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Outline For Appliance Warehouse's New System

Objective

The key objective of the project is to serve as a systems analyst who will help the project manager analyze and design systems to create a service department for the company. We are tasked to help develop a technological solution to help schedule service appointments and integrate it with existing systems.

Key outcomes

The key outcomes are maximizing the new IT system with the least amount of cost as possible, minimizing the security risks, and making adequate schedules so tasks can be completed ontime.

Hypotheses

It is really important to invest a lot in security because any lost information can cost the company a lot of money in damages and replacing old information.

Minimizing schedule risks can improve the productivity in accomplishing task.

Implementing a our own repair/servie system will impact our companies future and growth in positive ways.

Phase 1

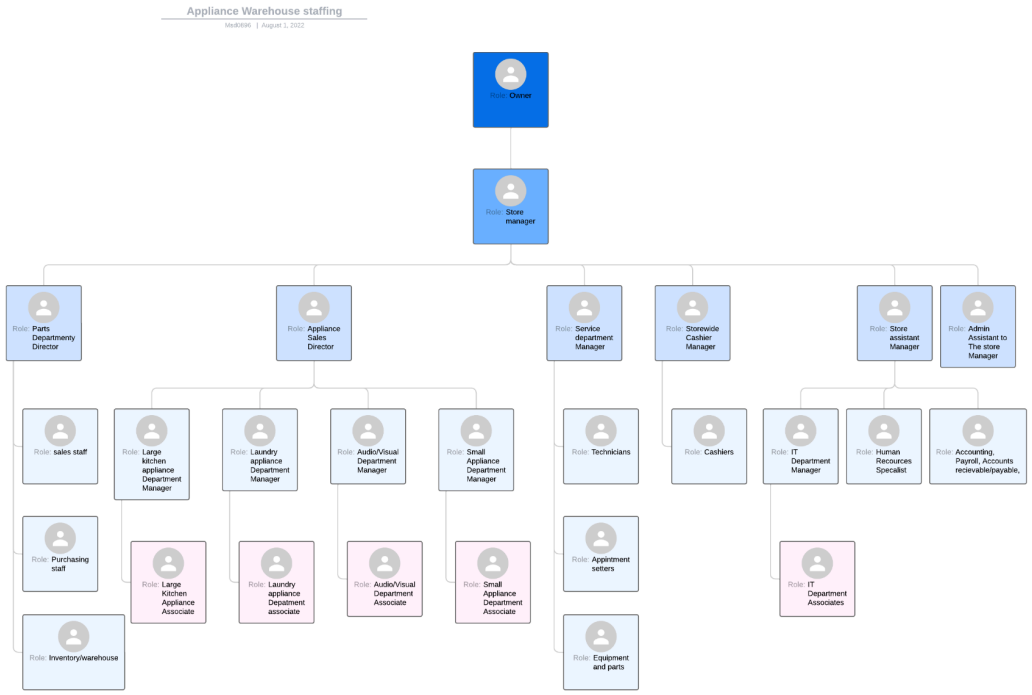
In this phase, we became familiar with the layout of the company by putting out the organizational chart. The SWOT analysis helped us understand what we thrive in and what our struggles are while also showing how we can get better or possibly worse. The opportunity statement told what the company's goals are and the mission statement is the bottom-line goal of the company. Lastly, we became familiar with staff and their tasks in the company.

Project Management

1.

Appliance Warehouse Organization Chart outlining details of the various functional areas

and the reporting positions.



2. SWOT Diagram - Analysis

Strength:

- A 360-degree solution of appliance sale, replacement part, and service department will create a better image and brand value for Appliance Warehouse.
- This will create a sustainable competitive advantage.
- Low overhead cost for operating the New department within the existing system.
- There are 0 customer acquisition costs for the service department because the existing buyer of the new appliance will be the natural customer for the service department.

Weakness:

- The Appliance Warehouse does not have enough after-sales service engineers and technicians required to have a service department.
- A new IT system must be integrated for customer complaints, track the status of complaints, and send technicians to the customer's location for fixing the equipment. As of right now, there is no such system in place.

Opportunity:

- Revenues can be increased by cross-selling the appliance services during the sale of the new appliance.
- Implementing an extended warranty offer on the appliances can earn higher revenues and profit on each sale.
- A third-party company will not have to be depended on for fixing old appliances.

Threat:

- Appliance Warehouse has to match the proficiency to other existing local technicians and third-party maintenance vendors in the maintenance of the home appliances.
- The new department can possibly be a financial burden on the existing system and fail to produce the projected revenue.
- Expenditure on the manpower expense will increase by hiring technicians and engineers on payroll.

3.

Opportunity Statement

We will improve the experience of our customers by applying our knowledge of appliances to help create a better home for you. As a multi-department company, we are aiming to focus more closely on customer service, specifically repairs services. We feel that an in-house maintenance team would allow for all repairs to be managed quickly and easily. Instead of referring customers to an outside service provider, we can accomodate repairs by keeping all replacement parts in stock. Customers will be able to schedule repair appointments with ease through our new service. We believe in having a direct way of accomplishing any and all customer needs. Once our service department is implemented, we will be able to offer customers professional technic

4 .

Mission Statement:

Our goal is to provide customers with the highest quality appliances and a fast-acting repair and maintenance team. Customer satisfaction is our number one priority, and we strive to deliver only the best services.

5A: Estimated project time frame

Development Times Duration

	Duration
Database design	5 days
Database build	10 days
Design of a report (web or app)	2 days
Design of data entry page (web or app)	2 days
Design of static text page (web or app)	1 day
Build of a report (web or app)	1 day
Build of data entry page (web or app)	1 day
Build of static text page (web or app)	1 day
Connection to separate system or database (sys admin)	8 days
Analysis work (both web and app combined)	20 days
Training	5 days
Cybersecurity work	10 days

Expected Monthly Maintenance:	
Development (web or app)	2 days
System Admin	3 days
Training	1 day

5B.

Identify Project tasks, this involves an overview and management of the project scope.

- Interview process (5 days)
- Development of User Questionnaire (2 days)
- Identification of risks (1.5 days)
- Database design (5 days)
- Database Build (10)
- Analysis work (20 days)
- Cyber security work (10 days)
- Web and app development (2 days)
- Layout of 1 report (4 hours)
- Layout of 1 user screen (2 hours)
- Testing plan (5 days)
- Implementation plan (3 days)

- The major tasks are system and industry analysis, system design, implementation plans, and security tasks

Team members and responsibilities

- Maddox Farley: director of parts department
- Celia Martel and Joe Perez: parts purchasing
- Ben Cooke, Melissa Benedict, Matt Jones: Inventory control and warehouse organization

- Emily Johns: Service department manager
- Liam Henson, Mark Robles, Lee Wong: Technicians
- Lisa Shields and Jake Meyers: Appointment Setters
- Rhonda Patel: equipment and parts leader
- Doug Dorsey and Tia Carey: Administrator of accounting and payrolls
- Carlie Davis: IT department manager

- Store Owner: Mae Roth
- Store Manager: Alan Marks
- Store assistant Manager: Ali Miranda
- Human Resource specialist: Joey Booker

5c:

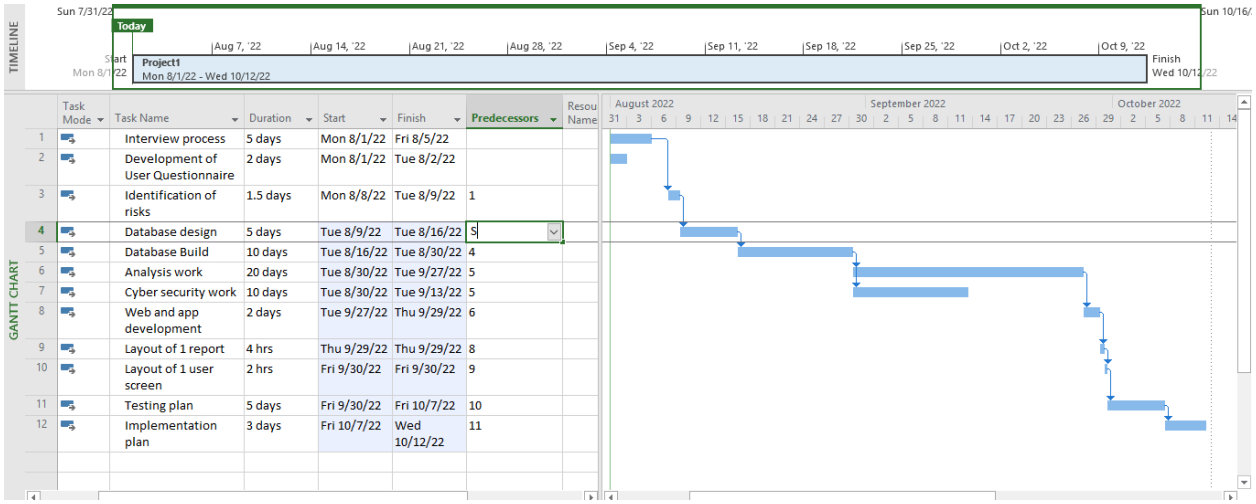
Work Breakdown structure and Project Work Plan

Task No.	Description	Duration	Predecessor Tasks
1	Interview process	5 days	
2	Development of User Questionnaire	2 days	
3	Identification of Risks	1.5 days	1
4	Database Design	5 days	3
5	Database Build	10 days	4
6	Analysis Work	20 days	5
7	Cyber Security Work	10 days	5
8	Web and App Development	2 days	6
9	Layout of 1 Report	4 hours	8
10	Layout of 1 User Screen	2 hours	9

11	Testing Plan	5 days	10
12	Implementation Plan	3 days	11

5d:

Gnatt Chart



	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resou Name
1		Interview process	5 days	Mon 8/1/22	Fri 8/5/22		
2		Development of User Questionnaire	2 days	Mon 8/1/22	Tue 8/2/22		
3		Identification of risks	1.5 days	Mon 8/8/22	Tue 8/9/22	1	
4		Database design	5 days	Tue 8/9/22	Tue 8/16/22	5	
5		Database Build	10 days	Tue 8/16/22	Tue 8/30/22	4	
6		Analysis work	20 days	Tue 8/30/22	Tue 9/27/22	5	
7		Cyber security work	10 days	Tue 8/30/22	Tue 9/13/22	5	
8		Web and app development	2 days	Tue 9/27/22	Thu 9/29/22	6	
9		Layout of 1 report	4 hrs	Thu 9/29/22	Thu 9/29/22	8	
10		Layout of 1 user screen	2 hrs	Fri 9/30/22	Fri 9/30/22	9	
11		Testing plan	5 days	Fri 9/30/22	Fri 10/7/22	10	
12		Implementation plan	3 days	Fri 10/7/22	Wed 10/12/22	11	

a.Project Standards:

1. Create Quality assurance
2. Create a risk management plan
3. Develop proper testing techniques
4. Keep work organized
5. Complete tasks at the specific times
6. Make sure work is saved properly
7. Make sure it is review by either peers or supervisors
8. Follow Plan Schedule and account for any changes if necessary

b. Risk Assessment and Management:

Risk 1 – Inherent Schedule Flaws: Software development can be difficult to estimate and schedule.

Solution: Get the team more involved in planning and estimating. Get early feedback and address any concerns directly with stakeholders.

Risk 2 – Schedule Risk: Schedules often slip due to the following reasons:

• Incorrect time estimation.

• Resources, such as, staff, systems, skills of individuals, etc, are not tracked properly.

• Failure to identify complex functionalities and time required to develop those functionalities.

• Unexpected project scope expansions.

Risk 3 – Programmatic Risks: uncertain risks that are outside the control of the program. These external events include:

• Lack of funding.

• Market development.

• Changing customer product strategy and priority.

• Government rule changes.

Risk 4 – Specification Breakdown: When coding and integration begin, specifications are incomplete or contain conflicting requirements.

Solution: Use a dedicated Product Manager to make critical trade-off decisions.

Risk 5 – Poor Productivity: During the process of long projects, the failure to work with haste in the beginning can lead to lost time that cannot be regained,

Solution: Short iterations, right people on the team, coaching, and team development.

Phase 2

Firstly, we developed questions for the potential workers during their job interviews. Created a decision table to see if they purchased a product and determined if they needed services for a certain amount of time. Created a decision tree for the SIM implementation as well as a DFD chart. Use a case diagram for the SIM implementation which illustrates the relationship between Apartment store and Parts department to the customer and SIM. We also came to the conclusion that using installed software is best for Appliance Warehouse because the vendor security is much more important than the cost.

Module 4

<u>To Store Manager</u>
Open-ended questions:
1) Tell me about yourself.
2) What are some things you excel at?
3) What are some things you find challenging?
4) What motivates you?
5) What are some things you hope to accomplish in the future?
6) What makes you the best person for the job and why should we hire you?
7) Tell me about your past personal experiences.

Closed ended and range of response questions:
1) Explain what is six sigma?

2) What do you know about the skill required for maintenance and repair work?
3) Explain what is Product-Report?
4) What are the factors that can lead to psychological risks and stress?
5) Are you capable of providing excellent customer service and having a flexible and adaptable approach to your work?

Questionnaire for Warehouse Operations:
1) What skills, qualities, and attributes do you possess that will help you to become a warehouse operative?
2) Why have you chosen our company to work for as a warehouse operative /worker?
3) When have you delivered excellent customer service?
4) What would you do if a member of the warehouse operative Team was not pulling their weight

<u>To Parts Department Manager</u>
Open-ended questions:
1) Tell me about yourself.
2) What are some things you excel at?
3) What are some things you find challenging?
4) What motivates you?
5) What are some things you hope to accomplish in the future?
6) What makes you the best person for the job and why should we hire you?
7) Tell me about your past personal experiences.

Closed ended and range of response questions:
1) How should those check-ins happen? As a group? In one-on-ones? Via phone calls? Or video chats?
2) What are the top three things that leaders can do to create a good remote culture?
3) Let's talk about virtual meetings. What are some best practices, beyond the general advice to clarify your purpose, circulate an agenda, prepare people to be called on, and so forth?

Questionnaire for Warehouse Operations:
1) What skills, qualities, and attributes do you possess that will help you to become a warehouse operative?
2) Why have you chosen our company to work for as a warehouse operative /worker?
3) When have you delivered excellent customer service?
4) What would you do if a member of the warehouse operative Team was not pulling their weight

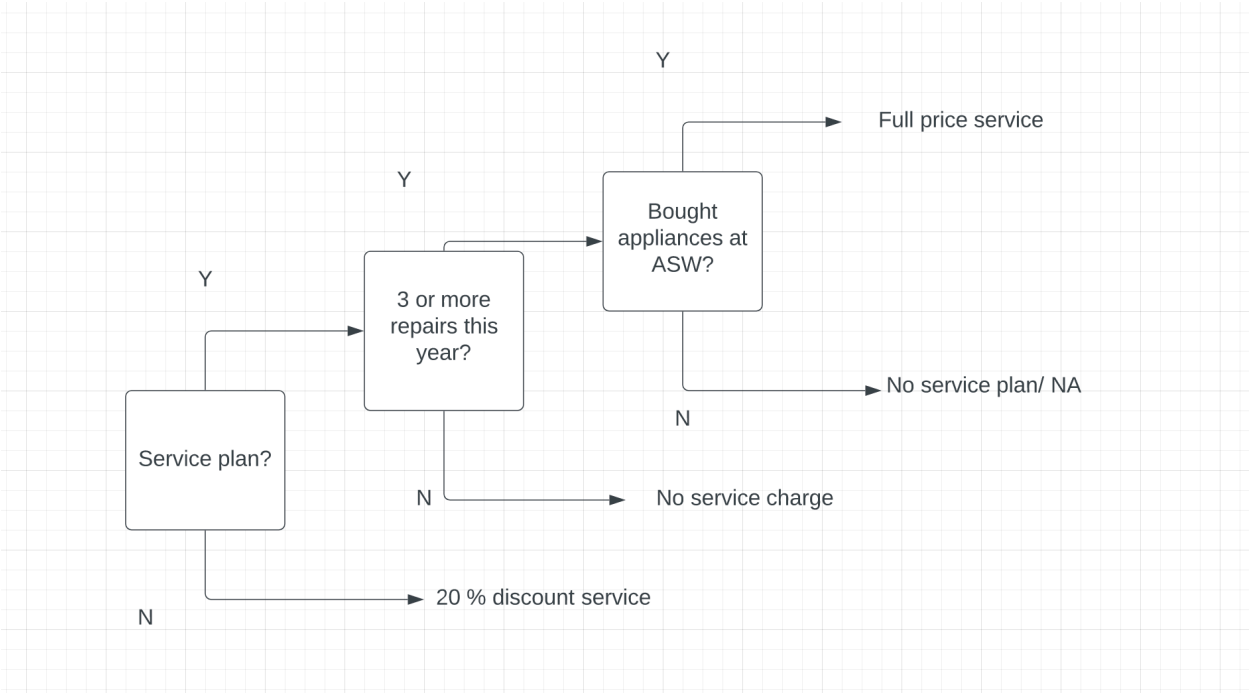
Module 5

Decision Table

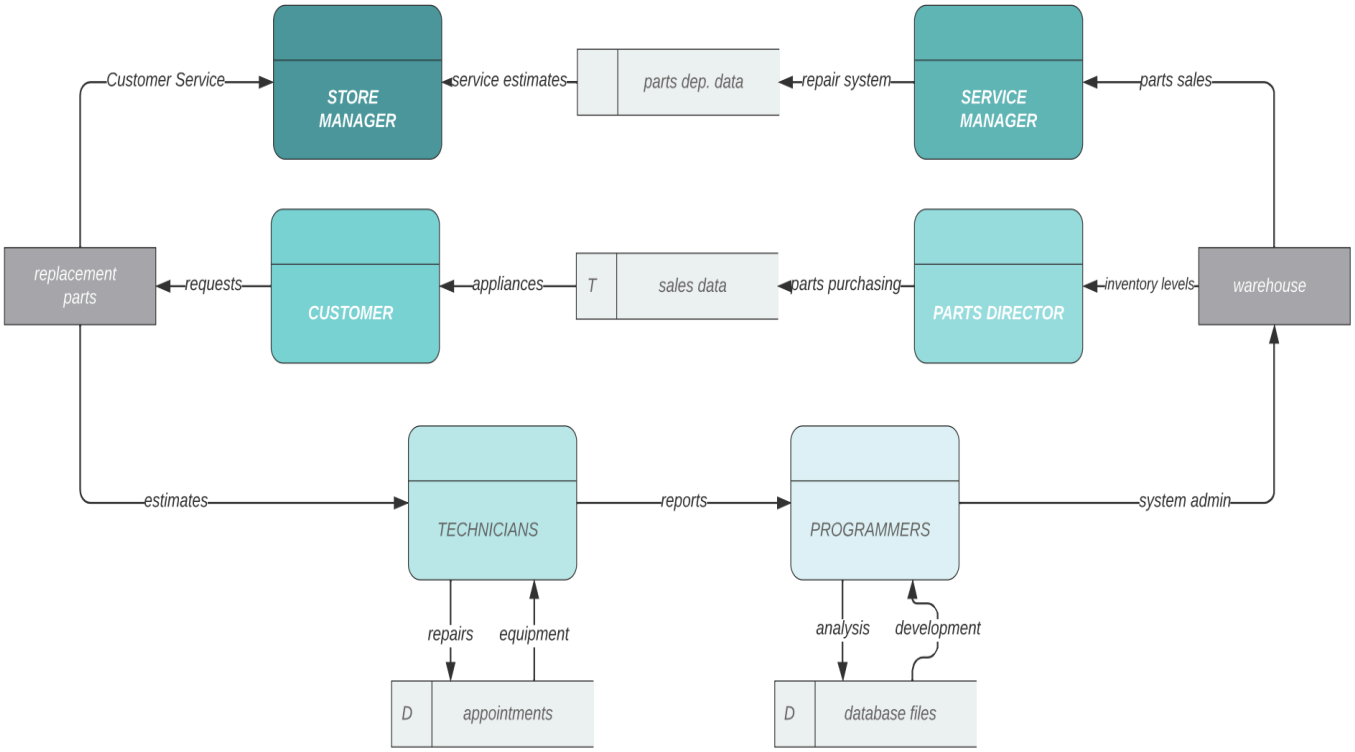
Conditions Actions

	No service charge	20% service discount	Full price service	
Service plan?	Y	N	N	
3 or more repairs this year?	N	N	Y	
Bought appliances at ASW?	N	Y	N	

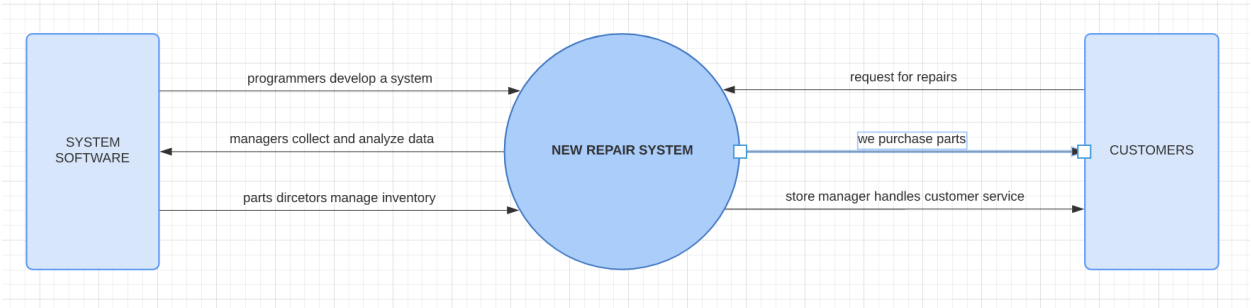
Decision Tree



DFD

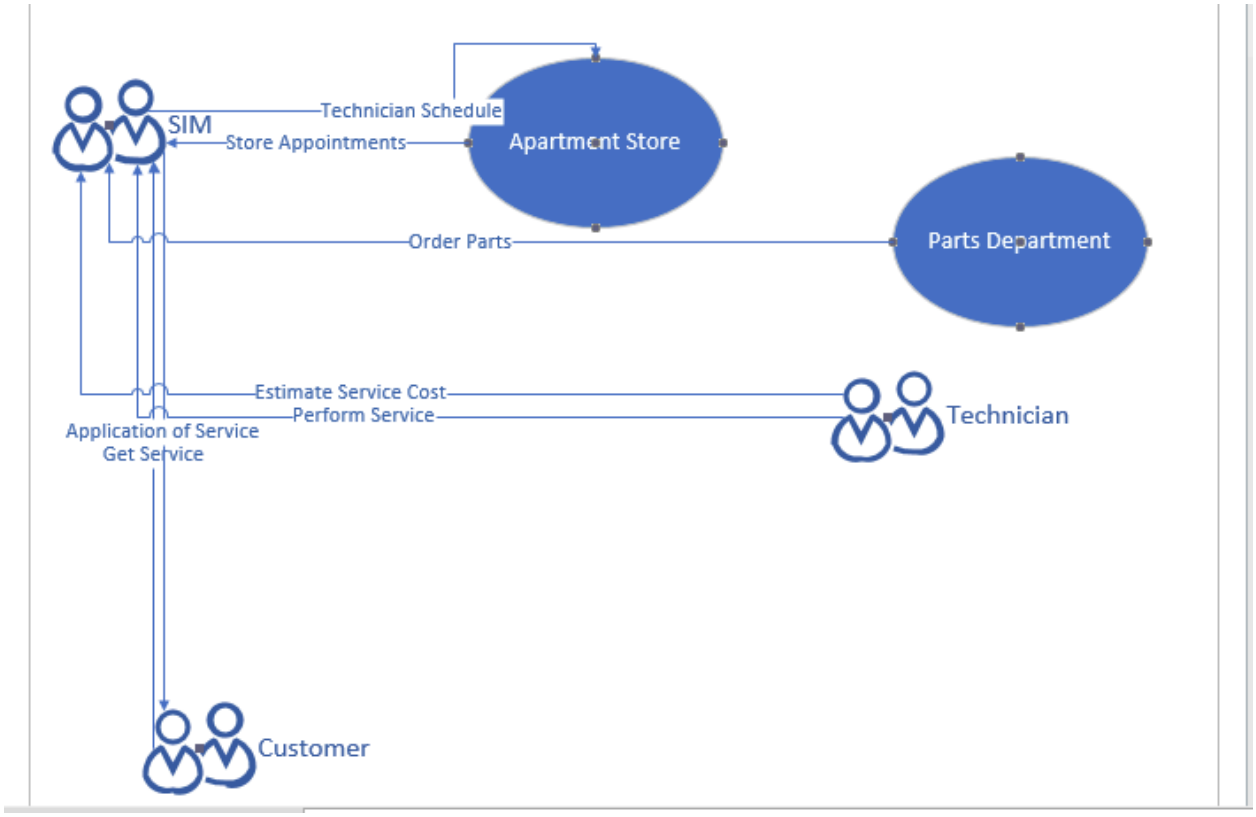


Level 0 diagram



Module 6

Use Case Diagram for SIM Diagram



Objects	Attributes	Methods	Instances
Technicians	knowledge of appliances, Working well as a team	Repair appliances	Liam Henson Mark robles Lee Wong
Parts department	Know what parts are needed, Know how to order them	Order parts when needed	Maddox Farley Tyler Cummings Steve Dawson
customers	Gender, loyalty level, age group Propensity to buy	Buy products and ask for repairs	Any customers who comes to our store

Appointment Setter	Know available times Set times for appointments	Set Appointments	Lisa Shields Jake Meyers

Module 7:

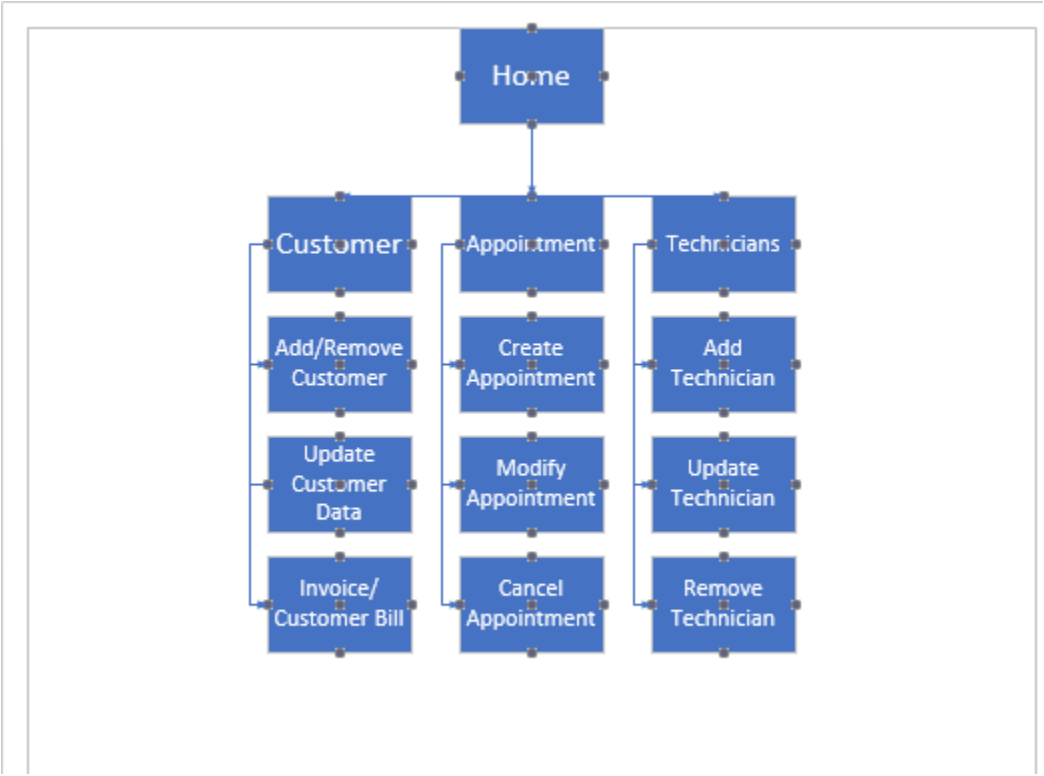
Security Information Management is an application that gathers, monitors, and investigates log data to find and report suspicious activities in the system. This data can be used to ensure the privacy of the system and to protect from breaches. Moreover, there are several similar applications available on the market today; so, whenever we are creating a new application and making it into an off-the-shelf product, we should consider the features of the rivals and price too. We should have to use an advanced program with the most efficiency to succeed in the market and then calculate the cost of production and assign a price. To elaborate calculating the cost, it should be calculated by the sum of all expenditure and the profit. Expenditure includes the cost of workers behind, depreciation of hardware used, cost of marketing, cost of flash drives or cd when it is out in the market. The cost of our workers in-house is $530 per hour and $2,700 for the equipment, which is cheaper than other software companies.

I suggest that installed software is best for Appliance Warehouse because the vendor security is much more important than the cost. There is no third-party allowance in installed software that completely allows control over the user such as access permission, data security, etc. Furthermore, despite having low upfront cost, SaaS has high subscription fees that can become bothersome in the long run. Based on the questionnaire results and my off-the-shelf solutions research, choosing software is essential to make sure the safety is the main goal rather than looking at the cost because one of the worst experiences a user can go through is having valuable data that can never be retrieved once it is corrupted or suddenly lost.

Phase 3

We created a hierarchical drawing that displays all the pages needed for the system. Determine that the new application can be made to run on the mobile platform. Find the use of Detail, Exception and Summary reports. Utilize an ERD diagram and a 3ND database table to normalize the database. Furthermore, we researched ERP systems to determine which system can protect software the best.

Chapter 8:



The new application can be made to run on the mobile platform. If the developers were to release the app on the mobile platform, they can easily launch the app on the mobile platform by simply integrating a responsive web page so that the web page can be size according to the screen of the

mobile phone. This will allow the user to clearly be able to see everything or every perspective of the website or the application. In essence, the developers use the responsive web page which allows the webpage to be modified according to the size of the mobile phone and will be able to work smoothly on the mobile platform without any major issues.

Advantages of prototyping:

1. Flexible design is easy to integrate new features and designs.

2. Easy to discern errors over the course of development.

3. We can find missing functionality easily.

4. Ideal for an online system as we can use the user feedback.

5. There is scope of refinement in the project.

6. Ensures greater level of customer satisfaction, trust, and reliability.

7. It lets the user and the developer understand the project more easily and more deeply.

Disadvantages of prototyping:

1. Prototyping is very costly.

2. Over the course of development, there are a large number of variations in the project.

3. Customers become anxious after seeing a prototype and demands for the product to be delivered to them very soon which is not possible.

4. The prototyping system can be very complex and confusing for the user and the developer as well.

5. Have to keep up with documentation as the requirements keep on changing over the development period.

Detail, Exception and Summary reports.

Detail Reports:

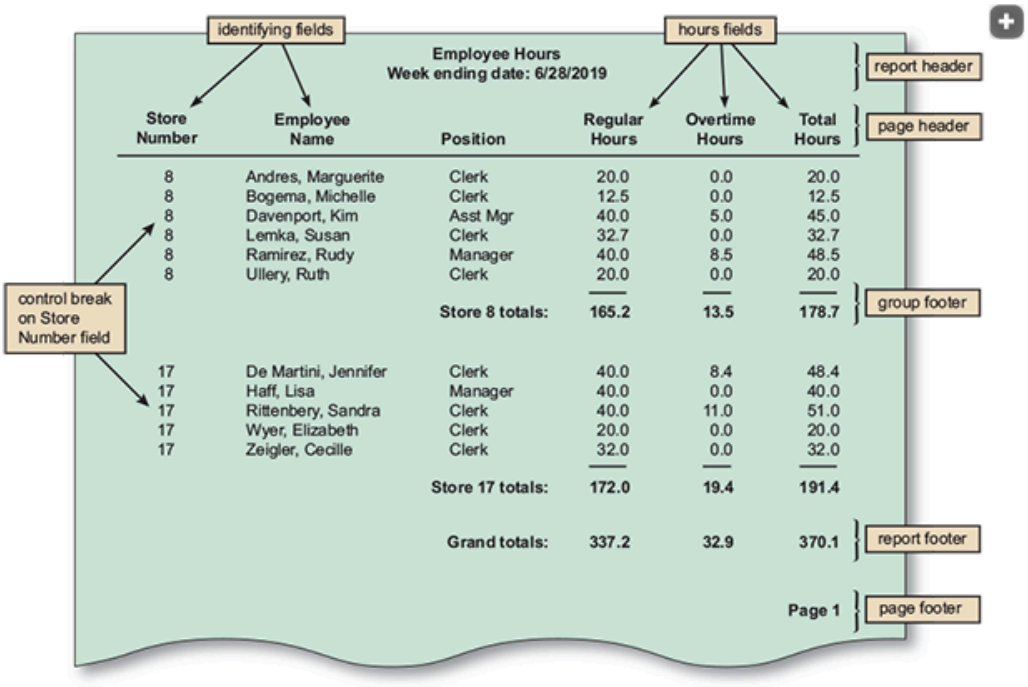
• Detail reports have one or more output lines in each processed record.

• Each single line printed in detail is an output.

• All fields in the record are not necessary to be not printed, nor need the records to be printed in order in which they appear.

• The Detail report can be lengthy as it may contain more than one line.

• For example:

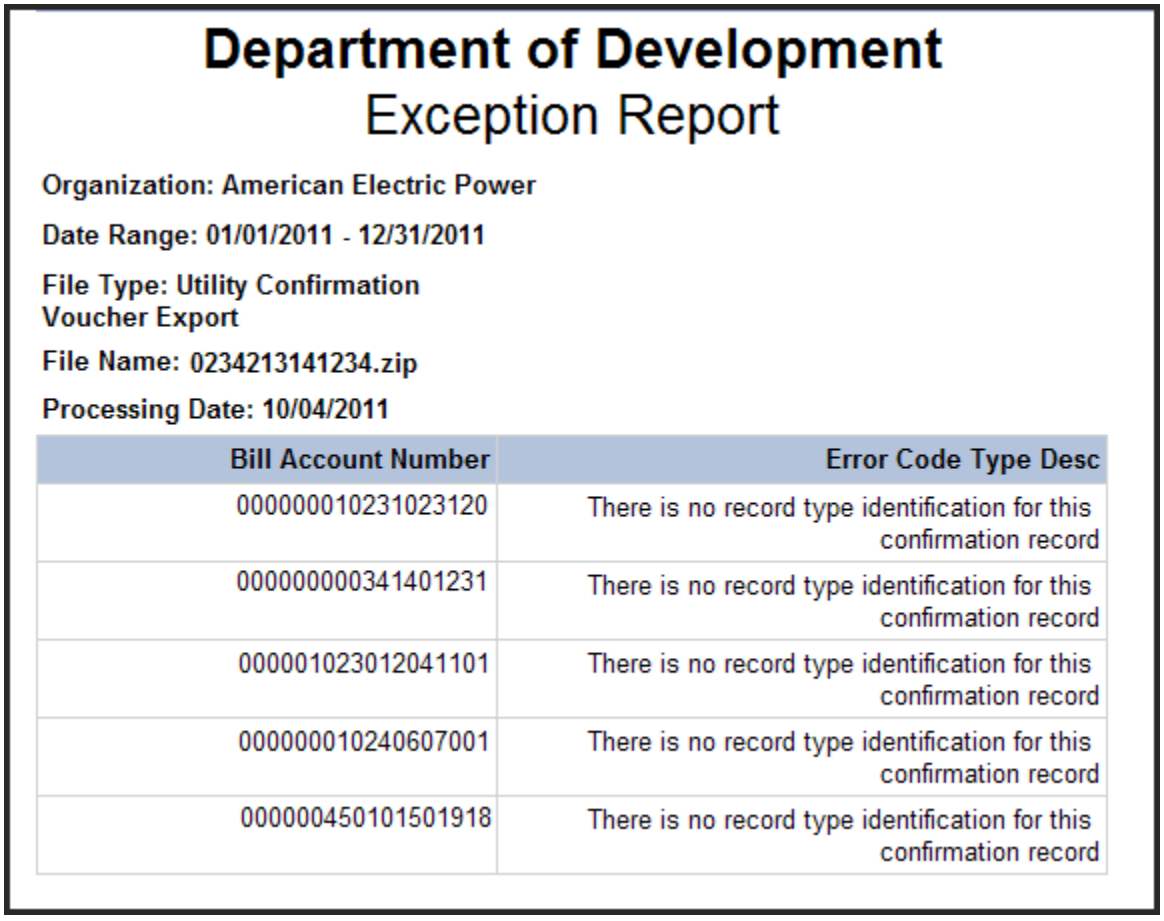


Exception reports:

• A document that states those instances in which actual performance deviated significantly from expectations, usually in a negative direction, is an exception report.

• Exception reports are used when the user needs certain information on records which may require action for it to be resolved.

• For example:



Department of Development

Exception Report

Organization: American Electric Power

Date Range: 01/01/2011 - 12/31/2011

File Type: Utility Confirmation Voucher Export

File Name: 0234213141234.zip

Processing Date: 10/04/2011

Bill Account Number	Error Code Type Desc
000000010231023120	There is no record type identification for this confirmation record
000000000341401231	There is no record type identification for this confirmation record
000001023012041101	There is no record type identification for this confirmation record
000000010240607001	There is no record type identification for this confirmation record
000000450101501918	There is no record type identification for this confirmation record

Summary Reports:

• Upper-level managers want to have an overview of data in a precise and concise manner; they do not want the data to be in detail.

• Summary reports only give a summary of data and do not provide details in depth, so in the above case summary reports are much appropriate.

• Generally, reports are maintained by higher levels in organization.

For example:

EXECUTIVE SUMMARY

The Global Partnership for Education is a global fund and partnership that was formed to address educational challenges in some of the world's most demanding contexts. The partnership brings together developing country partners, donor nations, multilateral development organizations, civil society, teacher organizations, foundations and the private sector around a single shared vision: to ensure inclusive and equitable quality education and promote lifelong learning for all.

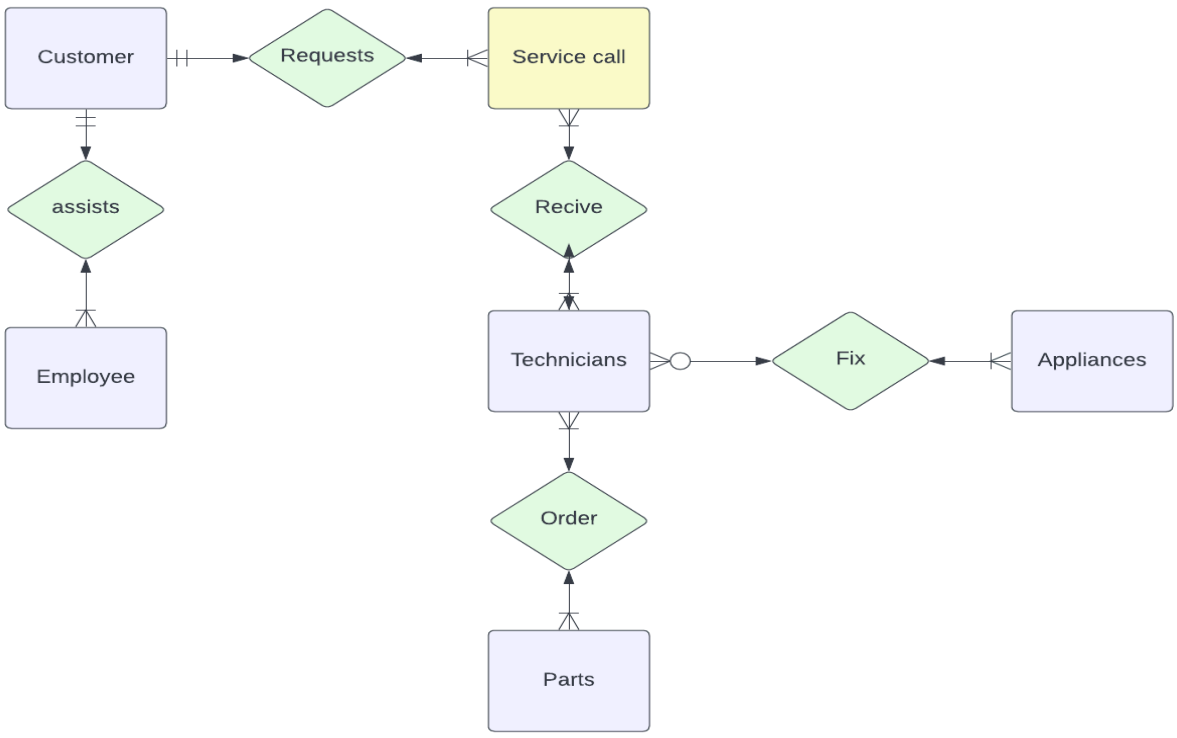
This year's results report is the first in a series that will document progress on GPE 2020, the partnership's strategic plan, adopted in December 2015. The report will be used to help guide the partnership and drive our common focus on achieving strong educational results for children and youth in developing country partners.

THIS YEAR'S RESULTS REPORT IS THE FIRST IN A SERIES THAT WILL DOCUMENT PROGRESS ON GPE 2020, THE PARTNERSHIP'S STRATEGIC PLAN, ADOPTED IN DECEMBER 2015.

The results report is structured around the three goals and five strategic objectives of GPE 2020, organized at the impact, outcome, country-level output and global-level output levels, as captured in the partnership's theory of change. Each strategic goal and objective is linked to a set of indicators—37 in all—with ambitious milestones and targets for 2020. The report also includes descriptive and financial data about GPE funding and its grant portfolio (for details see Appendix A and B). A summary of findings for the 37 indicators, coded using a traffic light system, is presented at the end of this report.[1]

Chapter 9:

ERD



3NF Database Tables

Date Called	Date of Service	Appliance Type
10-Jul	10-Jul	Microwave
11-Jul	11-Jul	refrigerator
12-Jul	12-Jul	Dishwasher

Appliance serial number	Parts needed	Technician assigned
AB-99-357-753	AB-3321	Robles
WP-78-956-694	WP-8877	Henson
WP-55-311-698	WP-1788	Wong

Customer name	Customer address	Customer Phone
Mitch Chu	5525 Winter Rd, Medford, MA	617-555-9898
Jamie Fernandez	2 Hope St, Hull, MA	617-555-4125
Mike Singh	15 Arch St, Tewksbury, MA	508-555-3596

Chapter 10

Security

- Security systems are continuously evolving to keep up with changing technology. As systems become more complex, protecting data becomes more difficult. Companies can prevent breaches by updating their systems and learning from past mistakes. I would recommend a few levels of security, such database and access levels to secure the database.

- Appointment setters supervise users of the database. They make sure all users are authorized clients. They prevent bots from hacking their systems. Appointment setters can also make sure customers are creating accounts in order to make virtual appointments.

- Technicians should have access to the database to enter information on machine repairs. They are authorized to access all apps to input technician data. This kind of data includes their reports and records. When accessing machines, they should be prompted with an encrypted password. The technicians machines should be protected with TLS, transport layer security.

- The parts department orders parts from external sources. They will be accessing other machines to make orders, so they require a special kind of security. I would reccomend tokenization as a solution to unauthorized users. This will allow for safe transactions using tokens and key strings.

- Managers should have access to customer related databases. This data should be organized and kept in a relational database such as sql. The data will include customer information such as phone numbers, addresses, and their purchases. It should also include revenue and sales data.

- Customers have a simple access to the database. They can make purchases and log in to their accounts to set their own maintenance appointments. The company database is different from customer logins. It is crucial that the database system is closed off to customers for confidentiality reasons.

SIM System Design

Our system should be highly scalable in order to accommodate our growing company. This will allow our system to be adjusted when we need to process and handle high volumes of data.

System requirements should include

- An efficient CPU to execute tasks in the shortest possible time
- A virtual machine system to run multiple operating systems in a single environment

- Main memory and Secondary memory (HDD) to increase the system capacity.
- High network bandwidth to transfer data between paths efficiently

I would recommend a cloud server like Azure to accommodate the system requirements.

When determining how to set up our computer network, we must consider

- The amount of tasks our computer system will run simultaneously
- How much memory capacity we need based on our amount of data
- How many computers we need to run all tasks
- How many tasks can a computer perform

Task environments are constantly changing. It is important to prepare for our systems to grow, or even new systems being implemented. Data files should be stored in the same software program to simplify tasks. We believe star topology would help AW by connecting all networks to a single node. Online processing will be more adequate. This will allow for real-time data processing.

ERP Systems

Oracle is one of the main databases used by companies for enterprise resource planning. Oracle offers very flexible and accessible resources for data management. The database can run on many different systems and networks. It is a high performance database that is continuously updated with many data recovery options. Unfortunately, oracle has downsides of being costly depending on the solution neccessary. Oracle can also be very complex, so specialized employees must be hired to operate the database.

MySQL is an oracle related database solution that can be installed for free. It is similar to oracle in some ways but very different in others. An oracle license can be easily obstained by our company. This will allow for the option of Oracle or MySQL, depending on our companies criteria for an ERP system. Many of the benefits of oracle are included in MySQL. However, MySQL is typically used by small to medium size companies who do not plan on expansion. It would be difficult to expand our systems later with MySQL. However, it is the most cost effective product on the market.

SalesForce is a different kind of ERP system that is very powerful and customizable. It is cloud-based and highly scalable to keep up with growing organizations. A strong internet connection is required at all times to manage SalesForce. Implementing a sales force requires a team of highly technical individuals. Licensing for SalesForce can be expensive, but we believe it is a valuable platform to consider investing in.

We recommend Oracle because it is a highly reliable database. We believe the investment in scalability and secure data management will be profitable for our company in the long run.

Star topology, a type of logical topology, is the best choice because online processing is needed, it has an adequate batch processing, and it protects both hardware and software. Furthermore, it helps strengthen access control which is an important part of security.

Phase 4

We rewrote requirements as user stories, went over Unit, Integration, and System testing. We decided that the best implementation plan is the Phase operations because the Direct Cutover method has a large amount of risk to it, using the phased operations method allows us to lessen that risk by only implementing each part of the new system once at a time. Created training plans for appointment setters, technicians, management, and the parts department.

#1 Rewrite requirements as user stories

- As a new appliance warehouse customer, I want to easily make an account so the company can trace my purchases back to my account. This is important so that I am seen as a returning customer when I make my next purchase.

- As an already registered user, I want to be able to log into my account and have all my past purchase info accessible to me. I want to ensure that if I forget my password, there is an easy way to authenticate that I am logging into my account.

- As a customer of Appliance Warehouse, I want to have 24/7 access to support if I have a question about my purchase.

- As a user of appliance warehouse's online appointment bot, I want to be able to cancel and reschedule my appointment with ease.

- As a returning customer of Appliance Warehouse, I want to know that the company cares about doing business with me. I would like incentives for return, such as a rewards program or discounts for my next purchase.

#2 Testing plan

Unit Testing: It is the testing of an individual program or module. The objective is to identify and eliminate execution errors that could cause the program to terminate abnormally and logic errors that could have been missed during desk checking.

Example:

```
public class UserLogIn : IUserLogIn

{

public bool IsValidUser (String UserName , string Password)

{

// todo validation check

IUserDataAccess userDataAcess = new UserDataAcess();

User user = userDataAccess.GetUserInfoByUserName(username);

if(user==null)

{

return false;
```

```
}

if (user.Password==password)

{

return True;

}

return false;

}

}

}
```

Integration Testing: The testing of two or more programs that depend on each other. The main focus of this level of testing is to discern the defects in the interaction between these software modules when they are integrated.

Example:

Test Case ID	Test Case Objective	Test Case Description	Expected Result
1	Check the interface link between the Login and Mailbox module	Enter login credentials and click on the Login button	To be directed to the Mailbox
2	Check the interface link between the Mailbox and Delete Mails Module	From Mailbox select the email and click a delete button	Selected email should appear in the Deleted/Trash folder

System Testing: A form of testing involving an entire information system and includes all typical processing situations. During a system test, users enter data, including samples of actual or live data, perform queries, and produce reports to simulate actual operating conditions. All processing options and outputs are verified by users and the IT project development team to ensure that the system functions correctly.

Example: A car manufacturer does not produce the car as a whole car. Each component of the car is manufactured separately, like seats, steering, mirror, break, cable, engine, car frame, wheels, etc. When each part is assembled with another part, that assembled combination is checked if assembling has not produced any side effect to the functionality of each component and whether both components are working together as expected and that is called integration testing.

#3 Implementation plan

There are four System Changeover techniques that we are able to use to roll out the new system. The four techniques are Direct Cutover, Parallel Operation, Pilot Operation, and Phased Operation.

Direct Cutover causes the new system change to happen immediately when the new system is operational. One advantage of Direct cutover is that it is usually the least expensive option and the best option when a system is developed in house. There is more risk in direct cutover because the new system can face unanticipated problems and can face problems due to the fact that live data faces more problems than test data.

Parallel Operation requires that both systems operate fully during a specified period of time. One advantage of parallel operations is that there is a lower risk involved because both systems are online for a select period of time. One problem facing parallel operation is that it is more expensive than direct cutover due to two systems being fully active at the same time.

Pilot operation involves the implementation of a new system at a single site or branch office of a company, after the system proves useful at a single site it is implemented at the rest of the companies locations. Pilot operation is a combination of both direct cutover and parallel operation so it combines both the strengths and weaknesses of both techniques

Phased operations allow new systems to be implemented in stages or modules, so instead of implementing a new system all at once, specific parts of the system will be installed as subsystems. For example, A management subsystem is installed first, then the inventory subsystem and so on and so forth. Each stage of the installation can be installed by using any of the other three changeover methods.

The best method for us to use would be Phased operations and to implement each phase using the Direct Cutover method. Due to the fact that using the Direct Cutover method has a large amount of risk to it, using the phased operations method allows us to lessen that risk by only

implementing each part of the new system once at a time. This also allows us to check and see if any issues arise in each part of the system when they are implemented instead of finding issues in every system all at once. It may take more time but it is the safest option at the lowest cost. We can also use phase operations with each phase be implemented with parallel operation but, the problem with using a phased operation with every phase being a parallel operation is that the cost would be much higher due to the fact that both systems in each department needs to be online and the cost do do that would be very high.

#4 Training Plan

Appointment Setters: Their training will show them how to create their own introductions that'll present the business, products and services while also letting the person on the phone know why they're being called. The training will teach them the basics and each step of how to communicate information while also grabbing the prospects attention. Furthermore the setters will set all the appointment schedules for the technicians.

Technicians: The technicians will be trained by upper management regarding their roles and what is expected of them on a daily basis. The technicians will be trained on the operating systems while learning the four techniques Direct Cutover, Parallel Operation, Pilot Operation, and Phased Operation.

Management: This team will focus on making sure that each area is running efficiently and is completing their task on time. This will lead to an efficient workplace that will help the team all around.

Phase 5

In this phase, we looked at the pros and cons between in-house software development vs outsourcing. Listed the risk of security threat: Physical, Network, Application, File, User, and Procedural. We determined that the best method for backup is tape backup encryption with copy on write because logs are backed up in the SIM system on a tape and are encrypted with copy on write. Calculated the initial in-house system which is $55,600 and the NPV for year 5 is $152,515.03.

1)

There are very apparent advantages of using in-house software development vs outsourcing to maintain our system. Both are viable options, but we must look at the pros and cons of each to determine which will benefit our company the most.

There are many benefits of in-house software development. The in-house team will new to upgrade their skills to handle in-house domain. This is beneficial because our team can use these skills in other sectors later. On site availability is a huge advantage of in house software

development. Our team can work together in the same time zone to protect data and fix problems effectively. Communicating an issue is much easier. We will have direct contact with each other, unlike an outsourcing team.

The higher cost of in house software development is one of the downsides. We must make sure we are prepared to pay for the infrastructure and training costs. Our in-house team will require a lot of experience in data storage to be able to run our technology. This will raise employee salaries and require us to implement more benefits for employees. Our employees are not guaranteed to stay, and finding replacement employees will be difficult for this specialized job.

On the other hand, there is outsourcing as our second option. Outsourcing our software development projects will mean that engineers in other companies will be handling development and data. This can be cost effective because we can save on workspaces and resources. Our team will be able to focus on internal projects while the outsourced company covers engineering expenses. We do not have to stay committed to our resources. We can use offshore development centers only when we need to instead of paying for our own. We will also have technology experts overseas to handle our software development. A third part opinion can help us take business initiatives. Generally, there is also less technical and monetary risk in outsourcing.

However, if we decide to outsource, we won't have complete control of our offshore engineers. We can guide them, but there is a risk that our project will not be completed how we want it to. Communicating with people off-shore can be more difficult than with an on-site team. It is not 100% certain that our outsourcing team can be relied on. We also risk cyber threats when working on different servers.

After reviewing the pros and cons of in-house versus outsource resources, our company will benefit from an in-house system more. We can control who has access to the system. We can invest in specialized employees and provide everything they require. The time and effort used to invest in an in-house system will be worth it because we can store all data in house and work together as a team to fix a relationship problem. To save costs, we could implement cloud data storage instead of a data storage tower.

2)

Physical security risks:

It includes damage and theft. Someone can steal the device in which logs are stored. They can use it to get all the personal data and lead to compromise of information. They can even get data about funds, credit card passwords, wallets, etc.

Network security risks:

These are related to malware and viruses. Someone may use phishing or social engineering attacks to gain an understanding of the system and check the logs and alter them or delete them. The logs can also be used to generate extra information about sensitive elements of the system.

Application security risks:

This involves injecting various flaws into the system to expose sensitive data. Since logs are used to gain insight into user activities, application risks related to security can cause malicious actors to keep track of user activity on the system and check for vulnerabilities to attack the system.

File security risks:

Sharing files are not safe where they are related to security logs or business logos. It makes the organization and systems susceptible to online threats. It can lead to theft or other malicious activities such as DoS. Especially if they are not encrypted.

User security risks:

These are very common with log files. Since log files not only keep track of user activity but also data related to them, their exposure or theft can lead to user security risks. They can be the target of painting or phishing. They can be asked for ransom in exchange for certain data. Their sensitive information can be used to gain access to their bank accounts, etc.

Procedural security risks:

IT relates to the operations of the system. The operations can be related to physical devices or storage. It can be related to offsite depositories as well. These are generally related to technical controls in the system.

3)

Backup method:

The best method for backup here is tape backup encryption with copy on write. In this method, logs are backed up in the SIM system on a tape and are encrypted with copy on write. With the copy-on-write operation, even if someone steals them and knows how to decrypt them, they will not be able to change or delete the files. This is because the copy on write will generate an alert which can be used to generate vulnerability alerts and use precautions.

4)

The initial cost is $55,600. The NPV for year 5 is $152,515.03.

As standard practice, use these costs for all in-house development.

	Cost per hour (for first year)
Database Development	$ 60
Web developers	$ 75
App developers	$ 75
UX designers	$ 60
Business Analyst	$ 50
Trainers	$ 50
Cybersecurity specialists	$ 90
System Admin	$ 70
	$ 530
Equipment:	
Servers	$ 2,500
Routers	$ 200

As standard practice, use these guidelines (assume 8 hours of work per day).

	Duration
Database design	5 days
Database build	10 days
Design of a report (web or app)	2 days
Design of data entry page (web or app)	2 days
Design of static text page (web or app)	1 day
Build of a report (web or app)	1 day
Build of data entry page (web or app)	1 day
Build of static text page (web or app)	1 day
Connection to separate system or database (sys admin)	8 days
Analysis work (both web and app combined)	20 days
Training	5 days
Cybersecurity work	10 days

	Duration
Expected Monthly Maintenance:	
Development (web or app)	2 days
System Admin	3 days
Training	1 day

initial cost:	cost years 2-4	discount rate
$ 55,600	$ 56,560	3%
	$ 55,400	
	$ 56,560	
	$ 55,400	
NPV		
$152,515.03		

Key:

Web or app = activity must be done for both web and app. Same amount of time required for each deliverable.

Both web and app = time given includes development for both of the web and app deliverables.

database development	web	app	ux	BA	Trainers	CS	SA
$ 7,200	$ 16,800	$16,800			$ 2,400	$ 7,200	$ 6,160

Recommendation Summary

The solution to company issues in regard to lacking a service department is to implement one. In this document, we detail all of the data and information needed to successfully add a repair system for Appliance Warehouse.

Conclusion Summary

. We have learned to do a better job in project planning and problem solving. We also learned how to communicate effectively as a team to create and plan this project. Now it is time to apply these two things into the final submission.