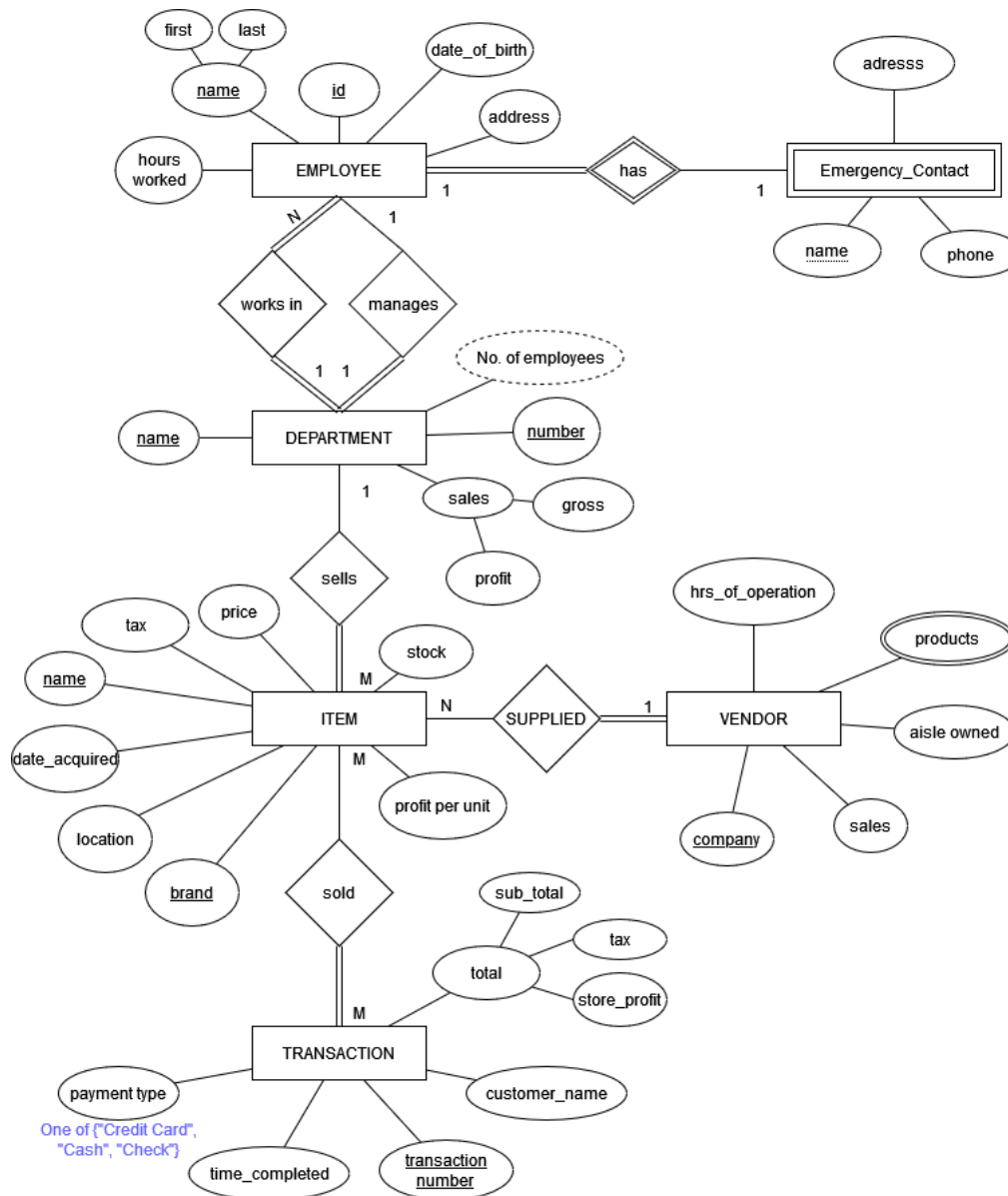Ethan Beck
Daniel Martin

Project G: Phase III

Problem Statement: Our project will be a grocery store data management tool. The purpose is to aid managers and administration by allowing them to overview various aspects of the store. Specifically, our system will provide them with information regarding employees, departments, store items, transactions, and aisles. These aspects will serve as our entities. We intend to create a command line program using Python that will allow the user to interact with this information and generate reports related to that information.

E-R Diagram

An EMPLOYEE works for one DEPARTMENT which is made up of many employees. An employee has one emergency contact. A department has exactly one manager. Not every employee is a manager

An ITEM is made up of several attributes including a name and brand. Some, not all, items are supplied by a VENDOR. A vendor must supply at most one item. An item is sold in a transaction, which may contain many items. An item must belong to a department.

A TRANSACTION must contain at least one item and can contain many items. A transaction is identified by a transaction number and includes a total.

Logical Database design

VENDOR

Company	OperationHrs	Aisles	Sales

PRODUCTS

Product	Product_Company

TRANSACTION

Trans_Number	Time_Complete	Payment_Type	Customer_Name	Total	Sub_Total	Tax	Store_Profit

DEPARTMENT

Number	Name	Num_Employees	Sales	Profit	Manager_ID

ITEM

Item_Name	Brand	Location	Date_Aqird	Tax_Percent	Price	Stock_Amount	Prof_Per	Dep_Num	Vend_Company

EMPLOYEE

ID	Name	First_Name	Last_Name	Hours_Worked	DOB	Address	Dep_Num

EMERGENCY CONTACT

Employee_ID	Emergency_Name	Phone_Num	Address

SOLD

Trans_Number	Item_Name

Summary Table of Data Types

Table	Attribute	Type	Constraint
Vendor	Company	STR	Primary_Key
Vendor	OperationHrs	INT	
Vendor	Aisle	INT	
Vendor	Sales	FLOAT	NOT NULL
Products	Product	STR	Primary_Key
Products	Product_Company	STR	Foreign_Key
Transaction	Trans_Number	INT	Primary_Key
Transaction	Time_Complete	INT	NOT NULL
Transaction	Payment_Type	STR	NOT NULL
Transaction	Customer_Name	STR	
Transaction	Total	FLOAT	NOT NULL
Transaction	Sub_Total	FLOAT	NOT NULL
Transaction	Tax	FLOAT	NOT NULL
Transaction	Store_Profit	FLOAT	
Department	Number	INT	Primary_Key
Department	Name	STR	NOT NULL
Department	Num_Employees	INT	NOT NULL
Department	Sales	FLOAT	
Department	Profit	FLOAT	
Department	Manager_ID	INT	Foreign_Key
Item	Item_Name	STR	Primary_Key
Item	Brand	STR	NOT NULL
Item	Location	STR	

Item	Date_Aqird	INT	
Item	Tax_Percent	FLOAT	NOT NULL
Item	Price	FLOAT	NOT NULL
Item	Stock_Amount	INT	NOT NULL
Item	Prof_Per	FLOAT	
Item	Dep_Num	INT	Primary/Foreign_Key
Item	Vend_Company	STR	Foreign_Key
Employee	ID	INT	Primary_Key
Employee	Name	STR	NOT NULL
Employee	First_Name	STR	NOT NULL
Employee	Last_Name	STR	NOT NULL
Employee	Hours_Worked	FLOAT	NOT NULL
Employee	DOB	INT	
Employee	Address	STR	
Employee	Dep_Num	INT	Foreign_Key
Emergency Contact	Employee_ID	INT	Primary/Foreign_Key
Emergency Contact	Emergency_Name	STR	NOT NULL
Emergency Contact	Phone_Num	INT	NOT NULL
Emergency Contact	Address	STR	
Sold	Trans_Number	INT	Primary/Foreign_Key
Sold	Item_Name	STR	Primary/Foreign_Key

Application Program Design:

```
Add_Item()
     Prompt user to input attributes for item
     if(query insert item is successful)
          Execute query to add item attributes to table
Remove_Item()
     User selected item to be removed
     if(item in database)
          Execute query to remove item

Modify_Item()
     User selects item to be modified
     if(item in database)
          User selects which attribute to modify
          Execute query to modify item

Add_Employee()
     if (Manager == true)
          if(query empName joined with Department is successful)
               Add employee to department list
          specify what type of employee (manager or general)
          Execute query to add user attributes to table

Delete_Employee()
     if(Manager == true)
          specify employee id
          Execute delete query starting at topmost employee table and
          cascading downwards

Generate_Department_Report()
     if(Manager == true)
          check department the manager manages
          based on the department, calculate things like sales, etc

View_Vendor()
     Give list of vendors and products to user
```

User Manual

1) Installation
   0) To run our program, one must have Python and pip properly configured and installed.
   1) The intended OS is Windows 10 or above.
   2) Run the program in a new terminal.
        i)   The program takes care of the database creation.
        ii) The program will install any missing dependencies.
2) Start Menu
   0) Upon startup, the user will be prompted to select from a series of options listed in a menu format. These options allow one to interact with the database. To select an option, enter a number (1-8) corresponding to the action or you want to take on the database.
   1) To exit the program, enter "q" and the program will cease.
   2) Refer to figure 1 for image
3) Menu Options

   0) Add Employee
        i)   The "Add Employee" menu adds an employee to the database. The user will follow the prompts and at the end will be able to see the employee they added in the system. An ID will be auto generated.
   1) Remove Employee
        i)   The "Remove Employee" menu will give you the option to remove any employees already in the database. When this option is selected the user will follow prompts and will get confirmation that the employee is removed from the database
   2) Get Employee ID
        i)   The "Get Employee ID" option is a quick and easy way for the user to get the ID of any employee by entering their first and last name by following the prompts displayed
   3) View employee
        i)   This menu will let the user view all employees. Employee's first name, last name, hours worked, date of birth (DOB), address, and department number are conveniently listed in a formatted table for
        ii) Refer to figure 2 for image.

   4) Insert Items
        i)   This menu is a quick and easy way to add items to what is being sold by the store. Once this menu is selected the user will be prompted to input information about the item.

    ii)   Some information is auto generated based on the information the user input.

    iii)   Once completed the inserted item will be displayed to the user.

5) Delete Items
    i)   In this menu, the user is given the ability to remove an item from the database. This process is seamless with the intuitive prompts that guide the user. Following the prompts, the user is given a confirmation below removing the item.

6) Modify Item
    i)   The user is guided through prompts to modify an item of their choosing. Some attributes such as the item's ID and tax percent are not able to be modified.

7) View Items
    i)   This is a quick and easy way for the user to view all items sold by the store.

    ii)   Refer to figure 3 for image.

8) Vendor Menu
    i)   The "Vendor Menu" option is a great way for any user to get information regarding any vendors in the store. When prompted it allows the user to get things such as Sales, Aisle Locations, and a list of the items sold by the selected vendor.

9) Weekly Sales Report
    i)   This option displays information regarding the last week's worth of transactions. It gathers the minimum, maximum, and average profit by day over the last week.

    ii)   As well as the above information it also plots a graph of daily profit over the last week.

    iii)   Refer to figure 4 for image.

Q) Quit
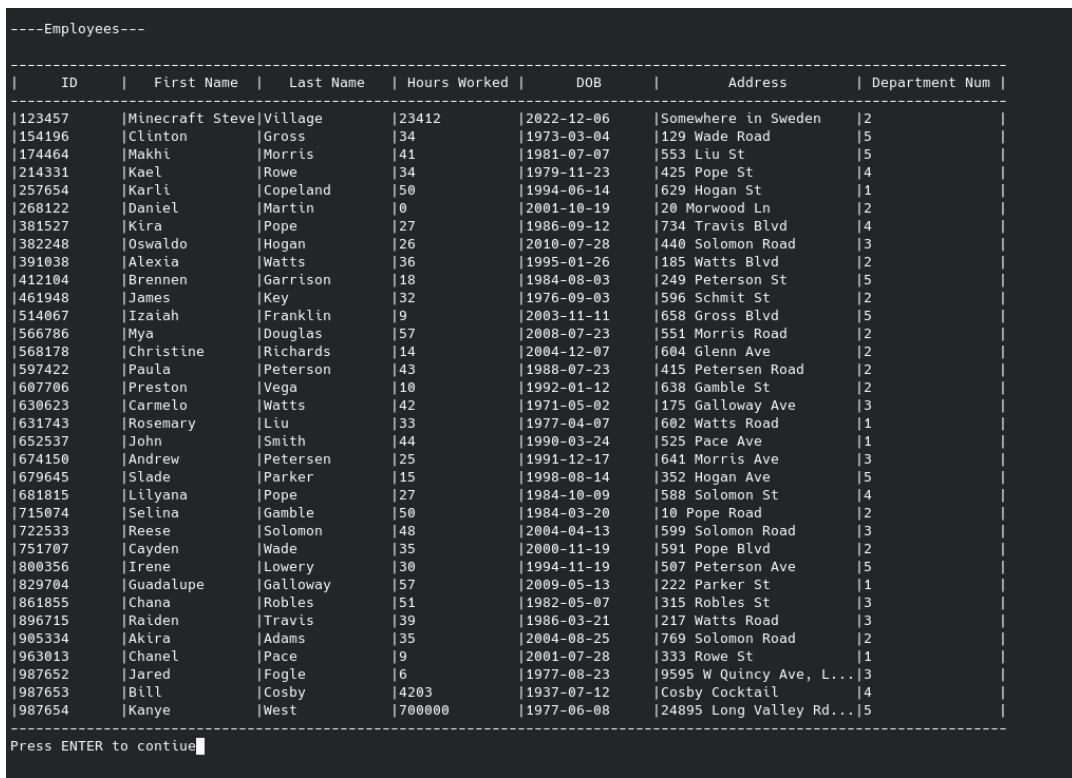   iv)   Exit the program. All changes to the database are then saved.

Figure 1


```
DE'S GROCERY

What would you like to do?

0: Add Employee
1: Remove Employee
2: Get Employee ID
3: View Employees
4: Insert Items
5: Delete Item
6: Modify Item
7: View Items
8: Vendor Menu
9: Weekly Sales Report
q: Quit

Menu Selection: █
```

Figure 2


```
----Employees---

-----------------------------------------------------------------------------------------------------------
|    ID     |   First Name  |  Last Name  | Hours Worked |    DOB     |        Address        | Department Num |
-----------------------------------------------------------------------------------------------------------
|123457     |Minecraft Steve|Village      |23412         |2022-12-06  |Somewhere in Sweden    |2              |
|154196     |Clinton        |Gross        |34            |1973-03-04  |129 Wade Road          |5              |
|174464     |Makhi          |Morris       |41            |1981-07-07  |553 Liu St             |5              |
|214331     |Kael           |Rowe         |34            |1979-11-23  |425 Pope St            |4              |
|257654     |Karli          |Copeland     |50            |1994-06-14  |629 Hogan St           |1              |
|268122     |Daniel         |Martin       |0             |2001-10-19  |20 Morwood Ln          |2              |
|381527     |Kira           |Pope         |27            |1986-09-12  |734 Travis Blvd        |4              |
|382248     |Oswaldo        |Hogan        |26            |2010-07-28  |440 Solomon Road       |3              |
|391038     |Alexia         |Watts        |36            |1995-01-26  |185 Watts Blvd         |2              |
|412104     |Brennen        |Garrison     |18            |1984-08-03  |249 Peterson St        |5              |
|461948     |James          |Key          |32            |1976-09-03  |596 Schmit St          |2              |
|514067     |Izaiah         |Franklin     |9             |2003-11-11  |658 Gross Blvd         |5              |
|566786     |Mya            |Douglas      |57            |2008-07-23  |551 Morris Road        |2              |
|568178     |Christine      |Richards     |14            |2004-12-07  |604 Glenn Ave          |2              |
|597422     |Paula          |Peterson     |43            |1988-07-23  |415 Petersen Road      |2              |
|607706     |Preston        |Vega         |10            |1992-01-12  |638 Gamble St          |2              |
|630623     |Carmelo        |Watts        |42            |1971-05-02  |175 Galloway Ave       |3              |
|631743     |Rosemary       |Liu          |33            |1977-04-07  |602 Watts Road         |1              |
|652537     |John           |Smith        |44            |1990-03-24  |525 Pace Ave           |1              |
|674150     |Andrew         |Petersen     |25            |1991-12-17  |641 Morris Ave         |3              |
|679645     |Slade          |Parker       |15            |1998-08-14  |352 Hogan Ave          |5              |
|681815     |Lilyana        |Pope         |27            |1984-10-09  |588 Solomon St         |4              |
|715074     |Selina         |Gamble       |50            |1984-03-20  |10 Pope Road           |2              |
|722533     |Reese          |Solomon      |48            |2004-04-13  |599 Solomon Road       |3              |
|751707     |Cayden         |Wade         |35            |2000-11-19  |591 Pope Blvd          |2              |
|800356     |Irene          |Lowery       |30            |1994-11-19  |507 Peterson Ave       |5              |
|829704     |Guadalupe      |Galloway     |57            |2009-05-13  |222 Parker St          |1              |
|861855     |Chana          |Robles       |51            |1982-05-07  |315 Robles St          |3              |
|896715     |Raiden         |Travis       |39            |1986-03-21  |217 Watts Road         |3              |
|905334     |Akira          |Adams        |35            |2004-08-25  |769 Solomon Road       |2              |
|963013     |Chanel         |Pace         |9             |2001-07-28  |333 Rowe St            |1              |
|987652     |Jared          |Fogle        |6             |1977-08-23  |9595 W Quincy Ave, L...|3              |
|987653     |Bill           |Cosby        |4203          |1937-07-12  |Cosby Cocktail         |4              |
|987654     |Kanye          |West         |700000        |1977-06-08  |24895 Long Valley Rd...|5              |
-----------------------------------------------------------------------------------------------------------
Press ENTER to contiue█
```

Figure 3

```
|166   |Jam/Jelly      |Ethans         |Aisle 7    |4.53    |2022-12-06    |1.0   |676    |0.53    |5    |None    |
|167   |Peanut Butter  |EatRite        |Aisle 10   |10.81   |2022-12-06    |1.0   |454    |2.81    |5    |None    |
|168   |Pasta Sauce    |Purpose Food   |Aisle 4    |15.48   |2022-12-05    |2.0   |345    |3.48    |5    |None    |
|169   |Black Beans    |Papa Jason     |Aisle 5    |8.32    |2022-12-10    |3.0   |337    |0.32    |5    |None    |
|170   |Chickpeas      |Papa Jason     |Aisle 2    |10.73   |2022-12-04    |2.0   |760    |2.73    |5    |None    |
|171   |Baked Beans    |Purpose Food   |Aisle 9    |13.94   |2022-12-02    |1.0   |779    |1.94    |5    |None    |
|172   |Soups          |Papa Jason     |Aisle 7    |12.2    |2022-12-10    |3.0   |875    |0.2     |5    |None    |
|173   |Tuna           |Kelp           |Aisle 2    |6.97    |2022-11-04    |1.0   |644    |2.97    |3    |None    |
|174   |Green Chiles   |OJK            |Aisle 8    |12.45   |2022-11-05    |2.0   |875    |0.45    |5    |None    |
|175   |Canned Veggies |Papa Jason     |Aisle 1    |5.61    |2022-11-04    |4.0   |403    |1.61    |5    |None    |
|176   |Coffee or Tea  |DE Grocery     |Aisle 6    |14.13   |2022-11-03    |3.0   |910    |2.13    |5    |None    |
|177   |Black Pepper   |Purpose Food   |Aisle 5    |7.7     |2022-11-09    |3.0   |446    |3.7     |5    |None    |
|178   |Chili Powder   |Purpose Food   |Aisle 2    |15.84   |2022-11-09    |2.0   |718    |3.84    |5    |None    |
|179   |Cinnamon       |Ethans         |Aisle 7    |6.51    |2022-12-05    |4.0   |673    |2.51    |5    |None    |
|180   |Crushed Red ...|ProduceQ       |Aisle 7    |4.6     |2022-12-06    |3.0   |337    |0.6     |5    |None    |
|181   |Cumin          |FOOD company   |Aisle 10   |9.29    |2022-11-02    |4.0   |412    |1.29    |5    |None    |
|182   |Garlic Powder  |Papa Jason     |Aisle 8    |13.38   |2022-12-11    |4.0   |416    |1.38    |5    |None    |
|183   |Ketchup        |Daddys Supper  |Aisle 1    |12.9    |2022-11-01    |2.0   |699    |0.9     |5    |None    |
|184   |Mustard        |Papa Jason     |Aisle 2    |7.24    |2022-11-01    |3.0   |642    |3.24    |5    |None    |
|185   |Mayo           |Ethans         |Aisle 6    |7.11    |2022-12-08    |4.0   |679    |3.11    |5    |None    |
|186   |Nutmeg         |FOOD company   |Aisle 2    |3.59    |2022-12-02    |2.0   |702    |3.59    |5    |None    |
|187   |Paprika        |Kelp           |Aisle 4    |12.3    |2022-12-05    |2.0   |494    |0.3     |5    |None    |
|188   |Course Sea Salt|FOOD company   |Aisle 1    |7.9     |2022-12-07    |3.0   |341    |3.9     |5    |None    |
|189   |Kosher Salts   |FOOD company   |Aisle 1    |6.27    |2022-11-05    |3.0   |533    |2.27    |5    |None    |
|190   |Soy Sauce      |ProduceQ       |Aisle 8    |4.84    |2022-12-04    |4.0   |544    |0.84    |5    |None    |
|191   |Steak Sauce    |EatRite        |Aisle 3    |6.6     |2022-12-09    |2.0   |678    |2.6     |1    |None    |
|193   |Salad Dressings|FOOD company   |Aisle 10   |7.8     |2022-11-07    |1.0   |606    |3.8     |3    |None    |
|194   |Apple cider ...|Ethans         |Aisle 8    |13.12   |2022-11-05    |4.0   |384    |1.12    |5    |None    |
|195   |Balsamic vin...|Kelp           |Aisle 8    |10.58   |2022-11-04    |2.0   |406    |2.58    |5    |None    |
|196   |Coconut Oil    |DE Grocery     |Aisle 2    |5.58    |2022-12-06    |4.0   |718    |1.58    |5    |None    |
|197   |Olive Oil      |Ethans         |Aisle 5    |5.46    |2022-11-03    |2.0   |922    |1.46    |5    |None    |
|198   |Vegetable/Ca...|DE Grocery     |Aisle 7    |15.45   |2022-11-11    |3.0   |574    |3.45    |5    |None    |
|199   |Red Wine Vin...|Kelp           |Aisle 5    |15.5    |2022-11-11    |2.0   |583    |3.5     |5    |None    |
|200   |White Vinegar  |Papa Jason     |Aisle 7    |10.71   |2022-12-01    |2.0   |389    |2.71    |5    |None    |
|201   |Cooking Wine   |Kelp           |Aisle 10   |14.77   |2022-11-11    |2.0   |511    |2.77    |5    |None    |
|202   |White Wine V...|DE Grocery     |Aisle 6    |10.47   |2022-11-03    |3.0   |770    |2.47    |5    |None    |
|203   |Crackers       |Kelp           |Aisle 8    |11.8    |2022-11-06    |2.0   |776    |3.8     |5    |None    |
|204   |Nuts           |Daddys Supper  |Aisle 9    |4.19    |2022-12-09    |1.0   |813    |0.19    |5    |None    |
|205   |Quick Oats     |ProduceQ       |Aisle 1    |8.95    |2022-12-06    |2.0   |410    |0.95    |5    |None    |
|206   |Popcorn        |Kelp           |Aisle 10   |5.88    |2022-12-06    |2.0   |344    |1.88    |5    |None    |
|207   |Crackers       |CheezIt        |Aisle 5    |2.2     |2022-12-09    |4.0   |465    |2.2     |5    |None    |
|208   |Honey          |ProduceQ       |Aisle 3    |2.2     |2022-12-09    |3.0   |473    |2.18    |4    |None    |
|209   |Candles        |Witch          |Aisle 666  |5.9     |2022-12-09    |4.0   |238    |1.88    |5    |None    |
|210   |Dog            |Democratic Pe...|Aisle 38  |20.91   |2022-12-09    |3.0   |678    |0.9     |1    |None    |
Press ENTER to continue
```

Figure 4