LOGIN

Abstract Code:

- If user selects RentalCustomer/Clerk radio button and enters username and password into input fields, then:
 - If data validation is successful for both username and password input fields, then:
 - When *Sign-in* button is clicked:
 - If User record is found but password is incorrect:

```
SELECT password, type FROM `User` WHERE username= '$username';
```

- If User record is found but User.password! = '\$Password' or User.type! = '\$type'
 - o Go back to **Login** form, with error message
- Else:
- Go to Main Menu form of user (RentalCustomer /clerk)
- Else username and password input fields are invalid, display Login form, with error message
- Else, with error message, there is no Clerk/RentalCustomer with username

REGISTRATION:

Abstract Code:

• Populate all the input fields

```
'$Value' = SELECT Count(*) FROM User WHERE username = '$Username';
```

• Step 1: If username does not exists, then:

```
If '$Value' = 0 then;
```

- Select at leastid
- one phone number (either home, work or cell) as primary phone number
- Select state from the dropdown
- Push the Register button
- Else: populate another username and go to step 1

View Profile:

- RentalCustomer clicked on View profile button
- Find the current User using the User.username; Display username, full name, available phone numbers and address

```
SELECT User.username, email, CONCAT(first_name, " " ,middle_name, " " ,last_name) as full_name, CONCAT(street, " " ,city, " " ,state, " " ,zip) AS full_address, cpn.*
FROM User
INNER JOIN RentalCustomer AS rc ON User.username=rc.username
INNER JOIN CustomerPhoneNumber AS cpn ON cpn.rcID=rc.rcID
```

WHERE User.username = '\$Username';

- Display reservations of RentalCustomer
- Read each reservation of the RentalCustomer ordered from most recent to oldest; Display names of clerk, tool details, date details and price details

```
SELECT r.rNO, r.start_date, r.end_date, r.pickupClerkENO, r.dropoffClerkENO, r.deposit_price, r.rental_price, CONCAT(t.power_source, " ", t.sub_option, " ", t.sub_type)
AS Tool
FROM Holds as h
INNER JOIN Reservation as r
ON h.rNO = r.rNO
INNER JOIN Tool as t
ON h.ToolID = t.ToolID
WHERE r.rcID = "$rcID";
```

Check Tool Availability

- When the **Check tool availability** button is pushed on the main menu
- Populate input fields in keyword search section (start/end dates, tool category, power_source/sub_types)
- Step 1: push **Search** button
- If number of tools returned is less than 10, then:
 - Find the input fields and display available inventory information (tool number, a short-description, deposit price per reservation, rental price per day)

```
SELECT toolID, CONCAT(power_source,sub_option,sub_type) AS short_desc,
r.rental price, r.deposit price FROM Tool
MINUS
SELECT t.toolID
FROM Holds as h
INNER JOIN Reservation AS r
ON h.rNO = r.rNO
INNER JOIN Tool AS t
ON h.ToolID = t.ToolID
WHERE
('$Start_date' >= r.start_date AND '$Start_date' <= r.end_date)
('$end-date' >= r.start date AND '$end-date' <= r.end date)
OR
('$Start-date' <= r.start date AND '$end-date' >= r.end date)
AND Tool.power source = '$power-source' and Tool.sub type = '$sub-type' and
Tool.tool type = '$tool-type'
AND
(t.sub_option= '$sub_option' OR '$sub_option' IS NULL)
AND
(t.rental_price > '$low_repaircost' OR '$low_rental_price' IS NULL)
```

```
AND
(t.rental_price < '$high_repaircost' OR '$high_rental_price' IS NULL)
AND
(t.deposit_price > '$low_deposit_price' OR '$low_deposit_price' IS NULL)
AND
(t.deposit_price < '$high_deposit_price' OR '$high_deposit_price' IS NULL);
```

- If customer wishes to see further details on a specific tool, clicks on description column
 - Find the tool and display the description of the tool (Tool id, Tool type, Short description, Full description, Deposit price and rental price)

```
SELECT Tool.ToolID, category, CONCAT(power source, sub option, sub type) AS
short desc,
CASE
WHEN category="Hand" THEN CONCAT(length,"in. Wx",width," L",weight," lb.",
category," ",sub_option," ",sub_type," ", "#", screw_size, drive_size, " in.",
IF(adjustable, "adjustable", ""), " ", gauge_rating, "G ", capacity, " ", manufacturer)
 WHEN category="Garden" THEN CONCAT(length,"in. Wx",width," L",weight," lb.",
category," ",sub_option," ",sub_type," ",handle_material," ",blade_length," in.
",head weight," lb. ",blade width," in. ",IF(blade length IS NOT NULL,
CONCAT(blade_length, "in. "), ""), tine_count, "tine ", bin_material, "", wheel_count, "
",manufacturer)
WHEN category="Power" THEN CONCAT(length,"in. Wx",width," L",weight," lb.",
category," ",sub_option," ",sub_type,IF(volt_rating IS NOT NULL,
CONCAT(volt_rating,"V"), ""), IF(amp_rating IS NOT NULL, CONCAT(amp_rating, "A"),
""), IF(min torque rating IS NOT NULL, CONCAT(min torque rating, "ft-lb"),
""),IF(blade size IS NOT NULL, CONCAT(blade size, "in. "), ""),IF(tank size IS NOT
NULL, CONCAT(tank_size, "Gal"), ""), IF(motor_rating IS NOT NULL,
CONCAT(motor_rating, "hp "), ""), IF(power_rating IS NOT NULL,
CONCAT(power_rating, "W "), ""),manufacturer)
WHEN category="Ladder" THEN CONCAT(length,"in. Wx",width," L",weight," lb.",
category," ",sub_option," ",sub_type," ",IF(step_count IS NOT NULL,
CONCAT(step_count," step "), ""), IF(weight_capacity IS NOT NULL,
CONCAT(weight_capacity," lb.capacity "), ""),manufacturer)
END AS full desc, rental price, deposit price
FROM Tool
INNER JOIN HandTool AS ht
INNER JOIN LadderTool AS It
INNER JOIN PowerTool AS pt
INNER JOIN GardenTool AS gt
WHERE Tool.ToolID = '$ToolID';
```

Make Reservation

Abstract Code:

• When the Make Reservation button is pushed on the Main menu

- Step 1: Populate input fields in keyword search section (*start/end dates, tool category, power_source/sub_types, type*)
- Push **Search** button
- Find the input fields and display available inventory information (tool number, a short-description, deposit price per reservation, rental price per day)

```
SELECT toolID, CONCAT(power source, sub option, sub type) AS short desc,
r.rental_price, r.deposit_price FROM Tool
MINUS
SELECT t.toolID
FROM Holds as h
INNER JOIN Reservation AS r
ON h.rNO = r.rNO
INNER JOIN Tool AS t
ON h.ToolID = t.ToolID
WHERE
(('$Start date' >= r.start date AND '$Start date' <= r.end date)
('$end-date' >= r.start_date AND '$end-date' <= r.end_date)
OR
('$Start-date' <= r.start_date AND '$end-date' >= r.end_date))
AND Tool.power source = '$power-source'
AND Tool.sub type = '$sub-type'
AND Tool.tool type = '$tool-type'
AND
(t.sub_option= '$sub_option' OR '$sub_option' IS NULL)
AND
(t.deposit_price > '$low_deposit_price' OR '$low_deposit_price' IS NULL)
(t.deposit_price < '$high_deposit_price' OR '$high_deposit_price' IS NULL);
```

- Push the **Add** button on all the required tools
- If number of added tool is 11th, then:
 - An error message is displayed
- Else:
 - Go to next step
- If any of the added tool available inventory reached zero, then
 - As error message is displayed
 - If identical tool requested is due to return within the next 24 hours, then
 - A notice is given to the user telling them the date when the tool is expected to become available
 - Else: go to next step
 - When customer is done with adding all the required tools

- Push the Calculate Total button is pushed
- A reservation summary form is popped displaying total deposit price, rental price, number of days
- If we wished to complete the reservation, then
 - Push the **Submit** button.
 - If any of the reserving tools is already reserved by another customer, then:
 - Display notice of unavailability and go to step 1
 - Else: go to next step
 - <u>Reservation confirmation</u> form pops-up displaying total deposit price, rental price, number of days

```
Reservation Confirmation
SELECT
rNO, rental price, deposit price,
FROM Reservation as r
INNER JOIN RentalCustomer as rc ON rc.rcID = r.rcID
INNER JOIN User ON User.username = rc.username
WHERE r.rNO = '$ReservationNumber';
Tools under reservation confirmation
SELECT
t.toolID, CONCAT(t.power_source, t.sub_type, t.sub_option) AS Description,
t.deposit_price, t.rental_price
FROM Holds as h
INNER JOIN Reservation as r
ON h.rNO = r.rNO
INNER JOIN Tool as t
ON h.ToolID = t.ToolID )
WHERE r.rNO = '$ReservationNumber';
```

• Else: Push the Reset button and go to step 1

Purchase Tool

- When the **Purchase Tool** button is pushed on the main menu
- Step 1: Populate input fields in keyword search section (start/end dates, tool category, power_source/sub_types, type)
- Push **Search** button
- Find available tools for sale and display tool description and sale price

```
SELECT
toolID, status , CONCAT(power_source, sub_type, sub_option), sale_price
FROM Tool INNER JOIN SalesOrder ON Tool.toolID = SalesOrder.toolID
WHERE Tool.status = '$for-sale'
AND
Tool.power_source = $power_source'
AND
Tool.sub_type = '$sub_type' and Tool.category = '$category'
AND
(Tool.sub_option= '$sub_option' OR '$sub_option' IS NULL);
```

- Select the tools from the list and push the Submit button
- If the credit file is not on file, then
 - Customer is required to enter the information
- Else:
 - Purchase confirmation form pops-up displaying total sale price and sold-date

Purchase Confirmation

```
SELECT
r.saleID, r.sale_price
FROM SalesOrder as r
INNER JOIN RentalCustomer as rc ON rc.rcID = r.rcID
INNER JOIN User ON User.username = rc.username
WHERE r.saleID = '$Sales_ID';
```

Tools under Purchase confirmation

```
SELECT
r.saleID, CONCAT( t.power_source, t.sub_type, t.sub_option) AS Description, r.sale_price
FROM SalesOrder as r
INNER JOIN Tool as t
ON t.toolID = r.toolID )
WHERE r.saleID = '$Sales_ID';
```

PICK-UP Reservation:

- When the **Pick-up reservation** button is pushed on the main menu
- Find all the reservations which are waiting to be picked up

```
SELECT rNO, CONCAT(first_name, " " ,middle_name, " " ,last_name) as full_name, rcID, start_date, end_Date
FROM Reservation as r
INNER JOIN RentalCustomer as rc ON rc.RCID = r.RCID
INNER JOIN User ON User.username = rc.username
WHERE r.pickupClerkENO IS NULL;
```

- Select a reservation either by entering the specific reservation number and pushing Pick-up button or click a link
- Display summary of the reservation
- If the CreditCard information does not exist in the customer's profile, then:

```
If the '$value' = 0 (CreditCard is not on file), then:

'$value' = SELECT count(*) FROM RentalCustomer WHERE

RentalCustomer.username = CreditCard.username;
```

- Step 1: Clerk should enter the customer's CreditCard information (*number, name on card, expiration month as a drop down, expiration year as a drop down, cvc 3 digit number*)
- Else:
 - Leave as it is
- Push the confirm Pick-up button
- If the information is valid, then:
 - Display rental contract with summary for the transaction

Fetching Customer Name, start and end dates

```
SELECT CONCAT(first_name, " " ,middle_name, " " ,last_name) as Customer_Name, start_date, end_Date
FROM Reservation as r
INNER JOIN RentalCustomer as rc ON rc.RCID = r.RCID
INNER JOIN User as u ON User.username = rc.username
WHERE Reservation.rNO = '$ReservationNUmber';
```

Fetching Clerk Name

```
SELECT CONCAT(first_name, " " ,middle_name, " " ,last_name) as Pick-up_Clerk, FROM Reservation as r
INNER JOIN Clerk as c ON c.empNO = r.pickupClerkENO
INNER JOIN User as u ON User.username = c.username
WHERE Reservation.rNO = '$ReservationNUmber';
```

Fetching Tools information

```
SELECT
t.toolID, CONCAT(t.power_source, t.sub_type, t.sub_option) AS Tool_Name,
t.deposit_price, t.rental_price
FROM Holds as h
INNER JOIN Reservation as r
ON h.rNO = r.rNO
INNER JOIN Tool as t
ON h.toolID = t.toolID)
WHERE Reservation.rNO = '$ReservationNUmber'
```

- Else:
 - Go to step 1

Drop-Off Reservation

Abstract Code:

- If user **Drop-off reservation** button is pushed on the main menu, then:
 - Find all the reservations which are waiting to be dropped-off

```
SELECT rNO, CONCAT(first_name, " " ,middle_name, " " ,last_name) as Customer_Name, rcID, start_date, end_date
FROM Reservation as r
INNER JOIN RentalCustomer as rc ON rc.rcID = r.rcID
INNER JOIN User ON User.username = rc.username
WHERE r.end_date <= Today();
```

- Select a reservation either by entering the specific reservation number by:
 - o By pushing **Drop off** button or
 - o by clicking a link
- Final receipt pops-up up (user can optionally print for their own records)

Reservation Details

```
SELECT
rNO, CONCAT(first_name, " " ,middle_name, " " ,last_name) as Customer_Name,
rental_price, deposit_price,
(rental_price – deposit_price) AS TotalDue
FROM Reservation as r
INNER JOIN RentalCustomer as rc ON rc.rcID = r.rcID
INNER JOIN User ON User.username = rc.username
WHERE r.rNO = '$ReservationNumber';
```

Tool Details

```
SELECT
t.toolID, CONCAT(t.power_source, t.sub_type, t.sub_option) AS Tool_Name,
t.deposit_price, t.rental_price
FROM Holds as h
INNER JOIN Reservation as r
ON h.rNO = r.rNO
INNER JOIN Tool as t
ON h.toolID = t.toolID)
WHERE r.rNO = '$ReservationNumber';
```

Else: remain as it is

Add Tool

Abstract Code:

- When the Add tool button is pushed on the main menu, Add tool form is displayed
- If any of the categories entered first, then
 - If selected category is hand tool, garden tool or ladder, then:
 - o If next entered is sub type, then
 - Populate suboption
 - Enable sub_optiondropdown
 - o Else: Error message displaying sub type should be entered first
 - Else: **Power tool form** pops-up
 - if next entered value is power source
 - o if subtype is cordless tools only, then:
 - Cordless Tools only form pops-up
 - Populate the fields
 - o Else: populate other fields in the **Power Tools Only** form
 - Else: Error message displaying power source should be entered first
- Else: Error message displaying category should be entered first

Repair-Tool

- When the **Repair tool** button is pushed on the main menu, **Repair Tool form** is displayed
- Populate input fields in keyword search section (start/end dates, tool category, power_source/sub_types, type)
- Read all the tools which are "In-repair" status with key word search

```
SELECT toolID, CONCAT(power_source,sub_option,sub_type) AS short_desc,
r.rental_price, r.deposit_price FROM Tool
MINUS
SELECT t.toolID
FROM Holds as h
INNER JOIN Reservation AS r
ON h.rNO = r.rNO
INNER JOIN Tool AS t
ON h.ToolID = t.ToolID
WHERE
(('$Start_date' >= r.start_date AND '$Start_date' <= r.end_date)
OR
('$end-date' >= r.start_date AND '$end-date' <= r.end_date)
OR
('$Start-date' <= r.start_date AND '$end-date' >= r.end_date))
AND Tool.power_source = '$power-source'
AND Tool.sub type = '$sub-type'
AND Tool.tool_type = '$tool-type'
AND
(t.sub_option= '$sub_option' OR '$sub_option' IS NULL)
AND
(t.rental_price > '$low_repaircost' OR '$low_rental_price' IS NULL)
AND
(t.rental_price < '$high_repaircost' OR '$high_rental_price' IS NULL)
(t.deposit price > '$low deposit price' OR '$low deposit price' IS NULL)
AND
(t.deposit price < '$high deposit price' OR '$high deposit price' IS NULL) AND
Tool.Status IS NULL;
```

• Enter Tool ID number and service cost, push **confirm** button

View Service Status page

- When the View repair status page button is pushed on the main menu, view repair status page form is displayed
- Populate input fields in keyword search section (start/end dates, tool category, power_source/sub_types, type)
- Read all the tools which are "In-repair" status with key word search

```
SELECT serviceId, status, tooIID, CONCAT(power_source, sub_type, sub_option), start_date, end_date, repair_cost, CONCAT(first_name, " " ,middle_name, " " ,last_name) as clerk_name
FROM ServiceOrder AS s
INNER JOIN Tool ON Tool.tooIID = s.tooIID
INNER JOIN Clerk ON Clerk.empNO = s.empNO
INNER JOIN User ON User.username = Clerk.username
WHERE Tool.status = '$in-repair'
AND
Tool.sub_option= '$sub_option'
AND
(s.repair_cost > '$low_repairprice' OR '$low_repairprice' IS NULL)
AND
(s.repair_cost < '$high_repairprice' OR '$high_repairprice' IS NULL)
```

- If clerk wishes to restrict results of the tool, then:
 - Use filter option on any combination of input (clerk names, sort by dates, repair cost, keyword description etc.)
 - Read all the tools which are "In-repair" status with key word search and restrictions applied using filters
 - Go to step 1
 - Else: go to step 1
- If clerk wishes to sort any of the field, then:
 - Clerk selects the required field (service/tool ID, short-description, repair start date, current repair end date, repair cost)
 - Go to step 1
 - Else: go to step 1
- Step 1: if clerk wants to override the "in-repair" status for any of the displayed tools, then:
 - Push on the fix now button
 - Repair end date of the tool changes to now() and returns back to available inventory and drops off the <u>service status page</u>
 - Else: Remain as it is

Sell Tool

- When the Sell tool button is pushed on the main menu, sell tool page form is displayed
- Populate input fields in keyword search section (start/end dates, tool category, power_source/sub_types, type)
- Find all the tools displaying description, rental and tool price with key word search

```
SELECT toolID, CONCAT(power_source,sub_option,sub_type) AS short_desc,
r.rental_price, r.deposit_price FROM Tool
MINUS
SELECT t.toolID
FROM Holds as h
INNER JOIN Reservation AS r
ON h.rNO = r.rNO
INNER JOIN Tool AS t
ON h.toolID = t.toolID
WHERE
(('$Start_date' >= r.start_date AND '$Start_date' <= r.end_date)
OR
('$end-date' >= r.start_date AND '$end-date' <= r.end_date)
OR
('$Start-date' <= r.start date AND '$end-date' >= r.end date))
AND Tool.power_source = '$power-source'
AND Tool.sub type = '$sub-type'
AND Tool.tool_type = '$tool-type'
AND
(t.sub_option= '$sub_option' OR '$sub_option' IS NULL) AND Tool.status IS NULL
AND
(t.deposit_price > '$low_deposit_price' OR '$low_deposit_price' IS NULL)
AND
(t.deposit_price < '$high_deposit_price' OR '$high_deposit_price' IS NULL);
```

- If clerk wishes to restrict results of the tool, then:
 - Use filter option on any combination of input (rental price, deposit price, etc.)
 - Read all the tools which are available with key word search and restrictions applied using filters
 - Go to step 1
- Step 1: if clerk wants to sell tool for any of the displayed tools, then:
 - Push on the Sell tool button
 - Unique sale transaction number is created which tracks the tool number, customer who bought the tool, clerk who marked tool 'for sale', sale price, for sale date, and sale date
 - Else: Remain as it is

View Sale Status

- When the View sale status page button is pushed on the main menu, view sale status page form is displayed
- Populate input fields in keyword search section (start/end dates, tool category, power_source/sub_types, type)
- Find all the tools which are under for 'For-sale' and 'Sold' status
- If clerk wishes to restrict results of the tool, then:

- Use filter option on any combination of input (clerk names, sort by dates, repair cost, keyword description etc.)
- Else: Remain as it is
- Display the current status of each tool with tool id, description, sale price, sale date and clerk id

```
SELECT saleID, status, tooIID, CONCAT(power_source, sub_type, sub_option) as Description, sale_price, sale_date, empNO FROM SalesOrder
INNER JOIN Tool ON SalesOrder.tooIID = Tool.tooIID
WHERE Tool.sub_option= '$sub_option'
AND
(SalesOrder.price > '$low_price' OR '$low_price' IS NULL)
AND
(SalesOrder.price < '$high_price' OR '$high_price' IS NULL)
```

- If the current status of the tool is sold, then:
 - The tool is marked as sold in black back ground
 - Display customer name
- Else: The tool is marked as "For sale" in grey back ground

Generate Reports

Abstract Code:

- When the Generate Reports button is pushed on the main menu, Generate reports form is displayed
- Display a page with clerk report, customer report and tool inventory report buttons

Generate Clerk Reports

- When the *clerk reports* button is pushed on the generate reports form, <u>Clerk report</u> form is displayed
- Find clerk information
- Display name, username, hire date and number of the clerk
- Find pickups and drop-offs for the clerk
- Display pickup, drop-off and their sum in the report

PickUpTable = SELECT pickupClerkENO, COUNT(*) AS no_of_pickups FROM Reservation WHERE MONTH(start_date) = MONTH(CURRENT_DATE() - INTERVAL 1 MONTH) GROUP BY pickupClerkENO

DropOffTable = SELECT dropoffClerkENO, COUNT(*) AS no_of_dropoffs FROM Reservation WHERE MONTH(start_date) = MONTH(CURRENT_DATE() - INTERVAL 1 MONTH) GROUP BY dropoffClerkENO

AllClerksTable = SELECT empNO, first_name, middle_name, last_name, username, hire_date FROM Clerk INNER JOIN User ON Clerk.username = User.username

SELECT

empNO, first_name, middle_name, last_name, username, hire_date, ISNULL(no_of_pickups, 0) AS no_pickups, ISNULL(no_of_dropoffs,0) AS no_dropoffs, (no_pickups + no_dropoffs) as combined total

FROM AllClerksTable AS all

FULL OUTER JOIN PickUpTable as pk ON all.empNO = pk.pickupClerkENO FULL OUTER JOIN DropOffTable as df ON all.empNO = df. dropoffClerkENO ORDER BY no_pickups DESC, no_dropoffs DESC;

Generate Customer Report

- When the *customer reports* button is pushed on the generate reports form, <u>Customer report</u> form is displayed
- Find customer information
- Display name, username, phone, profile link and number of the customer
- Find reservations made by customer
- Display reservation number and computed tool number

TotalReservTable = SELECT rcID, COUNT(*) AS total_reservations FROM Reservation GROUP BY rcID;

ToolsPerReservTable = SELECT rNO, COUNT(*) AS tools_per_reserv FROM Holds GROUP BY rNO;

MergeReservTools = SELECT rcID, SUM(tools_per_reserv) AS total_tools_rented FROM Reservation AS r

INNER JOIN ToolsPerReservTable AS tp ON r.rNO = tp.rNO GROUP BY rcID

SELECT rcID, first_name, middle_name, last_name, username, phone_number, total_reserv, total_tools_rented

FROM RentalCustomer AS rc

INNER JOIN User ON User.username = rc.username

INNER JOIN CustomerPhoneNo AS cp ON cp.rcID = rc.rcID

INNER JOIN MergeReservTable AS mr ON mr.rcID = rc.rcID

WHERE MONTH(start_date) = MONTH(CURRENT_DATE())

ORDER BY total tool rented DESC, last name;

Generate Tool Inventory

Abstract Code:

- When the tool inventory report button is pushed on the generate reports form, tool inventory form is displayed
- Populate the tool type options and display custom search option
- Find the information from tools table
- Display current status, description, rental profit, total cost and total profit

Calculate total costs

TotalCosts =

SELECT t.toolID, t.purchase_price, SUM(repair_cost) AS total_repair_cost, (t.purchase_price + total_repair_cost) AS total_cost

FROM Tool AS t

INNER JOIN ServiceOrder AS sor

ON t.toolId = sor.toolID

GROUP BY t.toolID;

Get tool report from TotalCosts and Tool

SELECT t.toolID, ISNULL(t.status,"Available") AS status, t.statusdate, CONCAT(power_source, sub_type, sub_option) as Description, (rental_count * rental_price) AS rental_profit, total_cost, (rental_profit - total_cost) AS total_profit
FROM Tool AS t
INNER JOIN TotalCosts AS tc
ON t.toolId = tc.toolId
ORDER BY total_profit DESC;