

Independent University, Bangladesh

CSE 213 (Object Oriented Programming)

Section: 4

Project Title: Simulating operations of an Automobile workshop such as Navana 3S

TOUSHIF HOSSAIN ID:1920404

*Department of Computer Science and Engineering*

Users:

U1) Customer (car owner)

U2) Technician

U3) Supplier

U4) Store Manager

U5) Human Resource Manager

Goals:

U1) Customer (car owner)

G1) Customer can see the workload of technician & make an appointment

G2) Customer can communicate with technician & ask for solution of problem / recommendation of upgrade from Technician

G3) Order for pick-up of vehicle (in case it is totally / partially immobilized)

G4) Complain to Store Manager & Reply of feedback of the complain / E-mail from the HR

G5) Download the invoice of any work whenever the customer wants

U2) Technician

G1) check for list of materials available in inventory & arrival date of new goods then report to Store Manager for any goods to order

G2) Communicate with the Customer & Refer the Customer for asked recommendation

G3) Give attendance & record the start time of the work &record the end time of the work

G4) Report of any emergency leave / Apply for any leave of absence

G5) Status of Technician (if any warning received from the Store Manager or Asked to join Training by HR Dept. / Any leave of absence granted)

U3) Supplier

G1) Can see the ordered products and their delivery due time

G2) Can see the inventory (List of materials available) of the company

G3) Mark as Delivered or Canceled any ordered product

G4) Suggest any product to the company

G5) See previously failed to deliver product in due time (& warning)

U4) Store Manager

G1) View & respond to customer complains

G2) Overview the products recommended by the technician and supplier, based on the requirement and previous experience on product knowledge Order / Cancel goods

G3) Sending out monthly email to the registered customers if there is any upgrade available for their car model

G4) Overview any pick-up request by the customer, verify the case & send the necessary pick-up vehicle (depending on the type of the car)

G5) Report of any emergency leave / Apply for any leave of absence

U5) Human Resource Manager

G1) Add Technician & Store Manager & Supplier by inputting details

G2) Maintain technicians by training the warned ones

G3) Identify current and future customer requirements by establishing connection with registered and frequent customers to understand service requirements

G4) View any leave of absence asked by the technician & Store Manager grant the leave based on the reason.

G5) Warn / remove any technician if the attendance / leave of absence is high and the reasons are not strong enough

Workflow:

U1) Customer (car owner)

G1) Customer can see the workload of technician & make an appointment

W1) Sign-up - for singing up the customer have to provide his 1) Name 2) Car model 3) Car Registration number 4) E-mail 5) Password

W2) log-in - 1) Car Registration number 2) Password

W2) From the dashboard select the option – Make appointment

W3) If there is already appointment taken: show the date of appointment / the progress of work, if the work has been done and the vehicle is ready to be taken from workshop

Else:

W4) View the workload of technician in the calendar form & if any technician is free, the customer can book for an appointment on that date

G2) Customer can communicate with technician & ask for solution of problem / recommendation of upgrade from Technician

W1) Sign-up - for singing up the customer have to provide his 1) Name 2) Car model 3) Car Registration number 4) E-mail 5) Password

W2) log-in - 1) Car Registration number 2) Password

W3) From the dashboard select the option – Communicate with a Technician

W4) if there is already a communication on going then they will be redirected to that conversation

Or:

W5) The user will be prompted (with a pop-up) for choosing - Repair Recommendation / Upgrade Recommendation

W6) if the user chooses Repair Recommendation, then they will be given a page to fill up; they will be asked to describe the problem if / as best as they can

W7) they can view the reply of the technician and carry on the conversation

G3) Order for pick-up of vehicle (in case it is totally / partially immobilized)

W1) log-in - 1) Car Registration number 2) Password

W2) From the dashboard select the option – Order for pick-up

W3) Share the location of the pick-up point

W4) Create a note regarding how the accident took place & how much damage caused

G4) Complain to Store Manager & Reply of feedback of the complain / E-mail from the HR

W1) log-in - 1) Car Registration number 2) Password

W2) From the dashboard select the option – Complain & see the feedback of complain

W3) Check if there is already any pending complain to be handled or any response is provided or If there is any E-mail from the HR

If none:

W4) Ask for type of complain: 1) Service related 2) product related 3) Recommendation / Upgrade related

` W5) Create a note regarding the problem, invoice attach (optional), and amount asking to be refunded

If there is any:

W6) See the email and carry forward the conversation

G5) Download the invoice of any work whenever the customer wants

W1) log-in - 1) Car Registration number 2) Password

W2) From the dashboard select the option – Download invoice

W3) Select the date of appointment

W4) Check if the invoice is the correct one & download

U2) Technician

G1) check for list of materials available in inventory & arrival date of new goods then report to Store Manager for any goods to order

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Check if the ID is in the defaulter list.

If not:

W3) Show Dashboard – 1) List of materials available & arrival of new goods

W4) Check list of materials available & Arrival of new goods

W5) If technician does not find any required good, can report for that product to the store manager

G2) Communicate with the Customer & Refer the Customer for asked recommendation

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Check if the ID is in the defaulter list.

W3) Show Dashboard – Select Customer Communication

W4) Check if there is any previous conversation pending for any answer

If there is any unfinished conversation:

W5) Redirect to that conversation

If not:

W6) Check if any new message is there and show the message & start conversation

G3) Give attendance & record the start time of the work &record the end time of the work

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Check if the ID is in the defaulter list.

If not:

W3) Show Dashboard – Attendance & Start work / End Work

W4) Record Attendance and provide option for Start Work / End Work

W5) Based on the technician selection take the attendance

W6) If the technician select Start Work : Ask for Customer Name/ Car registration number and record Starting time of the work

W7) If the technician select End Work : Ask for Customer Name/ Car registration number and record Ending time of the work

G4) Report of any emergency leave / Apply for any leave of absence

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Check if the ID is in the defaulter list.

If not:

W3) Show Dashboard – Leave request & Approval

Show three options:

W4) Emergency leave / Apply for leave of absence/ leave of absence approval

If selected Emergency leave:

W5) Ask for the reason & Record the date & time of leave

W6) If any work is pending or not

If selected apply for Leave of absence:

W7) Ask for the number of days

W8) Ask for the reason

G5) Status of Technician (if any warning received from the Store Manager or Asked to join Training by HR Dept. / Any leave of absence granted)

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Check if the ID is in the defaulter list.

W3) Show Dashboard – Status

W4) Show any warning – If there is any warning ( from Store manager ) then the technician have the option to leave a note to explain himself

W5) Show the warning for attending a training session by HR

W6) Leave of absence granted or denied – If the application for leave of absence is not granted, the technician have one last chance to explain if that is necessary for him to get the leave

U3) Supplier

G1) Can see the ordered products and their delivery due time

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Check if the ID is in the defaulter list.

W3) Show Dashboard – Ordered product

W4) Show the catalog of the products remaining to be delivered

G2) Can see the inventory (List of materials available) of the company

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Check if the ID is in the defaulter list.

W3) Show Dashboard – Inventory

W4) See the items available on the inventory of the company

G3) Mark as Delivered or Canceled any ordered product

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Check if the ID is in the defaulter list.

W3) Show Dashboard – Check Delivered or Cancel

Show two options:

1) Deliver 2) Cancel

If selected:

1) Deliver

W4) \*) Ask for the order number

\*) Ask to input the date of delivery

2) Cancel

W5) \*) Ask for the order number

\*) Ask for the reason of cancellation

G4) Suggest any product to the company

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Check if the ID is in the defaulter list.

W3) Show Dashboard – Suggest a product

W4) Ask for the name of the product, it’s model number & it’s uses also how will it be beneficial to the workshop

G5) See previously failed to deliver product in due time (& warning)

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Check if the ID is in the defaulter list.

W3) Show Dashboard – Failed to deliver

W4) Receive the warning that there was a delivery to be sent in the given time

W5) Add a note for the reason of late to deliver and ask if the items are still needed or not

W6) Show if the products are still needed and should be delivered as soon as possible

U4) Store Manager (for the store supervision & customer complaint)

G1) View & respond to customer complains

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Show Dashboard – Customer Complain

W3) View the complain

W4) If it is related to product fault issue: warn the supplier and ask the customer to bring the car for a replacement or if there is any fault in repairing or service: Repay the customer & warn the technician

G2) Overview the products recommended by the technician and supplier, based on the requirement and previous experience on product knowledge Order / Cancel goods

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Show Dashboard – See recommendation & Order Product

W3) View the recommendation from the technician & Supplier

W4) Check the inventory

W5) Order the necessary products

G3) Sending out monthly email to the registered customers if there is any upgrade available for their car model

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Show Dashboard – Send promotional E-mail

W3) From the customers who are frequent in upgrading their cars, see if there is any new item in the inventory available for their upgrade

W4) If there is any: Send them an email regarding the upgrade with the details of the product and how it would benefit them (their vehicle)

G4) Overview any pick-up request by the customer, verify the case & send the necessary pick-up vehicle (depending on the type of the car)

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Show Dashboard – Pick-up car request

W3) See the location of the accident

W3) Verify if the car damage over threshold level

W4) Choose the type of pick-up needed based on the model of the car

W5) Send the details to the pick-up service and tell them to go and pick-up the Customer’s car

G5) Report of any emergency leave / Apply for any leave of absence

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Show Dashboard – Leave request & Approval

W3) If there is any pending approval/ granted leave request, show that.

Show three options:

W4) Emergency leave / Apply for leave of absence/ leave of absence approval

If selected Emergency leave:

W5) Ask for the reason & Record the date & time of leave

If selected apply for Leave of absence:

W6) Ask for the number of days

W7) Ask for the reason

U5) HR department

G1) Add Technician & Store Manager & Supplier by inputting details

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Show Dashboard – Add Employee

W3) Ask For employee type: 1) Technician 2) Store Manager 3) Supplier

W3) Check if there are any technicians fired before

If Technicians have been fired:

W4) Show the application of the technicians that have applied for job

W5) Acceptance/ Rejection of application (Add technician based on this)

If Technicians have not been fired:

W6) Show that there is no need for new technicians to be recruited

G2) Maintain technicians by training the warned ones

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Show Dashboard – Train technicians

W3) Check for the technicians which are under warning by the store manager

W4) Select those technicians and give them necessary training schedule note

G3) Identify current and future customer requirements by establishing connection with registered and frequent customers to understand service requirements

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Show Dashboard – Send and Check Customer analysis E-mail

If there is any reply from the Customer

W3) Check that and give necessary reply or take action

If there is no reply from the Customer

W4) Select the customers who take frequent service

W5) E-mail them asking about any improvement needed by the service, (if they have complained to the Store Manager & did not get any respond, or if there were any service asked which was not handled properly)

G4) View any leave of absence asked by the technician & Store Manager grant the leave based on the reason.

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Show Dashboard – Check Leave of Absence Application

W3) Show the note of leave of absence if there is any emergency leave & the reason does not seem fair enough warn the technician

W4) Check the Leave of absence request from the technician / Store Manager and based on the days, previously asked for leave of absence & reason Accept or Reduce or Reject the leave of absence

G5) Warn / remove any technician if the attendance / leave of absence is high and the reasons are not strong enough

W1) log-in – 1) ID number (Provided by the company) 2) Password (Provided by the company)

W2) Show Dashboard – Warn / Remove Technician

W3) See the number of warnings received by the technicians and their valid reasons if provided.

W4) Decide if Warning will be given or Technician will be removed

W5) If Technician is removed then there will be an empty slot for to add new Technician or If warned the Warning message will be noted on the technicians field