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Final Project

PHASE I and II

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# Application Scenarios

* Customer **provides home location** information
* Customer **provides HVAC problem/issue**
* Customer **provides contact information**
* Customer **schedules appointment** for service
* Customer **cancels appointment** for service

A screenshot of a web page

Description automatically generated A screenshot of a computer screen

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* Admin **assigns** **HVAC technician** to customer
* Admin **creates** **HVAC technician** account
* Admin **removes** **HVAC technician** account
* Technician **completes** appointment

# Tasks List

* Schedule appointment
* Cancel appointment
* Login as administrator
* Login as technician
* Create HVAC technician
* Remove HVAC technician
* Assign HVAC technician
* Complete appointment

# Information Flow Diagram

A diagram of a customer

Description automatically generated

# Sources and Interview Summaries

Client, P. B. H., Client, C. G. H., & Client, L. B. H. (2024, April 14). *Furnace & AC Repair Glendora CA: Accurate HVAC services*. Accurate. https://accurateelectricplumbingheatingandair.com/

*Your trusted advisor for all things hvac*. HVAC.com | Your trusted advisor for all things HVAC. (n.d.). https://www.hvac.com/

YouTube. (2021, February 26). *HVAC interview: Donald Addington*. YouTube. https://www.youtube.com/watch?v=xS3F0KGO51E

* Air Performance Services HVAC owner Donald Addington describes how and where he started his successful HVAC business and how COVID-19 has affected his business. Furthermore, he gives useful information for those seeking to start their own HVAC business or to become HVAC technicians.

YouTube. (2021b, May 29). *HVAC secrets to grow from zero to $30m in less than 5 years with Ismael Valdez*. YouTube. https://www.youtube.com/watch?v=6EsKcpXgC84

* Tommy Mello interviews industry expert Ismael Valdez, Owner and CEO of Nexgen Air Condition, Heating, and Plumbing in business strategy and the secrets of running an HVAC business successfully.

# EER Diagram

A diagram of a company

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# Task Forms

Task Name: Make Appointment/Cancel Appointment

Task Number: T1

Description: Creates or cancels appointment date for technician service

Enabling Condition: Customer Request

Subtasks: Make Appointment; Cancel Appointment

Frequency: Very frequent

Task Name: Make Appointment

Task Number: T1.1

Description: Creates appointment date for technician service

Enabling Condition: Customer Request

Subtasks: N/A

Frequency: Very frequent

Operation:

INSERT INTO customer

VALUES (CustomerID, FirstName, LastName, HouseSize, Phone, Street, City, USState, Email)

INSERT INTO appointment

VALUES (AppointmentID, Date, Time, Price, Urgency, CustomerEmail, TechnicianID, AdminID)

Task Name: Cancel Appointment

Task Number: T1.2

Description: Cancels appointment date for technician service

Enabling Condition: Customer Request

Subtasks: N/A

Frequency: Very frequent

Operation:

DELETE FROM appointment

WHERE CustomerEmail = '$email' AND Date = '$date' AND Time = '$time'

Task Name: Complete Appointment

Task Number: T2

Description: Technician marks appointment as complete

Enabling Condition: Customer makes appointment and technician has finished the job

Subtasks: N/A

Frequency: Very frequent

Operation:

$sql = "DELETE FROM appointment

                WHERE CustomerEmail = '$email'";

        if ($con->query($sql)===TRUE) {

            $sql = "DELETE FROM customer

            WHERE Email = '$email'";

            $con->query($sql);

            echo "Assignment successfully completed.";

        }

Task Name: Assign HVAC Technician

Task Number: T3

Description: Admin assigns HVAC Technician to customer

Enabling Condition: Customer makes appointment and technician is available

Subtasks: N/A

Frequency: Very frequent

Operation:

$sql = "SELECT \* FROM technician

                WHERE Username = '$username' AND Password = '$password'";

        $result = $con->query($sql);

        if ($result->num\_rows > 0) {

            echo "Technician with same user/password already exists.";

        }

        else {

            $sql = "INSERT INTO technician VALUES (DEFAULT, '$firstName', '$lastName', '$username', '$password', '1')";

            $result = $con->query($sql);

            echo "Technician successfully added.";

        }

Task Name: Login as Administrator

Task Number: T4

Description: Admin logs into console

Enabling Condition: Admin account exists in database

Subtasks: N/A

Frequency: Frequent

Operation:

 $sql = "SELECT \* FROM admin

                WHERE Username = '$username' AND Password = '$password'";

        $result = $con->query($sql);

        if ($result->num\_rows > 0) {

            echo "Login successful.";

            echo "<script> location.href='admin\_console.php'; </script>";

        }

Task Name: Login as Technician

Task Number: T5

Description: Technician logs into console

Enabling Condition: Admin account has created account for employee

Subtasks: N/A

Frequency: Frequent

Operation:

$sql = "SELECT \* FROM technician

                WHERE Username = '$username' AND Password = '$password'";

        $result = $con->query($sql);

        if ($result->num\_rows > 0) {

            echo "Login successful.";

            echo "<script> location.href='tech\_console.php'; </script>";

        }

# Relational Schema

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For the relational schema, we created a relation between the strong entity ‘Customer’ and the weak entity ‘Appointment’ by creating a foreign key in Appointment corresponding to the unique key of ‘Email’. Additionally, Appointment also has relations with the strong entity Admin, possessing a foreign key corresponding to the AdminID as well as possessing a foreign key corresponding the weak entity Technician’s TechnicianID. Technician itself possesses a foreign key corresponding to Admin’s AdminID as well.

# Testing Instructions

1. Import database hvac\_website.sql into MySQL
2. Import .php files in App folder into xampp ‘htdocs’ folder
3. Start xampp Apache and MySQL
4. Run through browser (localhost/App/)
5. Schedule visit as customer
6. Use admin login (Username: ‘admin’, Password: ‘a\_password’)
7. Create and/or assign technician through admin console
8. Log in as technician using created details or existing ones (ex. Username = ‘tech\_smith’, Password = ‘t\_password’)
9. Mark appointment as complete