**Data types**

* First: string
* Middle: string
* Last: string
* Username: string
* Password: string
* DateofHire: date
* EmployeeNumber :int
* 9-digit zip: int
* City: string
* State: string
* Street: string
* Exp month: int
* Name on card: string
* Number (credit card): int
* CNC (credit card): int
* Primary number: boolean
* Area code: int
* Phone number: string
* Extension: int
* Reservation number: string
* Repair cost: float
* Clerk of record: string
* Start date: date
* End date: date
* UniqueToolNumber: int
* PurchasePrice: float
* Count of rents: int
* Status: int (0=available, 1=in repair, 2=for sale, 3=sold)
* Handle-material: string
* Sub-type: string
* DescriptorType: string
* DescriptorValue: string
* Accessory-description: string
* BatteryType: string
* PurchasePrice: float
* SalesTransactionNumber: int
* Clerk: string
* Customer: string
* For sale date: date
* Sale date: date

**Business Logic Constraints:**

* Every user has one primary phone number
* Clerk username, e-mail, temporary password, employee number and date of hire enetered by system administrator;
* If it is the first time a clerk logs in with a temporary password, the clerk is prompted to change the password by entering it twice
* Purchase price is entered with each tool; rental price is 15% of purchase price; deposit is 40% of purchase price; sale price is 50% of purchase price
* After 50 rents, a tool is automatically for sale
* A clerk may put any tool up for sale at any time
* All tools are available for daily rental; one day is 24 hours
* Clerk determines repair cost when creating service request
* Customers may never pick up a reservation
* Clerk cannot duplicate service request on the same tool
* Clerk can close service request (“Fix Now” button on “View Service” page); if a clerk closes a service job, they become the clerk of record for a service request

**Task decomposition**

Login

* Check username, password and type (customer or clerk)
* If no customer exists with username, go to registration screen
* If customer logs in as clerk, display error

Registration (Customer)

* Include username, e-mail address, full name, home phone, work phone and cell phone
* User select one phone as primary
* Need to account for hyphens and extensions
* Can’t have duplicate usernames
* Need one single address

View Profile (customer)

* List all profile info and rental history
* Order rental history from oldest to newest and include names of clerks

Check tool availability (Customer)

* Allow for tool search
* If more than 10 tools, prompt to specify a more unique search
* Returns available inventory meeting search criteria with tool number, description, deposit price per reservation and rental price per day
* Click link to show full description
* All columns sortable by any header
* Tools not available (in repair, for sale, sold or in repair) should not show

Make reservation (Customer)

* Allow for tool search
* Return tool number, short description, rental price and deposit price No more than 10 tool per reservation
* If identical tool to be returned within 24 hours, notify customer
* Calculate total cost and return reservation summary

Complete reservation (Customer)

* Assign reservation in database
* Assign confirmation number
* Return reservation confirmation

Purchase tool (Customer)

* List tools for sale
* Allow for tool search
* Selecting “Purchase Tool” completes sale
* If credit card info not in database, prompt to enter
* Display purchase summary and confirmation

Pick-up reservation (Clerk)

* Show all reservations
* Allow entry of specific reservation number
* Click on link to view details
* Prompt to enter credit card info if not on file

Drop off reservation (Clerk)

* Show all reservations
* Allow entry of specific reservation number
* Click on link to view details
* Return final receipt

Add tool (Clerk)

* Enter abbreviated description
* Enter purchase price
* Automatically fill rental price and deposit based on purchase price (rental price 155 of original, deposit 40% of original, sale price 50% of original)
* Enter accessories for power tools
* Enter tool specifications (dimensions, power tool info, cordless tool info)

Service order request (Clerk)

* Allow for tool search
* Change tool status to “in repair”
* Create repair record with tool number, clerk who requested service, service cost, service start date, service end date

View service status (Clerk)

* Display all tools currently being serviced
* Click “fix now” to update the end repair date to “now” and return tool to “available”
* Clerk on record overwritten to be clerk performing the ovveride

Sell tool

* Tools rented 50 times automatically marked “for sale” by system
* Tools can manually be marked for sale
* Allow for tool search

Check sales status

* List of tools either sold or for sale
* Allow search by customer username, sale price and/or keyword

Generate report

* Generates three reports: clerk report, customer report and tool report
* Clerk report lists clerk’s employee number, full name, email, hire date, number of pick-ups and drop offs handled this month and sum of two; ordered by number of pick-ups and drop offs
* Customer report lists all customers who rented a tool over the last month. Shows username, link to full profile, full names, e-mail address, primary phone number, and number of rentals. List is sorted by number of rentals
* Tool report lists everything in inventory with tool ID, current status of tool, relevant date, description, rental profit, cost of toll and total profit (rental profit: # of days rented times cost/day; total profit: rental profit minus tool cost). List is ordered by total profit

**Abstract Code**

Login

GET UserName, Password and Type (customer/clerk)

IF Type==Customer:

IF UserName==existingCustomerUser and Password==existingCustomerUserPassword THEN CustomerMain

IF UserName==existingCustomerUser and Password !=existingCustomerUserPassword THEN “Error: incorrect password”

IF UserName !=existingCutomerUser THEN Register

IF Type==clerk:

IF UserName==existingClerkUser and Password==existingClerkUserPassword THEN ClerkMain

IF UserName==existingClerkUser and Password !=existingClerkUserPassword THEN “Error: incorrect password”

IF UserName==existingClerkUser and Password==temporaryClerkPassword THEN set new password

IF UserName==existingCustomerUser and Password==existingCustomerUserPassword THEN “Error: Login as customer”

Registration (Customer)

GET username, e-mail address, full name, home phone, work phone, cell phone, primary number flag

Parse phone numbers to area code, number, extension

IF username==ExistingUser THEN “Error—user already exists”

View Profile (customer)

GET customer profile information and rental history

SORT rental history

DISPLAY profile information and rental history

Check tool availability (Customer)

GET SearchValues (StartDate, EndDate, Keyword, Type, PowerSource, SubType)

List=Query of SearchValues with ToolAvailable==TRUE

IF len(List)>10 THEN “Specify more unique search”

ELSE:

Description=FORMAT(Dimensions+PowerSource+SubOption+SubType+Other+Manufacturer)

DepositPricePerReservation=0.4\*PurchasePrice

RentalPricePerDay=0.15\*PurchasePrice

DISPLAY ToolID, Description, DepositPricePerReservation, RentalPricePerDay

WHILE no buttons pressed, do nothing

IF more details linked pressed, display full description

IF Column header pressed, sort column

Make reservation (Customer)

WHILE no buttons pressed, do nothing

IF Search pressed:

GET SearchValues (StartDate, EndDate, ToolCatagory, PowerSource/SubTypes and/or Keyword)

AvailableList=Query of SearchValues with ToolAvailable==TRUE OR ToolAvailableWithin24Hours==TRUE

Description=FORMAT(Dimensions+PowerSource+SubOption+SubType+Other+Manufacturer)

DepositPricePerReservation=0.4\*PurchasePrice

RentalPricePerDay=0.15\*PurchasePrice

DISPLAY ToolID, Description, DepositPricePerReservation, RentalPricePerDay

IF Add pressed:

IF len(Reservation)==10 THEN “Error: Max number of tools exceeded”

ELSE Add Tool to Reservation

IF Remove pressed:

Remove tool from Reservation

If Calculate Total pressed

CALCULATE Deposit Total and Rental Total

DISPLAY Reservation Summary Form

Complete reservation (Customer)

WHILE no buttons pressed, do nothing

IF Submit pressed, save Reservation

IF Reset pressed, Display Make Reservation form

Purchase tool (Customer)

WHILE no buttons pressed, do nothing

IF Search pressed:

GET SearchValues (ToolCategory, PowerSource, SubType, Keyword)

List=Query of SearchValues with ToolForSale==TRUE

SalePrice=0.5\*PurchasePrice

DISPLAY ToolID, Status, Description, SalePrice

IF PurchaseTool pressed:

IF CreditCardOnFile==FALSE, DISPLAY Credit Card info form

ELSE:

SAVE purchase

DISPLAY Purchase Confirmation form

Pick-up reservation (Clerk)

* Show all reservations
* Allow entry of specific reservation number
* Click on link to view details
* Prompt to enter credit card info if not on file

Drop off reservation (Clerk)

* Show all reservations
* Allow entry of specific reservation number
* Click on link to view details
* Return final receipt

Add tool (Clerk)

* Enter abbreviated description
* Enter purchase price
* Automatically fill rental price and deposit based on purchase price (rental price 155 of original, deposit 40% of original, sale price 50% of original)
* Enter accessories for power tools
* Enter tool specifications (dimensions, power tool info, cordless tool info)

Service order request (Clerk)

* Allow for tool search
* Change tool status to “in repair”
* Create repair record with tool number, clerk who requested service, service cost, service start date, service end date

View service status (Clerk)

* Display all tools currently being serviced
* Click “fix now” to update the end repair date to “now” and return tool to “available”
* Clerk on record overwritten to be clerk performing the ovveride

Sell tool

* Tools rented 50 times automatically marked “for sale” by system
* Tools can manually be marked for sale
* Allow for tool search

Check sales status

* List of tools either sold or for sale
* Allow search by customer username, sale price and/or keyword

Generate report

* Generates three reports: clerk report, customer report and tool report
* Clerk report lists clerk’s employee number, full name, email, hire date, number of pick-ups and drop offs handled this month and sum of two; ordered by number of pick-ups and drop offs
* Customer report lists all customers who rented a tool over the last month. Shows username, link to full profile, full names, e-mail address, primary phone number, and number of rentals. List is sorted by number of rentals
* Tool report lists everything in inventory with tool ID, current status of tool, relevant date, description, rental profit, cost of toll and total profit (rental profit: # of days rented times cost/day; total profit: rental profit minus tool cost). List is ordered by total profit