as a unique identifier for each farm, helping differentiate between multiple farms. |
| Name | The farm name is often required on legal documents, contracts, permits, and insurance policies. It helps clarify ownership, property rights, and responsibilities in any legal proceedings. |
| location | The farm’s geographical location is vital for understanding the climate, soil types, and water availability, all of which directly impact crop growth, livestock health, and overall productivity. It helps farmers select the right crops or livestock breeds suited to the environment. |
| size | The size of the farm dictates how resources like land, water, and labor are allocated, impacting crop yields, livestock capacity, and overall productivity. |
| Type | Different farm types may require different kinds of labor and skills. For example, a dairy farm may require specialized knowledge in animal husbandry, while a vegetable farm may need expertise in soil management and irrigation. |

Farm Entities and their Attributes

Farm

crop

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| Crop id | Crop ID helps organize and differentiate between various crops grown on the farm. With unique identifiers, farm managers can easily associate data with specific crops, such as planting dates, growth stages, pest control measures, harvest schedules, and yield forecasts |
| name | Crop names provide a straightforward way to identify different crops, making it easier for farm workers, managers, and databases to track and manage each crop type. |
| Variety | Different varieties of the same crop species can perform differently under various conditions, such as soil quality, temperature, water availability, and pest pressure. By selecting the most suitable variety for a particular field or environmental condition, farmers can maximize yield. |
| Planting season | Planting at the right time ensures that crops receive the ideal environmental conditions (temperature, soil moisture, and sunlight) for germination and early growth. Crops planted outside of their optimal growing season may experience slower growth, poor yields, or even crop failure. |
| Harvest season | Crops that are harvested at the peak of their season can command higher market prices. Understanding the harvest season allows farmers to align their crop output with market demand, avoiding a situation where crops are sold at lower prices due to oversupply. |
| Market price | The market price directly affects the revenue a farmer can generate from selling their crops. A higher market price means greater income, while lower prices can significantly reduce farm profitability. Farmers must monitor market trends to time their sales effectively and maximize revenue. |

finace

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| income | Farm income directly impacts the farm’s ability to sustain its operations, pay for inputs (seeds, fertilizers, labor, etc.), and cover fixed costs (e.g., land payments, equipment maintenance). Without sufficient income, a farm cannot remain financially viable. |
| expenses | Accurate tracking of expenses is essential for creating a realistic and effective farm budget. Expenses typically fall into categories such as land preparation, labor, machinery, seeds, fertilizers, and irrigation. A detailed budget enables farm managers to plan for future costs and allocate funds efficiently across different areas of the farm operation. |
| Profit/loss |  Profit and loss statements provide a historical view of how the farm is performing financially. This historical data is essential for setting future financial goals, budgeting, and forecasting. If the farm is generating a profit, it can plan for reinvestment or expansion; if it is incurring a loss, it can create strategies to return to profitability.   |

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| Attribute | reasons |
| Labor id | The Labor ID provides a unique way to identify each worker, reducing the risk of confusion or errors in employee records. It ensures that all employment-related data (such as hours worked, wages paid, job role, and performance evaluations) is linked to the correct individual |
| name | he labor name helps in identifying each worker, especially in environments with multiple employees. This ensures that all records, including hours worked, job performance, and compensation, are correctly attributed to the right person. |
| role | allows farm managers to assign workers to tasks that align with their skill sets and job functions. For example, a "Tractor Operator" may be responsible for operating heavy machinery, while a "Field Worker" may perform planting, weeding, or harvesting tasks. Assigning workers based on their roles ensures tasks are carried out efficiently and correctly. |
| wage | Wages are directly tied to a worker's role, responsibilities, experience, and the complexity of their tasks. Offering fair wages is essential for maintaining morale and job satisfaction among workers. If employees feel they are compensated fairly for their work, they are more likely to be motivated, productive, and loyal to the farm. |
| age | Age can influence the type of tasks a worker is assigned. Younger workers may be better suited for lighter, less physically demanding work, while older, more experienced workers may take on supervisory or technical roles. Knowing age helps farm managers make these appropriate assignments. |

labor

ER DIAGRAM