

Team 9

Project Phase 1 Report

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Data formatting

1. User:

password: Varchar, 6-18 alphanumeric characters, not null

2. Rental customer:

email: Varchar, length 36, format 'xxx@xxx', not null

name: First Name, Varchar length 25; Last Name, Varchar length 40, not null

home phone: numeric chars, in the format of 'xxx-xxx-xxxx', not null

work phone: numeric chars, in the format of 'xxx-xxx-xxxx', not null

address: Varchar, length 50, not null

create_date: Date 'YYYY-MM-DD', not null

credit card: card number: numbers only, 15 or 16 chars; expiration date: 'mm/yy', not null

3. Clerk:

Clerk ID: Varchar, max 16 alphanumeric chars, not null

4. Reservation

reservation number: Varchar, 16-30 alphanumeric chars, not null

starting date: Date, 'YYYY-MM-DD', not null

ending date: Date, 'YYYY-MM-DD', not null

created_date: Date, 'YYYY-MM-DD', not null

5. Tool

tool ID number: Int, not null

abbreviated description: Varchar, max 50 chars, not null

full description: Varchar, max 500 chars, not null

deposit amount: Float, not null

purchase price: Float, not null

rental price/day: Float, not null

tool type: {hand, construction, power}, not null

power tool accessories: max 50 chars, nullable

sold_date: Date, 'YYYY-MM-DD', nullable

6. service request

starting date: Date, 'YYYY-MM-DD', not null

ending date: Date, 'YYYY-MM-DD', not null

cost: Float, not null

Constraints

1. Clerk profile

Clerk ID must be unique

2. Customer profile

Email must be unique for each customer.

Password must contain both letter and number.

Create_date will be set when a new customer profile is created.

3. Check availability

Only tools that are available during the checking period of time will be shown to customer.

4. Reservation

Requested start date must be no earlier than requested end date.

Tools cannot be reserved if they were already reserved over the same time period.

Tools cannot be reserved if they were scheduled for service over the same time period.

Tools that are sold already cannot be reserved.

The number of tools to be reserved must be between 1 to 50, inclusively, for each reservation.

Create_date will be set when a new reservation is created.

5. Service request

Requested start date must be no earlier than requested end date.

The cost of service cannot be more than purchase price of the tool.

Create_date will be set when a new service request is created.

6. Sell tool

Tool has to be put for sale when a new tool is added to database.

The price of the tool for sale must be marked as half of the purchase price.

The tool must be marked with sold_date when it is sold..

Task Decomposition

1. log in

two look ups of user-name and password for a customer/clerk
both are read only
both have the same frequency
consistency is critical
must be done in certain order
both need to be done, no mother task is needed
no need to decompose

2. create customer profile

insert email address, password, name, home phone, work phone, address, create_date
for a new customer
all are write-only
all are enabled by user creating new profile
one schema construct is needed
consistency is not critical
they can be done in any order
all must be done, no mother task is needed
no need to decompose

3. create clerk profile

insert Clerk ID, password, name
all are write-only
all are enabled by user creating new profile
one schema construct is needed
consistency is not critical
they can be done in any order
all must be done, no mother task is needed
no need to decompose

4. view profile

two lookups of customer information and reservation history for a customer
both are read only
both are enabled by login
two different schema constructs are needed
consistency is critical
they can be done in any order
both must be done, so mother task is needed
shall be decomposed into two subtasks: look up customer information and look up reservation history

5. make reservation

look up tool availability, insert/delete/update tools, calculate total
read and write
all are enabled by user logging in and making a reservation
different schema constructs are needed
consistency is critical
they can be done in certain order
all must be done, so mother task is needed
shall be decomposed into four subtasks: look up tool availability, add tool, remove tool,
and calculate total

6. submit reservation

insert reservation information
write only
enabled by making a reservation
only one schema construct needed
consistency is not considered
order is not critical
must be done
no need to decompose

7. reservation summary

look up reservation information
read only
enabled by submit reservation
only one schema construct needed
consistency is not critical
order is not critical
must be done, no mother task needed
no need to decompose

8. reset reservation

no need to decompose

9. check tool availability

look up tool ID, start date, end date
all three are read only
all are enabled by checking tool availability request
different schema constructs needed
consistency is critical
they can be done in any order
all three must be done, mother task is needed
shall be decomposed to three subtasks: look up reservation information, look up tool
information, look up service information

10. view tool details

look up tool ID, abbr. description, full description, deposit, price/day
read only
enabled by checking tool ID
same schema construct is needed
consistency is not critical
they can be done in any order
mother task is not needed
no need to decompose

11. show pick-up reservation

look up reservation number, tool ID, abbr. description and deposit
all are read only
all are enabled by making a reservation
same schema construct needed
consistency is critical
they can be done in any order
all must be done, mother task is not needed
no need to decompose

12. complete pick-up reservation

insert credit card number, expiration date, look up reservation information
read and write
both enabled by show reservation
different schema constructs needed
consistency is not critical
must be done in certain order
both must be done, mother task is needed
shall be decomposed into two subtasks: insert credit card information and look up reservation information

13. complete drop-off reservation

look up reservation information
read only
enabled by dropping off reservation
same schema construct needed
consistency is not critical
order is not critical
must be done, mother task is not needed
no need to decompose

14. add new tools/accessories

insert tool information
write only
enabled by adding new tools/accessories
same schema needed
consistency is not critical
can be done in any order
must be done, mother task is not needed
no need to decompose

15. sell tool

look up tool ID and update tool price and sold_date
read and write
enabled by adding tool and selling tool request
different schema constructs needed
consistency is critical
order is critical
both must be done, mother task is needed
shall be decomposed into two subtasks: look up tool ID and update tool price

16. service order request

update service order request
write only
enabled by service order request
same schema construct needed
consistency is not critical
order is not critical
must be done, mother task is not needed
no need to decompose

17. generate reports

look up customer information, reservation information, tool inventory and clerk information
read only
enabled by submit reservation
different schema constructs needed
consistency is critical
order is critical
must be done, mother task is needed
shall be decomposed into four subtasks: look up customer information, reservation information, tool inventory and clerk information

ABSTRACT CODE:

1. Login

While no buttons are pushed, do nothing.

When ENTER button is pushed:

{ If "Clerk" radiobutton is selected:

{ Find the current Clerk using the Clerk ID and compare password with input.

 If found and matched: display the Clerk Main Menu.

 If Clerk ID not found, display "create clerk profile" screen.

 else if password does not match, pop up "wrong password"}

if "Customer radiobutton is selected:

 { Find the current customer using the Customer Email and compare password with input.

 If found and matched, display the Customer Main Menu.

 If not found, display the "Create a Profile" screen.

 else if password does not match, pop up "wrong password"}

}

2. Create Clerk Profile

while no buttons are pushed, do nothing.

While SUBMIT button is pushed, do the following:

{if any box is left blank: display "please fill in all boxes".

 if all boxes are filled with correct formatting: Add Clerk ID, password, First Name, Last Name and Create_date. Display "Customer Main Menu".

}

3. Create Customer Profile

While no buttons are pushed, do nothing.

While SUBMIT button is pushed, do the following:

{if any box is left blank: display "please fill in all boxes".

 if all boxes are filled with correct formatting: Add email, password, First Name, Last Name, Home Phone, Work Phone, Address and Create_date. Display "Customer Main Menu".

}

4. Customer Main Menu

While no buttons are pushed, do nothing.

While a button is pushed, do the following:

{If VIEW PROFILE: display "view profile" screen.

 If CHECK TOOL AVAILABILITY: display "check availability" screen.

 If MAKE RESERVATION: display "make reservation" screen.

 If EXIT: display "login" screen.

}

5. View Profile

Find the current customer using the Customer Email.
 Display Email Address, Name, Home Phone, Work Phone, Address.
 Find each reservation for the customer using the Reservation Number:
 {Display Reservation Number, Start Date, End Date Total Deposit (from most recent to oldest).
 Find all tools in each Reservation using Tool ID Number.
 Display Abbreviated description of all tools, and Total Deposit.
 Find clerk who handled the reservation.
 Display the First Name of the PickUp Clerk and Drop-Off Clerk.
 }

6. **Make Reservation**

While no buttons are pushed, do nothing.
 While a selection is made in the TYPE OF TOOL drop down menu, do the following:
 {If POWER TOOL: populate TOOL drop down with the available power tool in the inventory; display the Tool Number, Abbreviated Description, Price/day.
 If HAND TOOL: populate TOOL drop down with the available hand tool in the inventory; display the Tool Number, Abbreviated Description, Price/day.
 If CONSTRUCTION TOOL: populate TOOL drop down with the available construction tool in the inventory; display the Tool Number, Abbreviated Description, Price/day.
 }
 While a button is pushed, do the following:
 {If ADD MORE TOOLS: display the boxes with drop down menu for another tool.
 If REMOVE LAST TOOL: remove the last boxes with drop down menu.
 If CALCULATE TOTAL: calculate total rent price and total deposit; display reservation summary with Tools' Abbreviated Description, Start Date, End Date, Total Rental Price, Total Deposit.
 }

7. **Submit/Reset Reservation**

While no buttons are pushed, do nothing.
 While a button is pushed, do the following:
 {If SUBMIT: Assign reservation number. Add reservation with Create_date. Display reservation summary with Reservation Number, Tools' Abbreviated Description, Start Date, End Date, Total Rental Price, Total Deposit.
 If RESET: Display the "Make Reservation" screen.
 }

8. **Check tool availability**

While no buttons are pushed, do nothing.
 While SUBMIT button is pushed, do the following:


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{If HAND TOOL radiobutton is selected: populate hand tools not reserved during the
input Starting Date and Ending Date. Display the "Tool availability" screen with Tool ID,
Abbreviated Description, Deposit, and Price/day.
If CONSTRUCTION EQUIPMENT radiobutton is selected: populate construction tools
not reserved during the input Starting Date and Ending Date. Display the "Tool
availability" screen with Tool ID, Abbreviated Description, Deposit, and Price/day.
If POWER TOOL radiobutton is selected: populate power tools not reserved during the
input Starting Date and Ending Date. Display the "Tool availability" screen with Tool ID,
Abbreviated Description, Deposit, and Price/day.
}

```

9. Tool availability

While no buttons are pushed, do nothing.

While a button is pushed, do the following:

```

{If VIEW DETAILS: Find tool using the input Tool ID number. Display Full Description of
the tool.
If BACK TO MAIN: display "Customer Main Menu"
}

```

10. Clerk Main Menu

While no buttons are pushed, do nothing.

While a button is pushed, do the following:

```

{If PICK UP RESERVATION: display interface to input reservation number.
If DROP OFF RESERVATION: display interface to input reservation number.
If SERVICE ORDER: display "Service order" interface.
If ADD NEW TOOL: display "Add New Tool" interface.
If SELL TOOL: display "Sell Tool" interface.
If GENERATE REPORT:
    {Populate all tools in inventory; display tool ID, abbreviated description, rental profit,
cost of tool, and total profit.
    Find all reservations in the past month; display the corresponding customer's Name,
Email, Number of rentals, sorted by number of tools rented and then last name.
    Find all reservations in the past month; display the corresponding Clerk's Name,
number of pick-up, number of drop off, the sum of the two, sorted by the sum of the two.
    }
If EXIT: display "login" screen.
}

```

11. Pick-up

While no buttons are pushed, do nothing.

While a button is pushed, do the following:

```

{If VIEW DETAILS: Find tool using the input Tool ID number. Display Display Full
Description of the tool.
}

```

If COMPLETE PICK UP: Display "Rental Contract on Pick-Up", with Reservation Number, Clerk name, Customer name, Credit card number, Start date, End date, Tool Id, Tool abbreviated description, Deposit Held, Estimated rental price.
}

12. Drop-off

While no buttons are pushed, do nothing.

While a button is pushed, do the following:

{If VIEW DETAILS: Find tool using the input Tool ID number. Display Tool ID, Abbreviated description, Deposit Amount, Purchase Price, Price/day.

If COMPLETE DROP OFF: Display "Receipt on drop-off", with Reservation Number, Clerk name, Customer name, Credit card number, Start date, End date, Rental Price, Deposit Held, Total price.

}

13. Add New Tool

While no buttons are pushed, do nothing.

While a button is pushed, do the following:

{If ADD ACCESSORIES: display box to add accessories.

If SUBMIT NEW TOOL:

{If any box is left blank: display "please fill in all boxes".

If all boxes are filled: Add Abbreviated description, Purchase price, Rental price, Deposit amount, Full Description, any accessories. Display "Clerk Main Menu".
add tool to inventory.

}

14. Sell Tool

While no buttons are pushed, do nothing.

While SELL button is pushed, do the following:

{Find tool using the tool ID number; Display the sell price.

update sold_date for the tool

remove tool from inventory.}

15. Service Order Request

While no buttons are pushed, do nothing.

While SUBMIT button is pushed, do the following:

{Find tool using the tool ID number.

Add Service Starting date, Ending date, Repair cost and Create_date.

}