

# CSC 540 - DATABASE MANAGEMENT CONCEPTS & SYSTEMS

## FALL 2018 PROJECT 1 - DATABASE APPLICATION DESIGN & IMPLEMENTATION

### CARS - CAR Repair and Service management system Application Flow

This document is just to give you a general idea of the application flow. Please make sure you refer to the description and handle all the requirements/constraints mentioned therein. Since there is no overlap between customer, receptionist, manager, the application will provide a single login screen and redirect the user to the appropriate home page. There are three different types of home pages depending on the type of user:

- 1) Manager
- 2) Receptionist
- 3) Customer

Please make sure you verify the login credentials before logging in.

## Role-based Access Control

### Customer

The account for customers shall be created from the application. When logged in as a customer, the homepage displays the following options:

- **View and Update Profile:** This will have the following sub-menus
  - **View Profile:** The logged in customer should be able to view his profile information.
  - **Update Profile:** The logged in customer should be able to update his profile information.
- **Register Car:** A customer should be able to register a car with a service center. He should be allowed to only register cars that belong to an approved maker list (Honda, Nissan, and Toyota)
- **View and Schedule Service:** This will have the following sub-menus:
  - **View Service History:** A customer should be able to see service history for his car using the car's license plate number.
  - **Schedule Service:** A customer should be able to schedule a new maintenance/repair service appointment for his car using the car's license plate number. This will have the following sub-menus:
    - Schedule Maintenance
    - Schedule Repair
  - **Reschedule Service:** A customer should be able to reschedule a service appointment for his car using the car's license plate number.
- **View Invoices:** A customer should be able to view invoices billed to him.

## Receptionist

The account for receptionist can be created only by the manager. When logged in as a receptionist, the homepage displays the following options:

- **View and Update Profile:** This will have the following sub-menus
  - **View Profile:** After logging in a receptionist should be able to view his profile information.
  - **Update Profile:** After logging in a receptionist should be able to update his profile information.
- **View Customer Profile:** A receptionist should be able to view a customer's profile information.
- **Register Car:** A receptionist should be able to register a customer's car for service. He should be allowed to only register cars that belong to an approved maker list (Honda, Nissan, and Toyota).
- **View Service History:** A receptionist should be able to see service history for all cars a customer gets serviced at the current service center.
- **Schedule Service:** A receptionist should be able to schedule a new maintenance/repair service appointment for a customer car using the car's license plate number. This will have the following sub-menus:
  - Schedule Maintenance
  - Schedule Repair
- **Reschedule Service:** A receptionist should be able to reschedule a service appointment for a customer using the car's license plate number.
- **View Invoices:** A receptionist should be able to view invoices billed to a particular customer.
- **Daily Task - Update Inventory:** A receptionist should be able to run a daily task to update the counts of parts to be used that day, basically adjusted (decrementing them) to reflect the fact the parts will be removed and actually used that day.
- **Daily Task - Record Delivered Orders:** A receptionist should be able to run a daily task to update the status of any pending orders whose items have arrived to "complete" and update their counts. For any pending orders that have not arrived and are past the delivery window change their status to "delayed" and generate a notification for the manager.

## Manager

The account for manager shall be created using SQL Scripts and not from the application. When logged in as an manager, the homepage displays the following options:

- **View and Update Profile:** This will have the following sub-menus
  - **View Profile:** After logging in a manager should be able to view his profile information.

- **Update Profile:** After logging in a manager should be able to update his profile information.
- **View Customer Profile:** A manager should be able to view a customer's profile information.
- **Add New Employee:** A manager should be able to add new receptionists and mechanics at the service center he manages.
- **View Payroll Information:** A manager should be able to view the payroll information for all employees at the service center he manages.
- **View Inventory:** A manager should be able to view the inventory for the service center he manages.
- **View and Place Orders:** This will have the following sub-menus:
  - **View Order History:** A manager should be able to see order history for any orders involving his service center.
  - **Place Orders:** A manager should be able to place orders for any part in the inventory. He should also be able to add new parts to the inventory at his location via this menu option. Whenever an order is placed this using this option, it will be assumed that the part will be supplied by the authorized distributor only.
- **View Notifications:** A manager should be able to view all notifications generated at this service center.
- **Register New Car:** A manager should be able to register a new car model from the approved makers (Honda, Nissan, and Toyota) into the system and assign service details for the new model.
- **View Service Details:** A manager should be able to see service details (service schedule, parts required etc.) for all car models.
- **View Service History:** A manager should be able to see service history for any car serviced at his service center.
- **View Invoices:** A manager should be able to view all invoices billed to any customer at his service center.

# Application Menu

Below is the application menu for the CARS system. We expect you to follow this program flow strictly. **You must validate all user input and display appropriate error messages whenever necessary prompting the user to re-enter his input, even if it may not be explicitly stated.**

## Start Pages

### Home

Display	Menu	Input	Output
Display the menu	1. <a href="#">Login</a> 2. <a href="#">Sign Up</a> 3. Exit	Enter Choice (1-3)	Go to the appropriate page.  If exit is chosen, terminate the program.

### Login

Display	Menu	Input	Output
Ask user to input the following details in the order shown below, followed by the menu.  A. User ID B. Password	1. Sign-In 2. <a href="#">Go Back</a>	Enter Choice (1-2)	If the user chooses 1, validate credentials and recognize if user is a Manager, Receptionist, or Customer to go to the correct <b>Landing page</b> . Print "Login Incorrect" for invalid credentials and ask to enter again.  If the user chooses 2, go back to the <b>Home page</b>

## Sign Up

Display	Menu	Input	Output
<p>Ask user to input the following details in the order shown below, followed by the menu.</p> <p>A. Email Address B. Password C. Name D. Address E. Phone Number</p>	<p>1. <a href="#">Sign Up</a> 2. <a href="#">Go Back</a></p>	<p>Take input from user about the new customer.</p> <p>After entering details A-E, choose option 1-2 from the menu</p>	<p>If the user chooses 1, save his entered information into database creating an account for this customer and go to <b>Login page</b> after displaying an appropriate message.</p> <p>If the user chooses 2, go back to the <b>Home page</b></p>

## Customer pages

### Customer: Landing

Display	Menu	Input	Output
Display the menu	1. <a href="#">Profile</a> 2. <a href="#">Register Car</a> 3. <a href="#">Service</a> 4. <a href="#">Invoices</a> 5. <a href="#">Logout</a>	Enter choice (1-5)	Display the correct page depending on choice 1-4. For 5, logout and return to the <b>Home page</b>

### Customer: Profile

Display	Menu	Input	Output
Display the menu	1. <a href="#">View Profile</a> 2. <a href="#">Update Profile</a> 3. <a href="#">Go Back</a>	Enter choice (1-3)	Display the correct page or go back to <b>Customer: Landing page</b>

### Customer: View Profile

Display	Menu	Input	Output
Display the following details followed by the menu.  A. Customer ID B. Name C. Address D. Email Address E. Phone Number F. List of All Cars (and their details)	1. <a href="#">Go Back</a>	Enter Choice (1)	Go back to <b>Customer: Profile page</b>

### Customer: Update Profile

Display	Menu	Input	Output
Display the menu	1. Name	Choose 1-4 to enter a new value. Once a	Update the customer profile information

	2. Address 3. Phone Number 4. Password 5. <a href="#">Go Back</a>	new value is entered, save it and show this menu again. Do this until the user chooses 5 to go back.	into the database, or go back to <b>Customer: Profile page</b>
--	--	--	--

#### Customer: Register Car

Display	Menu	Input	Output
Ask user to input the following details in the order shown below, followed by the menu.  A. Licence plate B. Purchase date C. Make D. Model E. Year F. Current mileage G. Last Service Date	1. <a href="#">Register</a> 2. <a href="#">Cancel</a>	Take input from user about his car details. All details except the last service date are mandatory. The user may choose to not provide the last service date (save NULL)  After entering details A-G, choose option 1-2 from the Menu	If the user chooses 1 record all the information of car in the database and go back to <b>Customer: Landing page</b>  If the user chooses 2, discard all input and directly go to <b>Customer: Landing page</b>

#### Customer: Service

Display	Menu	Input	Output
Display the menu	1. <a href="#">View Service History</a> 2. <a href="#">Schedule Service</a> 3. <a href="#">Reschedule Service</a> 4. <a href="#">Go Back</a>	Enter choice (1-3)	Display the correct page or go back to <b>Customer: Landing page</b>

#### Customer: View Service History

Display	Menu	Input	Output
Display the following details for each service obtained by	1. <a href="#">Go Back</a>	Enter Choice (1)	Go back to <b>Customer: Service page</b>

<p>this customer followed by the menu.</p> <p>A. Service ID</p> <p>B. License Plate</p> <p>C. Service Type</p> <p>D. Mechanic Name</p> <p>E. Service Start Date/Time</p> <p>F. Service End Date/Time (expected or actual)</p> <p>G. Service Status (Pending, Ongoing, or Complete)</p>			
--	--	--	--

#### Customer: Schedule Service

Display	Menu	Input	Output
<p>Ask user to input the following details in the order shown below, followed by the menu.</p> <p>A. License Plate</p> <p>B. Current Mileage</p> <p>C. Mechanic Name</p>	<ol style="list-style-type: none"> <li>1. <a href="#">Schedule Maintenance</a></li> <li>2. <a href="#">Schedule Repair</a></li> <li>3. <a href="#">Go Back</a></li> </ol>	<p>Take input from user about his car. All details except mechanic name are mandatory. The user may choose to not provide the mechanic name.</p> <p>After entering details A-C, choose option 1-3 from the Menu</p>	<p>Display the correct page or go back to <b>Customer: Service page</b></p>

#### Customer: Schedule Maintenance (Page 1)

Display	Menu	Input	Output
<p>Display the menu</p>	<ol style="list-style-type: none"> <li>1. <a href="#">Find Service Date</a></li> <li>2. <a href="#">Go Back</a></li> </ol>	<p>Enter Choice (1-2)</p>	<p>If the user chooses 1 find two earliest available service dates after validating</p>



			<p>the car details input previously, and go to <b>Customer: Schedule Maintenance (Page 2) page</b></p> <p>If a service date can not be found due to insufficient parts, place an order (if required) and show a message to the user asking him to try again after a specific date (calculated based on when the order will be fulfilled). Do not place an order if an existing order can fulfill the requirement, but show a message to the user asking him to try again after a specific date. After showing the message, go back to <b>Customer: Schedule Service page</b></p> <p>If the user chooses 2, go to <b>Customer: Schedule Service page</b></p>
--	--	--	---

#### Customer: Schedule Maintenance (Page 2)

Display	Menu	Input	Output
Display the two identified service dates and mechanic name found based on the inputs in the	1. <a href="#">Schedule on Date</a> 2. <a href="#">Go Back</a>	<p>Enter Choice (1-2)</p> <p>If the user chooses 1, ask him to pick one of the two dates shown.</p>	If the user chooses 1, create a new service record for maintenance service on the chosen date,

previous page to the user, followed by the menu.			<p>and go back to <b>Customer: Schedule Service page</b></p> <p>If the user chooses 2, go to <b>Customer: Schedule Maintenance (Page 1) page</b></p>
--	--	--	--

#### Customer: Schedule Repair (Page 1)

Display	Menu	Input	Output
Display the menu to allow the user to pick on of the possible problems.	<ol style="list-style-type: none"> <li>1. <a href="#">Engine knock</a></li> <li>2. <a href="#">Car drifts in a particular direction</a></li> <li>3. <a href="#">Battery does not hold charge</a></li> <li>4. <a href="#">Black/unclean exhaust</a></li> <li>5. <a href="#">A/C-Heater not working</a></li> <li>6. <a href="#">Headlamps/Tail lamps not working</a></li> <li>7. <a href="#">Check engine light</a></li> <li>8. <a href="#">Go back</a></li> </ol>	Enter Choice (1-8)	<p>If the user chooses 1-7, create a diagnostic report showing the list of causes and parts needed to resolve them based on the problem selected. This report is to be displayed next. Also find two earliest available repair dates after validating the car details input previously, and go to <b>Customer: Schedule Repair (Page 2) page</b></p> <p>If a repair date can not be found due to insufficient parts, place an order (if required) and show a message to the user asking him to try again after a specific date (calculated based on when the order will be fulfilled). Do not place an order</p>

			<p>if an existing order can fulfill the requirement, but show a message to the user asking him to try again after a specific date. After showing the message, go back to <b>Customer: Schedule Service page</b></p> <p>If the user chooses 2, go to <b>Customer: Schedule Service page</b></p>
--	--	--	--

#### Customer: Schedule Repair (Page 2)

Display	Menu	Input	Output
Display the diagnostic report and the two identified service dates and mechanic name found based on the inputs in the previous page to the user, followed by the menu.	<ol style="list-style-type: none"> <li>1. <a href="#">Repair on Date</a></li> <li>2. <a href="#">Go Back</a></li> </ol>	<p>Enter Choice (1-2)</p> <p>If the user chooses 1, ask him to pick one of the two dates shown.</p>	<p>If the user chooses 1, create a new service record for repair service on the chosen date, and go back to <b>Customer: Schedule Service page</b></p> <p>If the user chooses 2, go to <b>Customer: Schedule Repair (Page 1) page</b></p>

#### Customer: Reschedule Service (Page 1)

Display	Menu	Input	Output
Display the following details for all upcoming services for this customer, followed by the menu	<ol style="list-style-type: none"> <li>1. <a href="#">Pick a service</a></li> <li>2. <a href="#">Go Back</a></li> </ol>	<p>Enter Choice (1-2)</p> <p>If the user chooses 1, ask him to enter one of the service IDs to select the service to</p>	<p>If the user chooses 1, find two earliest available maintenance/repair dates that are at least one day after the</p>

A. License Plate B. Service ID C. Service Date D. Service Type (Maintenance/Repair) E. Service Details (Service A/B/C or Problem)		be rescheduled.	current service date, and go to <b>Customer: Reschedule Service (Page 2) page</b>  If the user chooses 2, go to <b>Customer: Service page</b>
---	--	-----------------	---

#### Customer: Reschedule Service (Page 2)

Display	Menu	Input	Output
Display the two identified service dates and mechanic name, followed by the menu.	1. <a href="#">Reschedule Date</a> 2. <a href="#">Go Back</a>	Enter Choice (1-2)  If the user chooses 1, ask him to pick one of the two dates shown.	If the user chooses 1, reschedule his existing service to the chosen date making necessary adjustments to the parts commitment in the inventory, and go back to <b>Customer: Service page</b>  If the user chooses 2, go to <b>Customer: Reschedule Service (Page 1) page</b>

#### Customer: Invoice

Display	Menu	Input	Output
Display the following details for all the services that are complete followed by the menu.  A. Service ID B. Service Start Date/Time	1. <a href="#">View Invoice Details</a> 2. <a href="#">Go Back</a>	Enter Choice (1 - 2)	If the user chooses 1 <b>Customer: View Invoice Details page</b>  If the user chooses 2, go to <b>Customer: Landing page</b>

C. Service End Date/Time D. Licence Plate E. Service Type F. Mechanic Name G. Total Service Cost			
--	--	--	--

#### Customer: View Invoice Details

Display	Menu	Input	Output
<p>Ask user to input the following detail in order to show the described output followed by an option to go back as shown under "Menu".</p> <p>A. Service ID</p>	<p>3. <a href="#">Go back</a></p>	<p>Enter Service ID</p> <p>After entering Service ID and showing the output, choose option 1 from the Menu</p>	<p>Show detailed description of a service including following details.</p> <p>A. Service ID  B. Service Start Date/Time  C. Service End Date/Time  D. Licence Plate  E. Service Type  F. Mechanic Name  G. Parts Used in service with cost of each part  H. Total labor hours  I. Labor wages per hour  J. Total Service Cost</p> <p>Go back to  <b>Customer: Invoice page</b></p>

## Employee (Receptionist and Manager) pages

In the following description, pages named **Receptionist:xxx** and **Manager:xxx** refer to pages only for receptionist and manager roles respectively. Pages named **Employee:xxx** refer to pages that are common to both receptionist and manager roles.

### Receptionist: Landing Page

Display	Menu	Input	Output
Display the menu	<ol style="list-style-type: none"><li>1. <a href="#">Profile</a></li><li>2. <a href="#">View Customer Profile</a></li><li>3. <a href="#">Register Car</a></li><li>4. <a href="#">Service History</a></li><li>5. <a href="#">Schedule Service</a></li><li>6. <a href="#">Reschedule Service</a></li><li>7. <a href="#">Invoices</a></li><li>8. <a href="#">Daily Task-Update Inventory</a></li><li>9. <a href="#">Daily Task-Record Deliveries</a></li><li>10. <a href="#">Logout</a></li></ol>	Enter choice (1-10)	Display the correct page depending on choice 1-9. For 8, logout and return to the <b>Home page</b>

### Manager: Landing Page

Display	Menu	Input	Output
Display the menu	<ol style="list-style-type: none"><li>1. <a href="#">Profile</a></li><li>2. <a href="#">View Customer Profile</a></li><li>3. <a href="#">Add New Employees</a></li><li>4. <a href="#">Payroll</a></li><li>5. <a href="#">Inventory</a></li><li>6. <a href="#">Orders</a></li><li>7. <a href="#">Notifications</a></li><li>8. <a href="#">New Car Model</a></li></ol>	Enter choice (1-12)	Display the correct page depending on choice 1-11. For 12, logout and return to the <b>Home page</b>

	9. <a href="#">Car Service Details</a> 10. <a href="#">Service History</a> 11. <a href="#">Invoices</a> 12. <a href="#">Logout</a>		
--	---	--	--

#### Employee: Profile

Display	Menu	Input	Output
Display the menu	1. <a href="#">View Profile</a> 2. <a href="#">Update Profile</a> 3. Go Back	Enter choice (1-3)	Display the correct page or go back to the <b>appropriate Landing page</b>

#### Employee: View Profile

Display	Menu	Input	Output
Display the following details followed by the menu.  A. Employee ID B. Name C. Address D. Email Address E. Phone Number F. Service Center G. Role H. Start Date I. Compensation (\$) J. Compensation Frequency (monthly/hourly)	1. <a href="#">Go Back</a>	Enter Choice (1)	Go back to <b>Employee: Profile page</b>

#### Employee: Update Profile

Display	Menu	Input	Output
Display the menu	1. Name 2. Address 3. Email Address	Choose 1-5 to enter a new value. Once a new value is entered,	Update the employee profile information into the database, or

	4. Phone Number 5. Password 6. <a href="#">Go Back</a>	save it and show this menu again. Do this until the user chooses 6 to go back.	go back to <b>Employee: Profile page</b>
--	--	--	--

#### Employee: View Customer Profile

Display	Menu	Input	Output
<p>Ask user to input the following detail in order to show the described output followed by an option to go back as shown under "Menu".</p> <p>A. Customer email address</p>	1. Go back	<p>Enter customer email address.</p> <p>After entering customer detail and showing the output, choose option 1 from the Menu</p>	<p>Display the following details followed by the menu.</p> <p>A. Customer ID  B. Name  C. Address  D. Email Address  E. Phone Number  F. List of All Cars (and their details)</p> <p>At the end, show menu to provide an option to go back to the <b>appropriate Landing page</b></p>

#### Receptionist: Register Car

Display	Menu	Input	Output
<p>Ask user to input the following details in the order shown below, followed by the menu.</p> <p>A. Customer email address  B. Licence plate  C. Purchase date  D. Make</p>	1. <a href="#">Register</a> 2. <a href="#">Cancel</a>	<p>Take input from user about his car details. All details except the last service date are mandatory. The user may choose to not provide the last service date (save NULL)</p> <p>After entering details A-H, choose option 1-2 from the Menu</p>	<p>If the user chooses 1 record all the information of car in the database and register the car with the user associated with the supplied email address. Then, go back to <b>Receptionist: Landing page</b></p> <p>If the user chooses 2,</p>



E. Model F. Year G. Current mileage H. Last Service Date			discard all input and directly go to <b>Receptionist: Landing page</b>
---	--	--	---

#### Receptionist: Service History

Display	Menu	Input	Output
<p>Ask user to input the following detail in order to show the described output followed by an option to go back as shown under "Menu".</p> <p>A. Customer email address</p>	1. <a href="#">Go Back</a>	<p>Enter customer email address.</p> <p>After entering customer detail and showing the output, choose option 1 from the Menu</p>	<p>Display the following details for each service provided to the given customer followed by the menu.</p> <p>A. Service ID B. License Plate C. Service Type D. Mechanic Name E. Service Start Date/Time F. Service End Date/Time (expected or actual) G. Service Status (Pending, Ongoing, or Complete)</p> <p>At the end, show menu to provide an option to go back to the <b>Receptionist: Landing page</b>.</p>

#### Receptionist: Schedule Service

Display	Menu	Input	Output
Ask user to input the following details in	1. <a href="#">Schedule Maintenance</a>	Take input regarding user and his car. All	Display the correct page or go back to

the order shown below, followed by the menu.  A. Customer email address B. License Plate C. Current Mileage D. Mechanic Name	2. <a href="#">Schedule Repair</a> 3. <a href="#">Go Back</a>	details except mechanic name are mandatory. The user may choose to not provide the mechanic name.  After entering details A-D, choose option 1-3 from the Menu	the <b>Receptionist: Landing page</b>
---	--	--	---------------------------------------

#### Receptionist: Schedule Maintenance (Page 1)

Display	Menu	Input	Output
Display the menu	1. <a href="#">Find Service Date</a> 2. <a href="#">Go Back</a>	Enter Choice (1-2)	<p>If the user chooses 1 find two earliest available service dates after validating the car details input previously, and go to <b>Receptionist: Schedule Maintenance (Page 2) page</b></p> <p>If a service date can not be found due to insufficient parts, place an order (if required) and show a message to the user asking him to try again after a specific date (calculated based on when the order will be fulfilled). Do not place an order if an existing order can fulfill the requirement, but show a message to the user asking him to try again after a specific date. After showing the</p>

			<p>message, go back to <b>Receptionist: Schedule Service page</b></p> <p>If the user chooses 2, go to <b>Receptionist: Schedule Service page</b></p>
--	--	--	--

#### Receptionist: Schedule Maintenance (Page 2)

Display	Menu	Input	Output
Display the two identified service dates and mechanic name found based on the inputs in the previous page to the user, followed by the menu.	<ol style="list-style-type: none"> <li><a href="#">Schedule on Date</a></li> <li><a href="#">Go Back</a></li> </ol>	<p>Enter Choice (1-2)</p> <p>If the user chooses 1, ask him to pick one of the two dates shown.</p>	<p>If the user chooses 1 create a new service record for maintenance service on the chosen date, and go back to <b>Receptionist: Schedule Service page</b></p> <p>If the user chooses 2, go to <b>Receptionist: Schedule Maintenance (Page 1) page</b></p>

#### Receptionist: Schedule Repair (Page 1)

Display	Menu	Input	Output
Display the menu to allow the user to pick on of the possible problems.	<ol style="list-style-type: none"> <li><a href="#">Engine knock</a></li> <li><a href="#">Car drifts in a particular direction</a></li> <li><a href="#">Battery does not hold charge</a></li> <li><a href="#">Black/unclean exhaust</a></li> <li><a href="#">A/C-Heater not working</a></li> </ol>	Enter Choice (1-8)	<p>If the user chooses 1-7, create a diagnostic report showing the list of causes and parts needed to resolve them based on the problem selected. This report is to be displayed next. Also find two earliest available repair dates</p>

	6. <a href="#">Headlamps/Tail lamps not working</a> 7. <a href="#">Check engine light</a> 8. <a href="#">Go back</a>		<p>after validating the car details input previously, and go to <b>Receptionist: Schedule Repair (Page 2) page</b></p> <p>If a repair date can not be found due to insufficient parts, place an order (if required) and show a message to the user asking him to try again after a specific date (calculated based on when the order will be fulfilled). Do not place an order if an existing order can fulfill the requirement, but show a message to the user asking him to try again after a specific date. After showing the message, go back to <b>Receptionist: Schedule Service</b></p> <p>If the user chooses 2, go to <b>Receptionist: Schedule Service</b></p>
--	--	--	--

#### Receptionist: Schedule Repair (Page 2)

Display	Menu	Input	Output
Display the diagnostic report and the two identified service dates and mechanic name found based on the inputs in the previous	1. <a href="#">Repair on Date</a> 2. <a href="#">Go Back</a>	<p>Enter Choice (1-2)</p> <p>If the user chooses 1, ask him to pick one of the two dates shown.</p>	<p>If the user chooses 1 create a new service record for repair service on the chosen date, and go back to <b>Receptionist:</b></p>

page to the user, followed by the menu.			<b>Schedule Service page</b>  If the user chooses 2, go to <b>Receptionist: Schedule Repair (Page 1) page</b>
---	--	--	---

#### Receptionist: Reschedule Service (Page 1)

Display	Menu	Input	Output
<p>Ask user to input the following detail in order to show the described output followed by an option to go back as shown under "Menu".</p> <p>A. Customer email address</p>	<ol style="list-style-type: none"> <li><a href="#">Pick a service</a></li> <li><a href="#">Go Back</a></li> </ol>	<p>Enter customer email address.</p> <p>After entering customer detail and showing the output, choose option 1-2 from the Menu</p> <p>If the user chooses 1, ask him to enter one of the service IDs to select the service to be rescheduled and then find two earliest available maintenance/repair dates that are at least one day after the current service date, and go to <b>Receptionist: Reschedule Service (Page 2) page</b></p>	<p>Display the following details for all upcoming services for this customer, followed by the menu</p> <p>A. License Plate B. Service ID C. Service Date D. Service Type (Maintenance/Repair) E. Service Details (Service A/B/C or Problem)</p> <p>At the end, show menu to provide an option to go back to the <b>Receptionist: Landing page</b>.</p>

#### Receptionist: Reschedule Service (Page 2)

Display	Menu	Input	Output
<p>Display the two identified service dates and mechanic</p>	<ol style="list-style-type: none"> <li><a href="#">Reschedule Date</a></li> <li><a href="#">Go Back</a></li> </ol>	<p>Enter Choice (1-2)</p> <p>If the user chooses 1, ask him to pick one of the two dates shown.</p>	<p>If the user chooses 1, reschedule his existing service to the chosen date making necessary</p>

name, followed by the menu.			<p>adjustments to the parts commitment in the inventory, and go back to</p> <p><b>Receptionist: Landing page</b></p> <p>If the user chooses 2, go to <b>Receptionist: Reschedule Service (Page 1) page</b></p>
-----------------------------	--	--	--

### Receptionist: Invoices

Display	Menu	Input	Output
<p>Ask user to input the following detail in order to show the described output followed by an option to go back as shown under "Menu".</p> <p>A. Customer email address</p>	<p>1. <a href="#">Go back</a></p>	<p>Enter customer email address.</p> <p>After entering customer detail and showing the output, choose option 1 from the Menu</p>	<p>Display the following details for all the services for this customer that are complete followed by the menu.</p> <p>A. Service ID B. Service Start Date/Time C. Service End Date/Time D. Licence Plate E. Service Type F. Mechanic Name G. Parts Used in service with cost of each part H. Total labor hours I. Labor wages per hour J. Total Service Cost</p> <p>At the end, show menu to provide an option to go back to the <b>Receptionist: Landing page</b></p>

## Receptionist: Daily Task-Update Inventory

Display	Menu	Input	Output
Display the menu after performing the actions described under “output”	1. <a href="#">Go Back</a>	Enter Choice (1)	<p>Run a task to update the counts of parts to be used that day, basically adjusted (decrementing them) to reflect the fact the parts will be removed and actually used that day.</p> <p>At the end, show a message displaying whether the task finished running successfully or not. Then show the menu to provide an option to go back to the</p> <p><b>Receptionist: Landing page</b></p>

## Receptionist: Daily Task-Record Deliveries

Display	Menu	Input	Output
Display the menu	1. Enter Order ID (CSV) 2. <a href="#">Go Back</a>	<p>Choose 1 to enter a comma separated list of order ids to be marked as delivered.</p> <p>Choose 2 to go back.</p>	<p>Run a task to update the status of any pending orders whose items have arrived to “complete” and update their counts, and then show a message displaying whether the task ran successfully or not.</p> <p>If the user chooses 2, go back to</p>

			<b>Receptionist: Landing page</b>  Just before going back, change the status of any pending orders which did not arrive and are past the delivery window to “delayed” and generate a notification to the manager.
--	--	--	---

#### Manager: Add New Employees

Display	Menu	Input	Output
Ask user to input the following details in the order shown below, followed by the menu.  A. Name B. Address C. Email Address D. Phone Number E. Role F. Start Date G. Compensation (\$)	1. <a href="#">Add</a> 2. <a href="#">Go Back</a>	Take input from user about the new employee.  After entering details A-F, choose option 1-2 from the menu	If the user chooses 1, create a new employee record for this service center and display the new employee ID number. Set the default password of 12345678 for this employee.  He should be allowed to create accounts for only receptionists and mechanics. Also a service center can not have more than one receptionist.  After creating the account, show a confirmation message and go back to <b>Manager: Landing page</b>



			If the user chooses 2, discard all input and go back to the <b>Manager: Landing page</b>
--	--	--	--

#### Manager: Payroll

Display	Menu	Input	Output
<p>Ask user to input the following detail in order to show the described output followed by an option to go back as shown under "Menu".</p> <p>A. Employee ID</p>	<p>1. <a href="#">Go back</a></p>	<p>Enter the employee ID.</p> <p>After entering employee ID and showing the output, choose option 1 from the Menu</p>	<p>Display the following details for each paycheck paid to this employee followed by the menu.</p> <p>A. Paycheck date  B. Pay period  C. Employee ID  D. Employee Name  E. Compensation (\$)  F. Compensation Frequency (monthly/hourly)  G. Units (# of hours/days)  H. Earnings (Current)  I. Earnings (Year-to-date)</p> <p>At the end, show menu to provide an option to go back to the <b>Manager: Landing page</b></p>

#### Manager: Inventory

Display	Menu	Input	Output
<p>Display the following details for each part</p>	<p>1. <a href="#">Go Back</a></p>	<p>Enter Choice (1)</p>	<p>Go back to <b>Manager: Landing page</b></p>

<p>in the inventory followed by the menu.</p> <p>A. Part ID</p> <p>B. Part Name</p> <p>C. Quantity</p> <p>D. Unit Price</p> <p>E. Minimum Quantity Threshold</p> <p>F. Minimum Order Threshold</p>			
--	--	--	--

#### Manager: Orders

Display	Menu	Input	Output
Display the menu	<ol style="list-style-type: none"> <li>1. <a href="#">Order History</a></li> <li>2. <a href="#">New Order</a></li> <li>3. <a href="#">Go Back</a></li> </ol>	Enter choice (1-3)	Display the correct page or go back to <b>Manager: Landing page</b>

#### Manager: Order History

Display	Menu	Input	Output
<p>Display the following details for each order followed by the menu.</p> <p>A. Order ID</p> <p>B. Date</p> <p>C. Part Name</p> <p>D. Supplier Name</p> <p>E. Purchaser Name</p> <p>F. Quantity</p> <p>G. Unit Price</p> <p>H. Total Cost</p> <p>I. Order Status</p>	<ol style="list-style-type: none"> <li>1. <a href="#">Go Back</a></li> </ol>	Enter Choice (1)	Go back to <b>Manager: Orders page</b>

## Manager: New Order

Display	Menu	Input	Output
<p>Ask user to input the following details in the order shown below, followed by the menu.</p> <p>A. Part ID B. Quantity</p>	<p>1. <a href="#">Place Order</a> 2. <a href="#">Go Back</a></p>	<p>Take input regarding the parts to be ordered.</p> <p>After entering details A-B, choose option 1-2 from the Menu</p>	<p>If the user chooses 1, a new order record will be created to obtain the part from its authorized distributor. Details such as cost, order date, etc. should be automatically calculated and the order status must be set as "pending".</p> <p>After placing the order, show a confirmation message with the order ID and estimated date of fulfillment before going back to <b>Manager: Orders Page</b></p> <p>If the user chooses 2, discard all input and go to <b>Manager: Orders Page</b></p>

## Manager: Notifications

Display	Menu	Input	Output
<p>Display the following details followed by the menu.</p> <p>A. Notification ID B. Notification Date/Time C. Order ID D. Supplier Name</p>	<p>1. <a href="#">Order ID</a> 2. <a href="#">Go back</a></p>	<p>Choose 1 to enter an order ID to view more details.</p> <p>Choose 2 to go back.</p>	<p>If the user Chooses 1, go to <b>Manager: Notifications Detail page</b>.</p> <p>Choose 2 to go back to <b>Manager: Landing page</b></p>

E. Expected Delivery Date			
F. Delayed by (# of days)			

#### Manager: Notifications Detail

Display	Menu	Input	Output
<p>Display the following details for the selected order followed by the menu.</p> <p>A. Order ID B. Date C. Part Name D. Supplier Name E. Purchaser Name F. Quantity G. Unit Price H. Total Cost I. Order Status</p>	1. <a href="#">Go Back</a>	Enter Choice (1)	Go back to <b>Manager: Notifications page</b>

#### Manager: New Car Model

Display	Menu	Input	Output
<p>Ask user to input the following details in the order shown below, followed by the menu.</p> <p>A. Make B. Model C. Year D. Service A:     a. Miles     b. Months     c. Parts List E. Service B</p>	<p>1. <a href="#">Add car</a> 2. <a href="#">Go Back</a></p>	<p>Take input from user about the new car model.</p> <p>After entering details A-F, choose option 1-2 from the menu</p>	<p>When entering part list for Service A, all parts that are required must be input using their part IDs (a sample list will be given separately). When entering part list for Service B, only those parts that are different from Service A must be input. For Service C, input only those parts that are different from Service B.</p>

<ul style="list-style-type: none"> <li>a. Miles</li> <li>b. Months</li> <li>c. Additional Parts</li> </ul> <p>F. Service C</p> <ul style="list-style-type: none"> <li>a. Miles</li> <li>b. Months</li> <li>c. Additional Parts</li> </ul>			<p>From the menu, if the user chooses 1, save the entered information into database to add a new car model for service. Then go to <b>Manager: Landing page</b>.</p> <p>If the user chooses 2, discard all input and go back to the <b>Manager: Landing page</b>.</p>
---	--	--	---

#### Manager: Car Service Details

Display	Menu	Input	Output
<p>Display the following details for all car models registered in the system followed by the menu.</p> <ul style="list-style-type: none"> <li>A. Make</li> <li>B. Model</li> <li>C. Year</li> <li>D. Service A: <ul style="list-style-type: none"> <li>a. Miles</li> <li>b. Months</li> <li>c. Parts List</li> </ul> </li> <li>E. Service B <ul style="list-style-type: none"> <li>a. Miles</li> <li>b. Months</li> <li>c. Additional Parts</li> </ul> </li> <li>F. Service C <ul style="list-style-type: none"> <li>a. Miles</li> <li>b. Months</li> <li>c. Additional Parts</li> </ul> </li> </ul>	<p>1. <a href="#">Go Back</a></p>	<p>Enter Choice (1)</p>	<p>Go back to the <b>Manager: Landing page</b>.</p>

### Manager: Service History

Display	Menu	Input	Output
<p>Display the following details for all cars that were serviced at this service center followed by the menu.</p> <p>A. Service ID  B. Customer Name  C. License Plate  D. Service Type  E. Mechanic Name  F. Service Start Date/Time  G. Service End Date/Time (expected or actual)  H. Service Status (Pending, Ongoing, or Complete)</p>	<p>1. <a href="#">Go Back</a></p>	<p>Enter Choice (1)</p>	<p>Go back to the <b>Manager: Landing page</b>.</p>

### Manager: Invoices

Display	Menu	Input	Output
<p>Display the following details for all the services that are complete at this service center followed by the menu.</p> <p>A. Service ID  B. Customer Name  C. Service Start Date/Time</p>	<p>1. <a href="#">Go back</a></p>	<p>Enter Choice (1)</p>	<p>Go back to the <b>Manager: Landing page</b>.</p>

D. Service End Date/Time			
E. Licence Plate			
F. Service Type			
G. Mechanic Name			
H. Parts Used in service with cost of each part			
I. Total labor hours			
J. Labor wages per hour			
K. Total Service Cost			