

COM2008 Systems Design & Security: Team Project

By Team002

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➤ **Introduction:**

Build-a-Bike Ltd. Is a wholesale warehouse and retail business that sells custom-built bicycles. It consists of an in-store computer system that is used by both the shop staff and shoppers. The system captures the details about bicycles, customers and orders.

Main Requirements:

- **Shopper:**
 - A shopper can only browse various products (handlebar, frame, wheels) of different kinds that are available and assemble a virtual bicycle.
 - A Shopper can become a customer once they are ready to create their first order.
- **Customer**
 - A Customer can enter details like Name and Address, and submit their current bicycle configuration to create their first order.
 - A customer can place their next orders with the same saved user details.
 - A Customer can view their Name and Address details and change them.
 - A Customer can review their orders by entering their Name, Address, or order number which is generated when an order is created.
 - A Customer can delete their created/pending orders but once it is saved, checked out, and paid for, it can't be changed since the order is confirmed.

- **Staff**

- A staff member can process a confirmed order.
- A staff member can login to the system using a unique username and password.
- A staff member can't register or change their login details.
- A staff member can view any of the data, including customers, addresses, orders and products of each kind.
- A staff member can accept payment for the order.
- A staff member can add new products in the stock.
- A staff member can delete products that are depleted from the stock.
- A staff can fulfil the order by assembling the bicycle and completing the order which will move the order from confirmed queue to fulfilled queue.

Stakeholders:

Stakeholders include shopper, customer and staff roles.

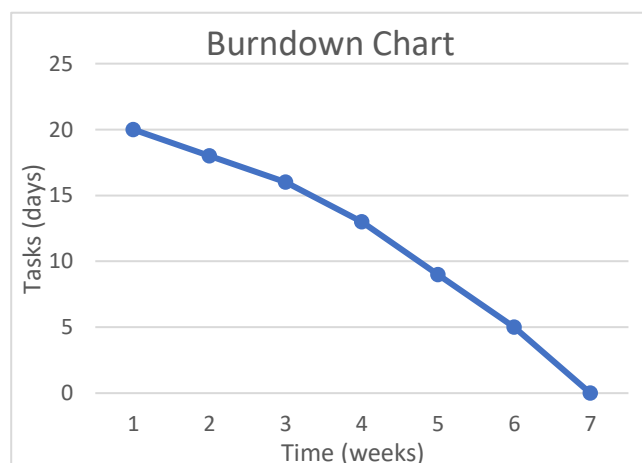
- Shoppers visit the warehouse and browse the products available.
- Customers have one or more orders placed in the system.
- Staff have complete rights to view and update data in the system.

Team Working Strategy:

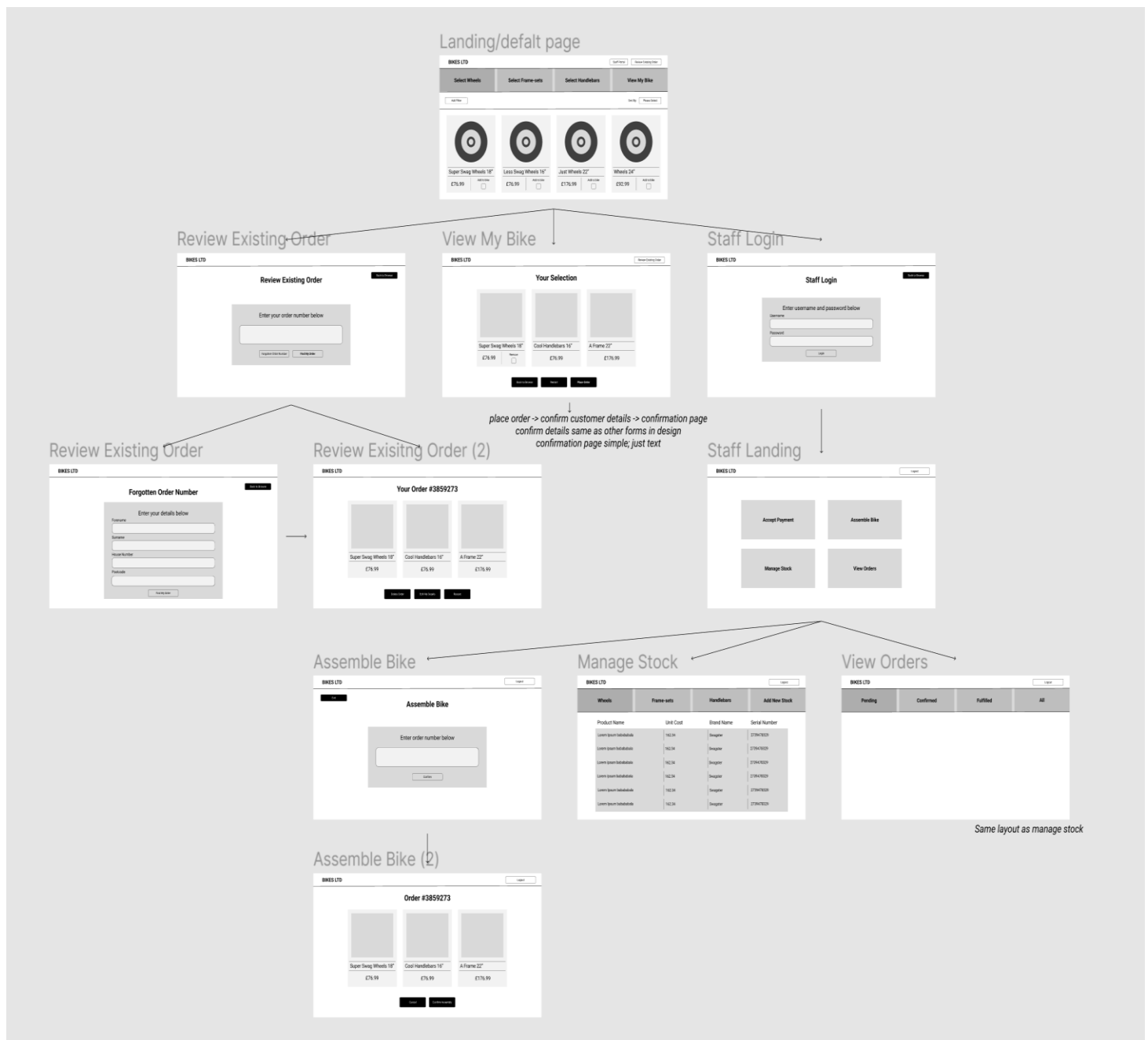
The main strategy of our team from the start was divide and conquer and we tried to closely follow agile methodology throughout the process. In the very first week, our team worked on the initial information model and the normalised database model so as to be sure of the direction our project should head in. From the second week, we divided the team into two teams, with one working on front-end and the other working on back-end. We had one or more team meetings regularly every week where we conversed about the work that has been done, the work that we need to do and are we on the right track in terms of meeting the deadline. Both the front-end and the back-end teams regularly talked with each other so as to know what the other team is doing and if there is a better way to do it. Both the teams supported, helped, and pushed each other and made sure everyone was excited and motivated throughout the process. And in the final week, we merged the back-end and front-end to finally achieve our goal.

Burndown Chart:

Figure on the right includes a burndown chart showing the amount of work done every week.



Initial Wireframe of the system:

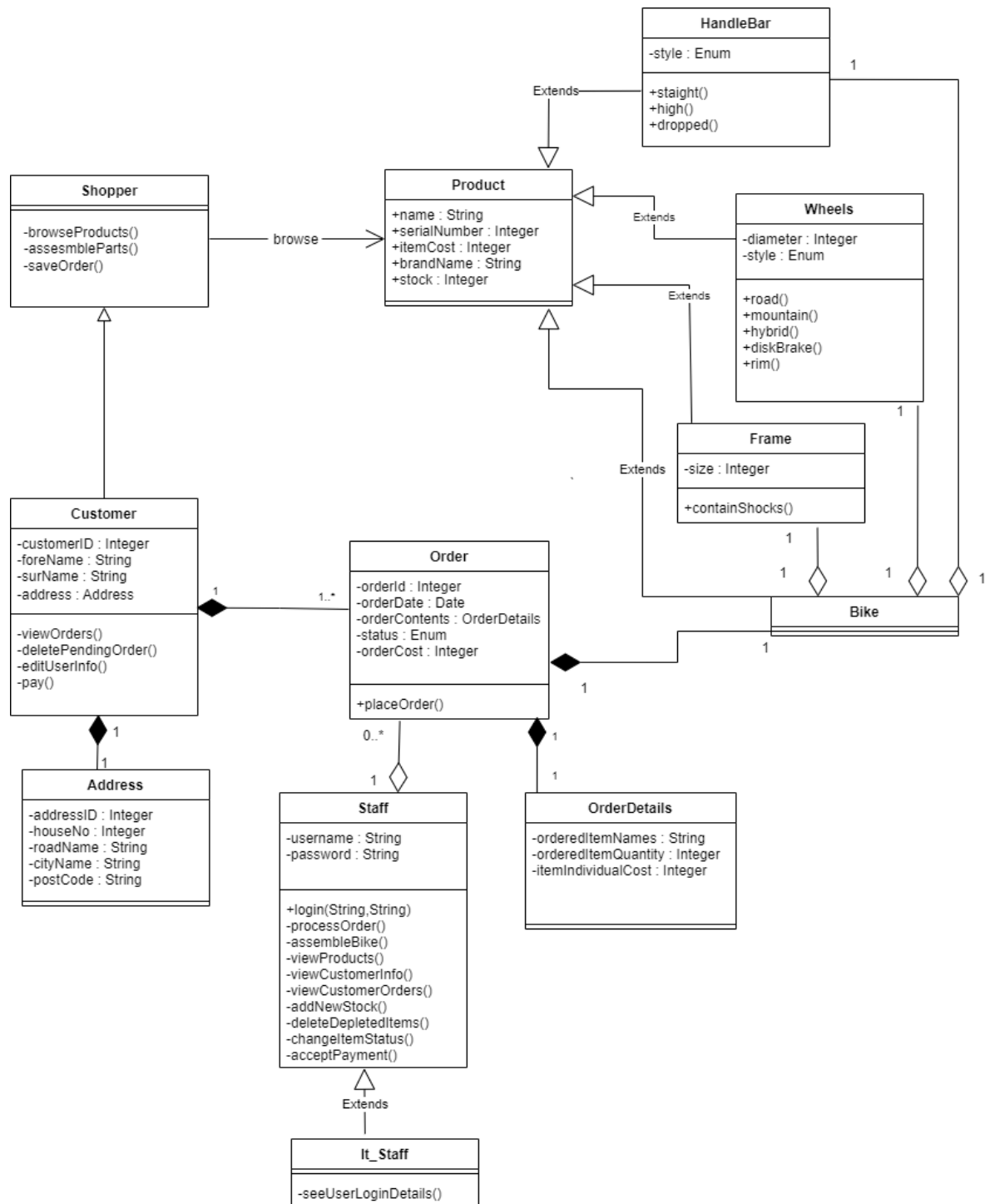


➤ UML Diagrams:

We designed three UML diagrams to help us for this project. UML class diagrams of initial information model and normalised database model were made before we begin programming, UML State machine diagram was built at the end of the project.

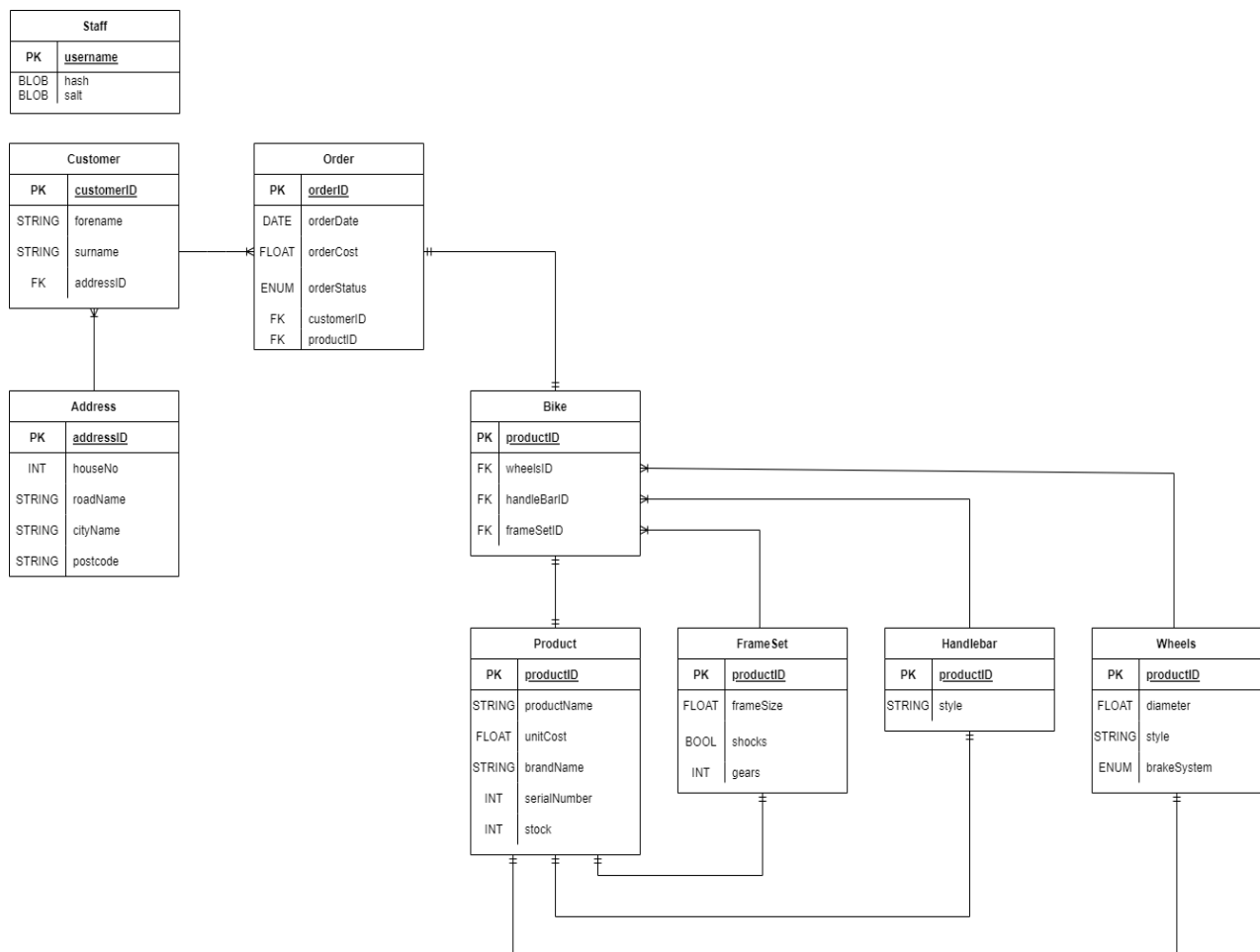
UML class diagram of the initial information model:

- The Initial information model was developed before starting actual programming by analysing the given background information, showing classes, attributes, associations and association classes. This diagram is left unchanged since it was meant to act as a starting guide for the direction our project should head in.



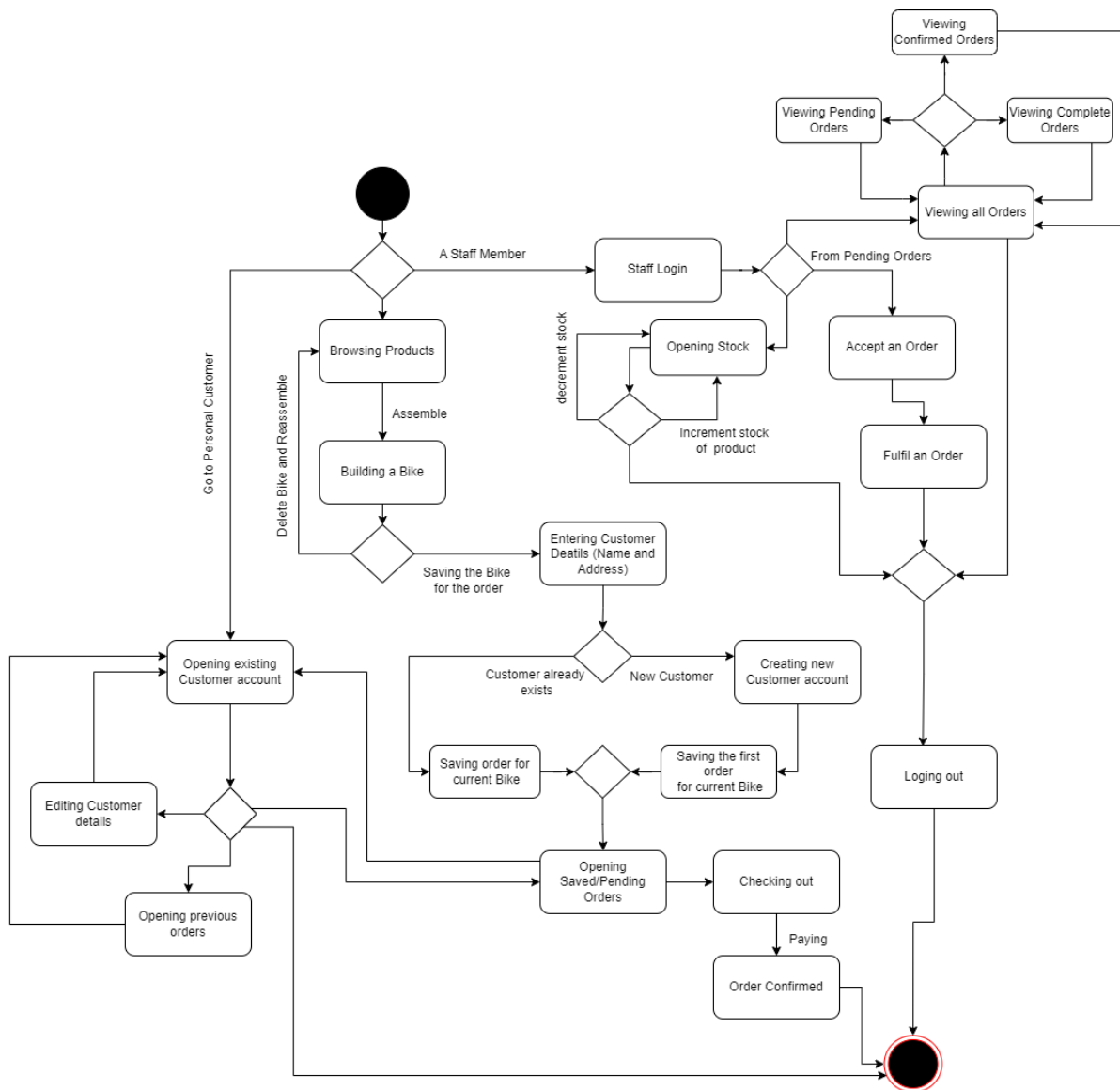
UML class diagram of normalised database model:

- The normalised database model (using the UML database profile) normalises all the relationships in the initial information model and identifies primary and foreign keys. All remaining associations are directed, according to table-linkage. The normalised database model was also designed before starting actual programming so as to understand what tables we needed in our database.



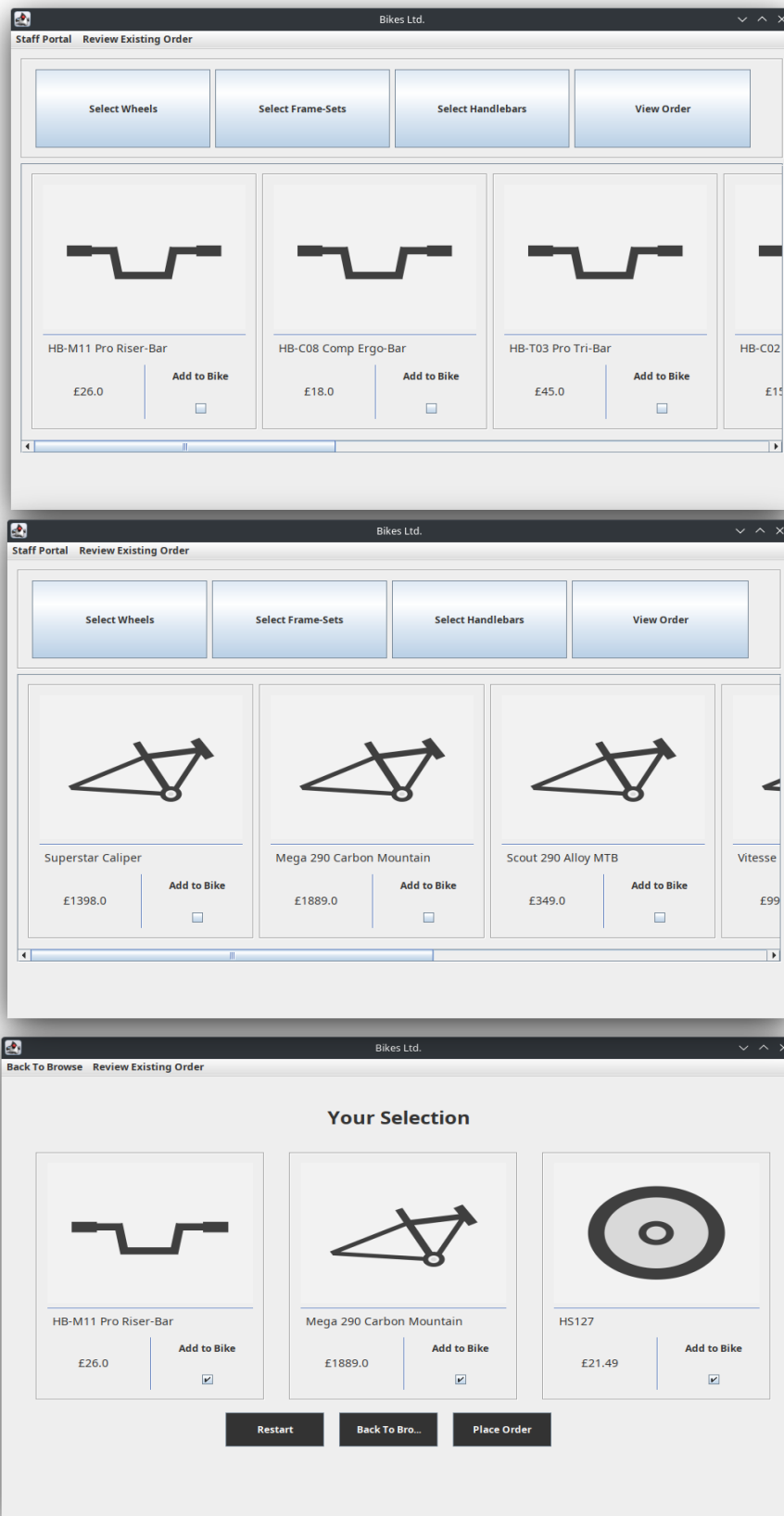
UML State Machine Diagram:

- The UML state machine diagram, shows the different authenticated states of the system, with transitions describing what actions can be performed in these states. It basically describes all the possibilities in the system.



➤ **Screenshots:**

Shopper/Customer:



Bikes Ltd.

Staff Portal Review Existing Order

Enter Your Details Below

Forename
Walter

Surname
White

House Number
308

Road Name
Negra Arroyo Lane

City
Albuquerque

Postcode
510 2DT

Next

Staff:

Bikes Ltd.

Logout Back To Staff Landing

Wheels	Frame-Sets	Handlebars	Add New Stock
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Product Name	Serial Number	Brand Name	Stock
HB-M11 Pro Riser-Bar	1	XLC	114
HB-C08 Comp Ergo-Bar	2	XLC	69
HB-T03 Pro Tri-Bar	3	XLC	54
HB-C02 Trekking Handlebar	4	XLC	159
SL 70 XPLR	5	ZIPP	17

Bikes Ltd.

Logout Back To Staff Landing

Pending	Confirmed	Fulfilled	All
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Order Number	Cost	Status	serialNumber
568	662	FULFILLED	2837.98
573	813	FULFILLED	1487.5
570	526	FULFILLED	1990.99
578	122	PENDING	10.0
574	252	PENDING	1047.98

➤ **Security features:**

- Password encryption - Hashing a password.
- Passwords are auto generated which is a completely secure and random string.
- The database credentials are stored in a separate file which is not in the repository as to not have the sensitive data stored in the program.
- Cleaning user input - Sanitisation with prepared statements.

➤ **Individual Weighting:**

Team 002	Contributions	Efforts (100 points)
Alex Chapman	Back-end (Product classes, database connection, all of the queries, password hashing, populating database, integration with front-end), Database set up	25
Mohammad Tahir Khan	Back-end (Actor classes, Order Classes, few select queries), Report, UML Class diagram, UML State Machine Diagram	25
Lea Button	Front-end (Design and wireframing, refining GUI builder built code, page navigation), UML Database diagram	25
Oscar Overton	Front-end (Design implementation), Integration (linking GUI to Database, buttons), Set up the Project	25

We hereby declare that we agree with the individual contribution and effort points written above. The distribution of effort points is valid and done unanimously.

Signed by:

Alex Chapman

Mohammad Tahir Khan

Lea Button

Oscar Overton

Extra Notes:**Login information for one of the admin staff users is:**

Username – test

Password – test

Populate database:

In order to populate the database, you run the main method in SQL.BuildDatabase, and that will delete and then populate the entire database with dummy products and orders etc.

Java connector:

There is currently an issue with the JDBC jar file, so you need to delete it from the libraries in project structure and add it again if there are any issues.

Unsure why this occurred with the zip file as it did not happen when going between computers with just the product folder.