

CPSC 304 Project Cover Page

Milestone #: 1

Date: 10/6/2023

Group Number: 66

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

2. A brief project description

The domain of the application is *Farming and Agricultural Resource Management*. The application will help farmers to maximize their cultivation potential, whether they operate on expansive fields, smaller plots, or specialized farms. Efficient management of resources and optimization of yields are necessary for farmers to be successful and sustainable.

The application modeled by the database will store data to help support the overall farming process. It stores information about each farmer, including their unique ID and years of experience. The farmers can track the details of the crops they are currently growing, how long it takes to grow and when they are ready to be harvested. Farmers can also keep track of their seeds and tools, keeping them informed of the condition of the tools and the available seeds in stock.

Moreover, the system tracks symptoms of plant disease, helping farmers to identify which crops are infected and what to do so they can return to optimum health. With this the farmer can track the root to the source and adjust the plant's environment accordingly. For example, if one kind of crop keeps getting the same disease in a field that is within a rocky region, this could indicate to the farmer that they may need to locate that crop in a different region or that the soil is not suitable for the crop. The database also tracks details about each farming plot which may help them adjust the water, fertilizer or crops as needed.

3. Database specifications

The database provides a way for farmers to streamline their operations and manage their resources. Users of the database can record and monitor data based on the different types of crops, the crop's growth parameters, watering schedules and expected harvest times. It will track inventory of seeds and tools and allow users to monitor and treat possible plant diseases. Users can also map the available farming space, allocate areas for different crops and keep track of the fields that are ready to be harvested. With this database, even a beginner farmer can efficiently manage their resources, enhance their yield and boost their productivity.

4. Description of the application platform

Our database will utilize Oracle. Our expected application technology stack will be PHP.

5. An ER diagram for the database that your application will use. It is OK to hand-draw it but if it is illegible or messy or confusing, marks will be taken off. You can use software to draw your diagram (e.g., draw.io, GoogleDraw, Microsoft Visio, Powerpoint, Gliffy, etc.) The result should be a legible PDF or PNG document. Note that your ER diagram must use the conventions from the textbook and the lectures. For example, do not use crow's feet notation or notation from other textbooks).

- a. Please limit your diagram to a letter size page (8.5 x 11 inches). If you require additional space, talk to your project mentor beforehand as this might mean that your project is a bit more complicated than what we expect.

Entities:

1. Farmer
 - a. FarmerID
 - b. Name
2. Crop
 - a. CropID
 - b. FieldID
 - c. Name
 - d. GrowthDuration
 - e. CropType
3. Inventory
 - a. InventoryID
 - b. ISA (Constraint: Total, disjoint)
 - i. Seed Inventory
 1. SeedType
 2. Quantity
 - ii. Tools Inventory
 1. ToolName
 2. Condition
4. Field
 - a. FieldID
 - b. Size
 - c. planted
 - d. region/soil type
5. Water Log
 - a. WaterLogID
 - b. Date
 - c. QuantityUsed
6. Harvest
 - a. HarvestDate
 - b. CropID(foreign key)
 - c. Quantity

7. PlantDisease
 - a. DiseaseID
 - b. DiseaseName
 - c. Symptoms
 - d. Treatment
8. Storage Unit
 - a. StorageUnitID
 - b. Capacity
 - c. Type(kind of storage, silo, barn, cold storage etc...)

Relationships:

1. Farmer **grows** Crop (attr: startDate,)
2. Crop **needs** Tool
3. Farmer **buys** seeds (attr: purchasedate, quantitypurchased)
4. Field **produces** crops
5. Field **utilizes** water log
6. Crops **require** water log (attr: frequency - e.g daily, weekly)
7. Crop **affected by** PlantDisease (attr: startDate, endDate)
8. Crop **has** harvest
9. Storage Units **store** inventory
10. Storage Units **store** harvest

