



PROGRAMMING PROJECT REPORT

COURSES CODE & NAME	PROGRAMMING (K_BCS_004)
FACULTY	SCHOOL OF TECHNOLOGY AND ARCHITECTURE
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Contents

Introduction.....	2
Logic Flow	2
Highlight Features	3
1. Search.....	3
2. Filter	4
3. Sort	5
Technologies	6
1. IntelliJ IDEA.....	6
2. MySQL Workbench.....	7
3. GitHub.....	7
Conclusion.	8
Important Details	8

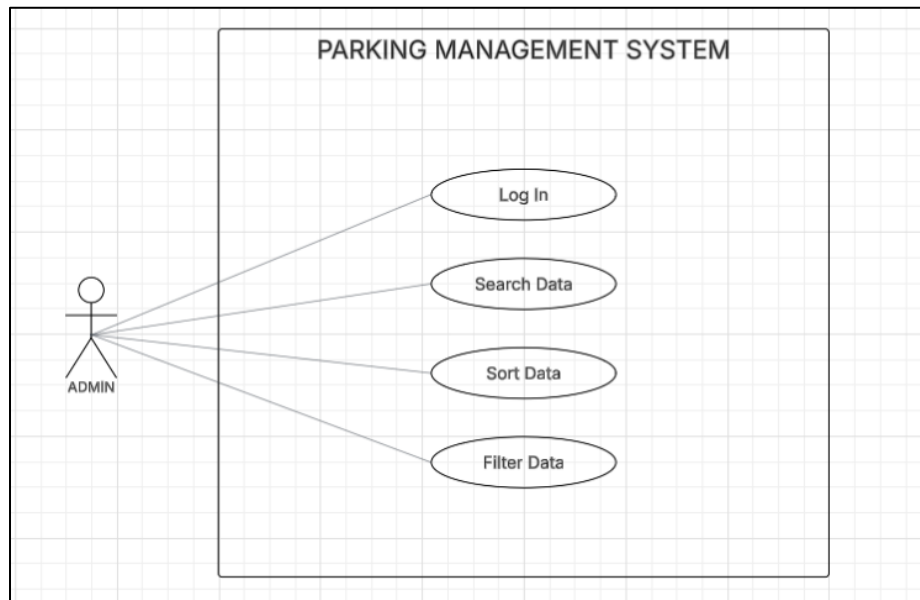
Introduction

In this Programming course, we have been tasked as group of 5 to develop a software project that is able to manage a large amount of data, that utilizes the methods and techniques that has been taught in the class. We have decided on a **Parking Management System**.

Logic Flow

There is one user role with access to the system: the **Admin**. When the system starts, the login page is displayed and the **Admin** enters their credentials. After successful login, the **Admin** is redirected to the dashboard, where past parking records are shown. From the dashboard, the **Admin** can search, filter and sort the data as needed.

The image below illustrates how the **Admin** interacts with the main features of the Parking Management System.

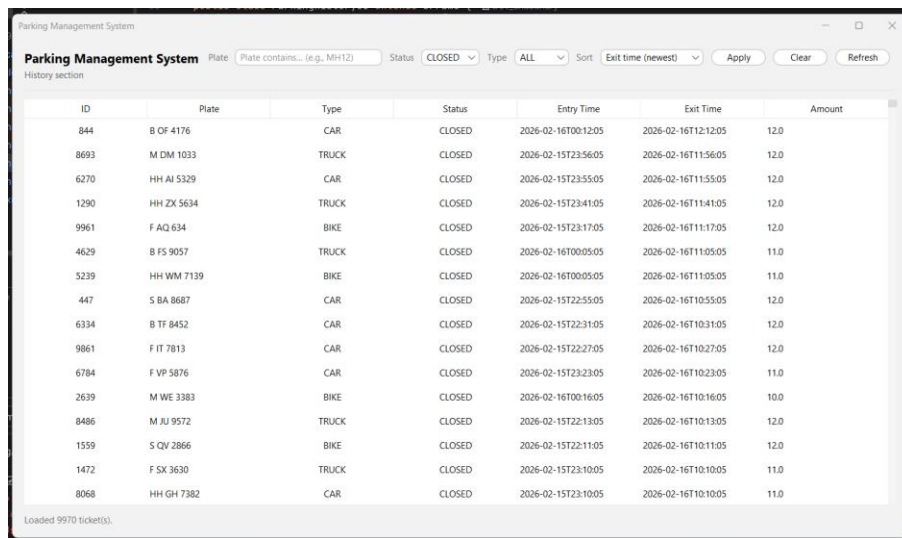


Highlight Features

The main features you can find in the Parking Management System are the **Search**, **Filter** and **Sort** feature.

1. Search

The following screenshots compare the interface before and after applying a plate search. This feature **searches** the history table and displays records that match the entered plate number.



Parking Management System

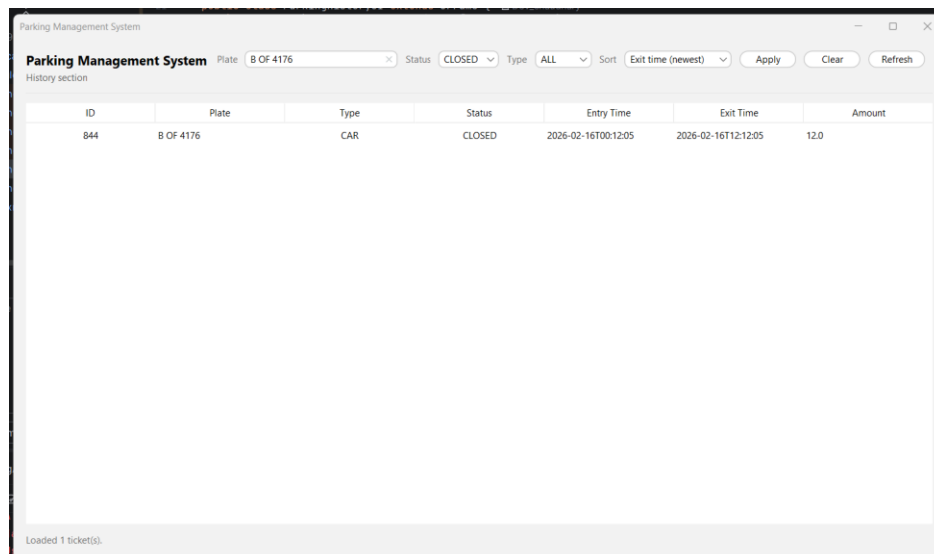
Plate: Status: Type: Sort:

History section

ID	Plate	Type	Status	Entry Time	Exit Time	Amount
844	B OF 4176	CAR	CLOSED	2026-02-16T00:12:05	2026-02-16T12:12:05	12.0
8693	M DM 1033	TRUCK	CLOSED	2026-02-15T23:56:05	2026-02-16T11:56:05	12.0
6270	HH AI 5329	CAR	CLOSED	2026-02-15T23:55:05	2026-02-16T11:55:05	12.0
1290	HH ZX 5634	TRUCK	CLOSED	2026-02-15T23:41:05	2026-02-16T11:41:05	12.0
9961	F AQ 634	BIKE	CLOSED	2026-02-15T23:17:05	2026-02-16T11:17:05	12.0
4629	B FS 9057	TRUCK	CLOSED	2026-02-16T00:05:05	2026-02-16T11:05:05	11.0
5239	HH WM 7139	BIKE	CLOSED	2026-02-16T00:05:05	2026-02-16T11:05:05	11.0
447	S BA 8687	CAR	CLOSED	2026-02-15T22:55:05	2026-02-16T10:55:05	12.0
6334	B TF 8452	CAR	CLOSED	2026-02-15T22:31:05	2026-02-16T10:31:05	12.0
9861	F IT 7813	CAR	CLOSED	2026-02-15T22:27:05	2026-02-16T10:27:05	12.0
6784	F VP 5876	CAR	CLOSED	2026-02-15T23:23:05	2026-02-16T10:23:05	11.0
2639	M WE 3383	BIKE	CLOSED	2026-02-16T00:16:05	2026-02-16T10:16:05	10.0
8486	M JU 9572	TRUCK	CLOSED	2026-02-15T22:13:05	2026-02-16T10:13:05	12.0
1559	S QV 2866	BIKE	CLOSED	2026-02-15T22:11:05	2026-02-16T10:11:05	12.0
1472	F SX 3630	TRUCK	CLOSED	2026-02-15T23:10:05	2026-02-16T10:10:05	11.0
8068	HH GH 7382	CAR	CLOSED	2026-02-15T23:10:05	2026-02-16T10:10:05	11.0

Loaded 9970 ticket(s).

Before the **Admin** inputs a specific car plate in the search bar.



Parking Management System

Plate: Status: Type: Sort:

History section

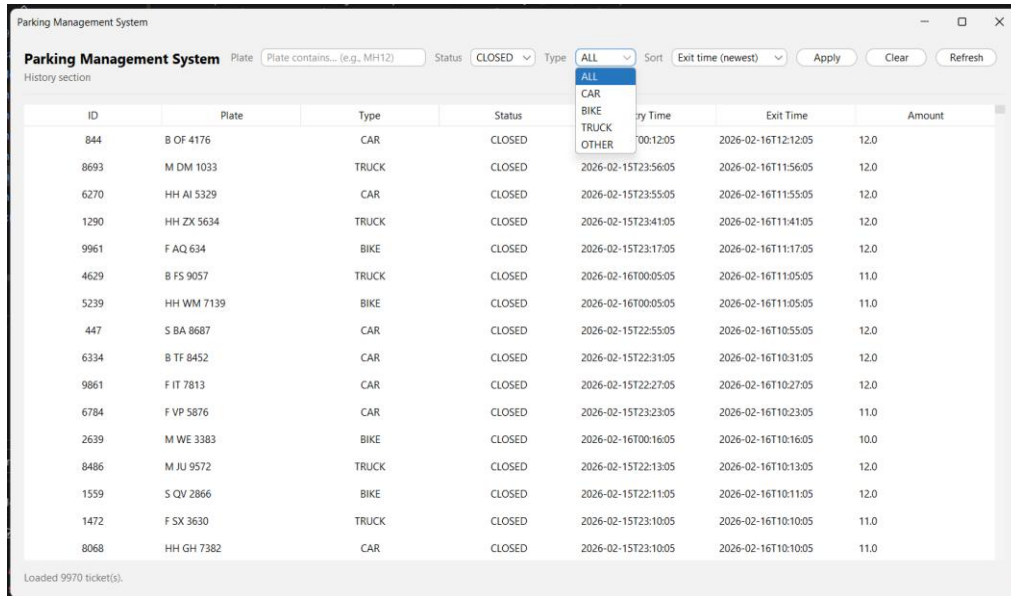
ID	Plate	Type	Status	Entry Time	Exit Time	Amount
844	B OF 4176	CAR	CLOSED	2026-02-16T00:12:05	2026-02-16T12:12:05	12.0

Loaded 1 ticket(s).

After the **Admin** inputs the specific car plate. (Exp: **B OF 4176** is entered & is displayed upon after clicking apply)

2. Filter

For the filter feature, this allows the **Admin** to filter through different vehicle types. The vehicle types consist of **CAR**, **BIKE**, **TRUCK**, **OTHER**.



Parking Management System

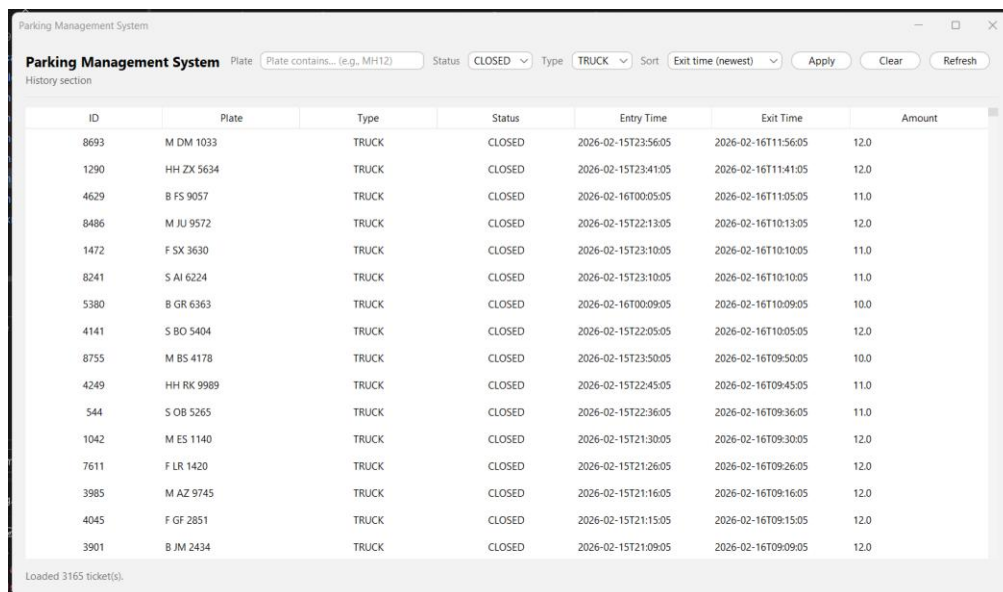
Plate: Plate contains... (e.g., MH12) Status: CLOSED Type: ALL Sort: Exit time (newest) Apply Clear Refresh

History section

ID	Plate	Type	Status	Entry Time	Exit Time	Amount
844	B OF 4176	CAR	CLOSED	2026-02-15T23:56:05	2026-02-16T12:12:05	12.0
8693	M DM 1033	TRUCK	CLOSED	2026-02-15T23:55:05	2026-02-16T11:56:05	12.0
6270	HH AI 5329	CAR	CLOSED	2026-02-15T23:55:05	2026-02-16T11:55:05	12.0
1290	HH ZX 5634	TRUCK	CLOSED	2026-02-15T23:41:05	2026-02-16T11:41:05	12.0
9961	F AQ 634	BIKE	CLOSED	2026-02-15T23:17:05	2026-02-16T11:17:05	12.0
4629	B FS 9057	TRUCK	CLOSED	2026-02-16T00:05:05	2026-02-16T11:05:05	11.0
5239	HH WM 7139	BIKE	CLOSED	2026-02-16T00:05:05	2026-02-16T11:05:05	11.0
447	S BA 8687	CAR	CLOSED	2026-02-15T22:55:05	2026-02-16T10:55:05	12.0
6334	B TF 8452	CAR	CLOSED	2026-02-15T22:31:05	2026-02-16T10:31:05	12.0
9861	F IT 7813	CAR	CLOSED	2026-02-15T22:27:05	2026-02-16T10:27:05	12.0
6784	F VP 5876	CAR	CLOSED	2026-02-15T23:23:05	2026-02-16T10:23:05	11.0
2639	M WE 3383	BIKE	CLOSED	2026-02-16T00:16:05	2026-02-16T10:16:05	10.0
8486	M JU 9572	TRUCK	CLOSED	2026-02-15T22:13:05	2026-02-16T10:13:05	12.0
1559	S QV 2866	BIKE	CLOSED	2026-02-15T22:11:05	2026-02-16T10:11:05	12.0
1472	F SX 3630	TRUCK	CLOSED	2026-02-15T23:10:05	2026-02-16T10:10:05	11.0
8068	HH GH 7382	CAR	CLOSED	2026-02-15T23:10:05	2026-02-16T10:10:05	11.0

Loaded 9970 ticket(s).

The table displays all types of Vehicles.



Parking Management System

Plate: Plate contains... (e.g., MH12) Status: CLOSED Type: TRUCK Sort: Exit time (newest) Apply Clear Refresh

History section

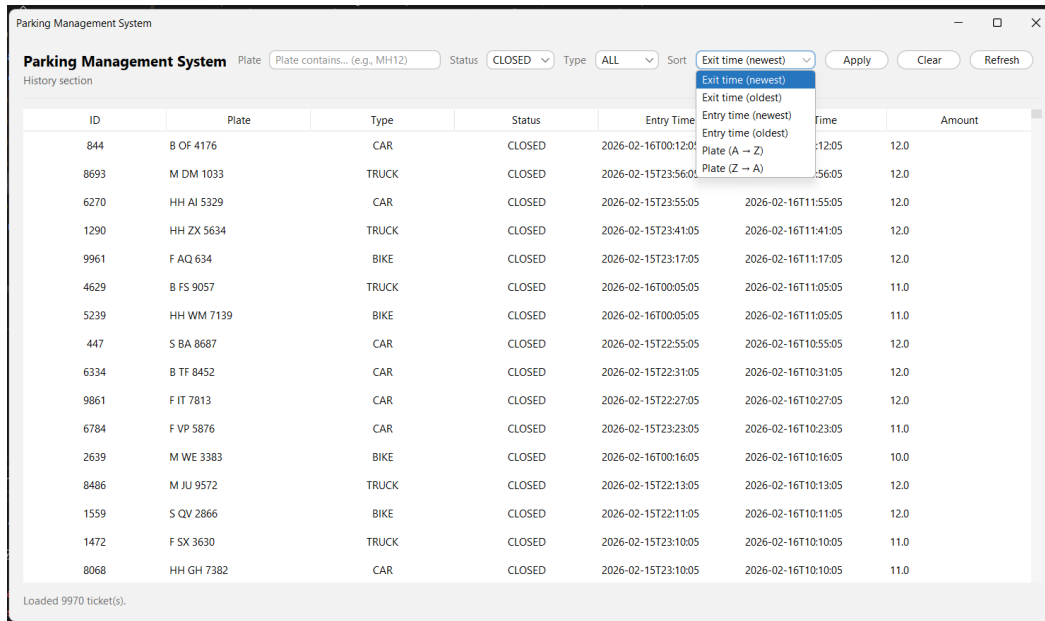
ID	Plate	Type	Status	Entry Time	Exit Time	Amount
8693	M DM 1033	TRUCK	CLOSED	2026-02-15T23:56:05	2026-02-16T11:56:05	12.0
1290	HH ZX 5634	TRUCK	CLOSED	2026-02-15T23:41:05	2026-02-16T11:41:05	12.0
4629	B FS 9057	TRUCK	CLOSED	2026-02-16T00:05:05	2026-02-16T11:05:05	11.0
8486	M JU 9572	TRUCK	CLOSED	2026-02-15T22:13:05	2026-02-16T10:13:05	12.0
1472	F SX 3630	TRUCK	CLOSED	2026-02-15T23:10:05	2026-02-16T10:10:05	11.0
8241	S AI 6224	TRUCK	CLOSED	2026-02-15T23:10:05	2026-02-16T10:10:05	11.0
5380	B GR 6363	TRUCK	CLOSED	2026-02-16T00:09:05	2026-02-16T10:09:05	10.0
4141	S BO 5404	TRUCK	CLOSED	2026-02-15T22:05:05	2026-02-16T10:05:05	12.0
8755	M BS 4178	TRUCK	CLOSED	2026-02-15T23:50:05	2026-02-16T09:50:05	10.0
4249	HH RK 9989	TRUCK	CLOSED	2026-02-15T22:45:05	2026-02-16T09:45:05	11.0
544	S OB 5265	TRUCK	CLOSED	2026-02-15T22:36:05	2026-02-16T09:36:05	11.0
1042	M ES 1140	TRUCK	CLOSED	2026-02-15T21:30:05	2026-02-16T09:30:05	12.0
7611	F LR 1420	TRUCK	CLOSED	2026-02-15T21:26:05	2026-02-16T09:26:05	12.0
3985	M AZ 9745	TRUCK	CLOSED	2026-02-15T21:16:05	2026-02-16T09:16:05	12.0
4045	F GF 2851	TRUCK	CLOSED	2026-02-15T21:15:05	2026-02-16T09:15:05	12.0
3901	B JM 2434	TRUCK	CLOSED	2026-02-15T21:09:05	2026-02-16T09:09:05	12.0

Loaded 3165 ticket(s).

The table display a specific Vehicle type, which is **TRUCK**.

3. Sort

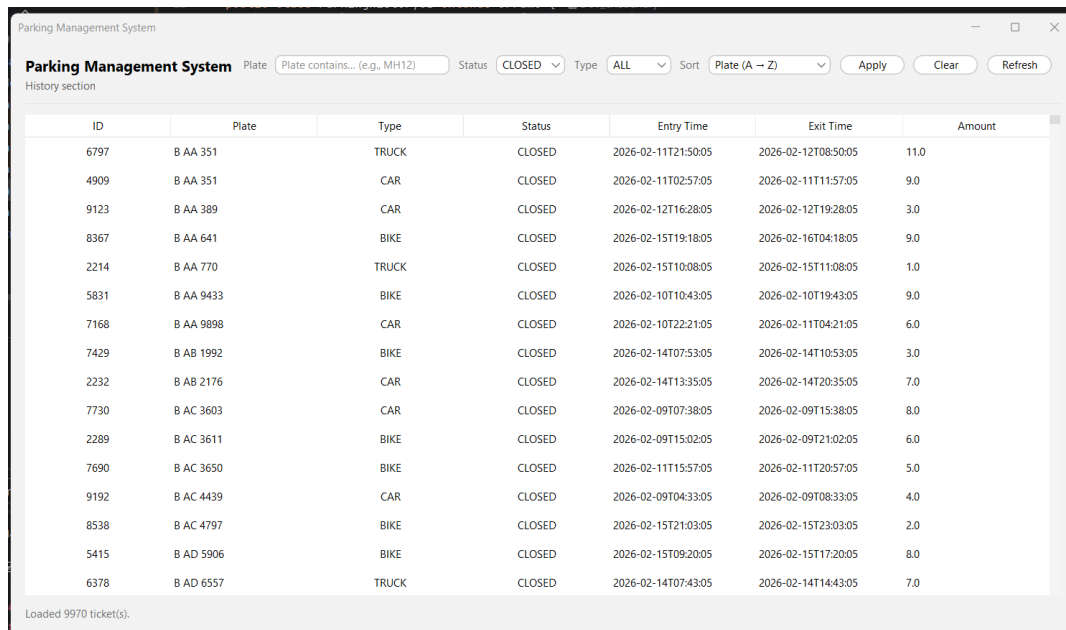
As for the sort feature, it allows the **Admin** to sort records by **Exit Time** (newest/oldest), **Entry Time** (newest/oldest) and **Car Plate** (A–Z or Z–A).



The screenshot shows the 'Parking Management System' interface. At the top, there are filters for 'Plate' (Plate contains... (e.g., MH12)), 'Status' (CLOSED), 'Type' (ALL), and 'Sort' (Exit time (newest)). The 'Sort' dropdown menu is open, showing options: 'Exit time (newest)', 'Exit time (oldest)', 'Entry time (newest)', 'Entry time (oldest)', 'Plate (A → Z)', and 'Plate (Z → A)'. Below the menu is a table with columns: ID, Plate, Type, Status, Entry Time, Exit Time, and Amount. The table contains 18 rows of data. At the bottom, it says 'Loaded 9970 ticket(s)'.

ID	Plate	Type	Status	Entry Time	Exit Time	Amount
844	B OF 4176	CAR	CLOSED	2026-02-16T00:12:00	2026-02-16T11:12:05	12.0
8693	M DM 1033	TRUCK	CLOSED	2026-02-15T23:56:00	2026-02-16T11:56:05	12.0
6270	HH AJ 5329	CAR	CLOSED	2026-02-15T23:55:05	2026-02-16T11:55:05	12.0
1290	HH ZX 5634	TRUCK	CLOSED	2026-02-15T23:41:05	2026-02-16T11:41:05	12.0
9961	F AQ 634	BIKE	CLOSED	2026-02-15T23:17:05	2026-02-16T11:17:05	12.0
4629	B FS 9057	TRUCK	CLOSED	2026-02-16T00:05:05	2026-02-16T11:05:05	11.0
5239	HH WM 7139	BIKE	CLOSED	2026-02-16T00:05:05	2026-02-16T11:05:05	11.0
447	S BA 8687	CAR	CLOSED	2026-02-15T22:55:05	2026-02-16T10:55:05	12.0
6334	B TF 8452	CAR	CLOSED	2026-02-15T22:31:05	2026-02-16T10:31:05	12.0
9861	F IT 7813	CAR	CLOSED	2026-02-15T22:27:05	2026-02-16T10:27:05	12.0
6784	F VP 5876	CAR	CLOSED	2026-02-15T23:23:05	2026-02-16T10:23:05	11.0
2639	M WE 3383	BIKE	CLOSED	2026-02-16T00:16:05	2026-02-16T10:16:05	10.0
8486	M JU 9572	TRUCK	CLOSED	2026-02-15T22:13:05	2026-02-16T10:13:05	12.0
1559	S QV 2866	BIKE	CLOSED	2026-02-15T22:11:05	2026-02-16T10:11:05	12.0
1472	F SX 3630	TRUCK	CLOSED	2026-02-15T23:10:05	2026-02-16T10:10:05	11.0
8068	HH GH 7382	CAR	CLOSED	2026-02-15T23:10:05	2026-02-16T10:10:05	11.0

Before the **Admin** chooses a sort category. The table display the **Exit Time (newest)** from the start.



The screenshot shows the 'Parking Management System' interface. At the top, there are filters for 'Plate' (Plate contains... (e.g., MH12)), 'Status' (CLOSED), 'Type' (ALL), and 'Sort' (Plate (A → Z)). The 'Sort' dropdown menu is open, showing options: 'Exit time (newest)', 'Exit time (oldest)', 'Entry time (newest)', 'Entry time (oldest)', 'Plate (A → Z)', and 'Plate (Z → A)'. Below the menu is a table with columns: ID, Plate, Type, Status, Entry Time, Exit Time, and Amount. The table contains 18 rows of data. At the bottom, it says 'Loaded 9970 ticket(s)'.

ID	Plate	Type	Status	Entry Time	Exit Time	Amount
6797	B AA 351	TRUCK	CLOSED	2026-02-11T21:50:05	2026-02-12T08:50:05	11.0
4909	B AA 351	CAR	CLOSED	2026-02-11T02:57:05	2026-02-11T11:57:05	9.0
9123	B AA 389	CAR	CLOSED	2026-02-12T16:28:05	2026-02-12T19:28:05	3.0
8367	B AA 641	BIKE	CLOSED	2026-02-15T19:18:05	2026-02-16T04:18:05	9.0
2214	B AA 770	TRUCK	CLOSED	2026-02-15T10:08:05	2026-02-15T11:08:05	1.0
5831	B AA 9433	BIKE	CLOSED	2026-02-10T10:43:05	2026-02-10T19:43:05	9.0
7168	B AA 9898	CAR	CLOSED	2026-02-10T22:21:05	2026-02-11T04:21:05	6.0
7429	B AB 1992	BIKE	CLOSED	2026-02-14T07:53:05	2026-02-14T10:53:05	3.0
2232	B AB 2176	CAR	CLOSED	2026-02-14T13:35:05	2026-02-14T20:35:05	7.0
7730	B AC 3603	CAR	CLOSED	2026-02-09T07:38:05	2026-02-09T15:38:05	8.0
2289	B AC 3611	BIKE	CLOSED	2026-02-09T15:02:05	2026-02-09T21:02:05	6.0
7690	B AC 3650	BIKE	CLOSED	2026-02-11T15:57:05	2026-02-11T20:57:05	5.0
9192	B AC 4439	CAR	CLOSED	2026-02-09T04:33:05	2026-02-09T08:33:05	4.0
8538	B AC 4797	BIKE	CLOSED	2026-02-15T21:03:05	2026-02-15T23:03:05	2.0
5415	B AD 5906	BIKE	CLOSED	2026-02-15T09:20:05	2026-02-15T17:20:05	8.0
6378	B AD 6557	TRUCK	CLOSED	2026-02-14T07:43:05	2026-02-14T14:43:05	7.0

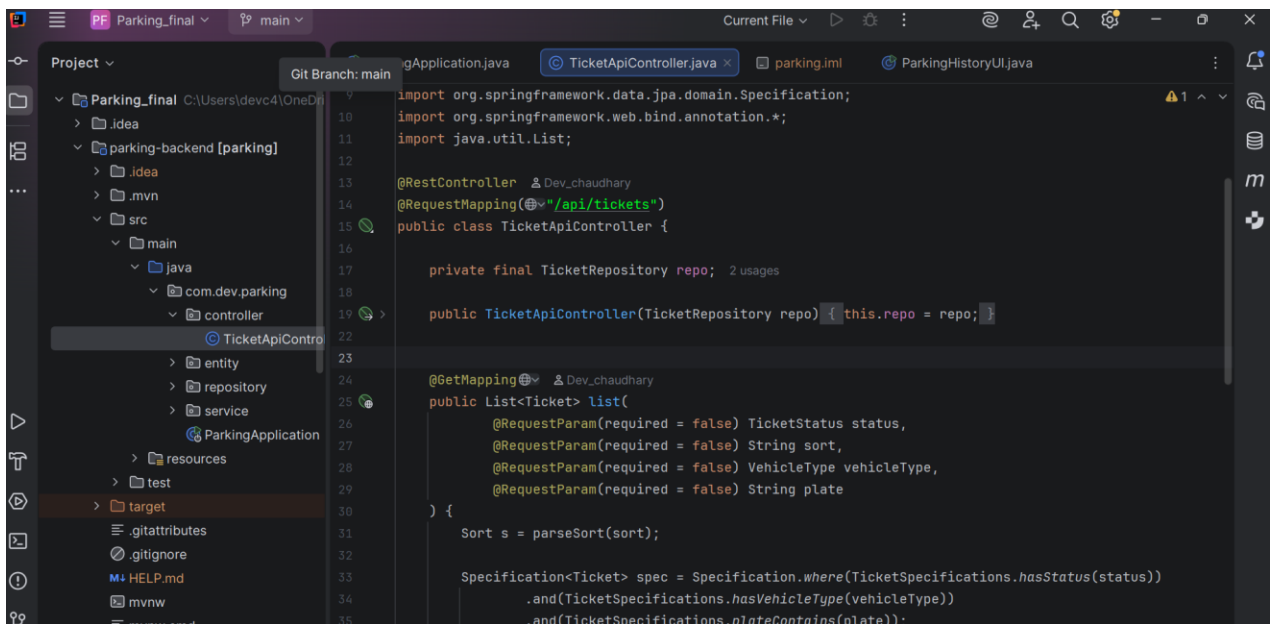
The **Admin** chose the Car Plate category in ascending order.

Technologies

The main tools used for this project are **IntelliJ IDEA**, **MySQL Workbench**, and **GitHub**.

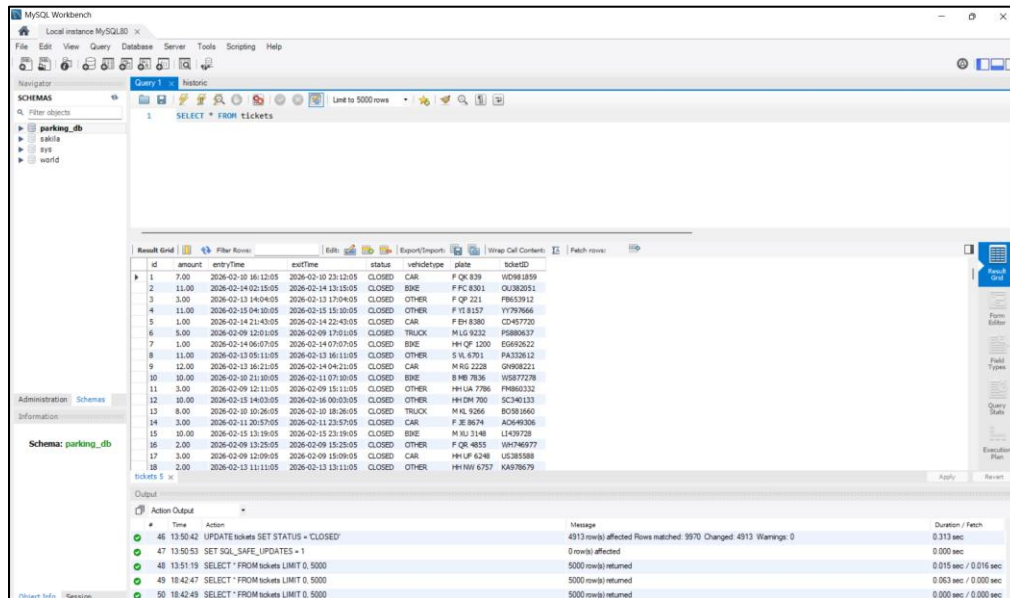
1. IntelliJ IDEA

IntelliJ IDEA is the primary development environment used to build the Parking Management System. It was used to write, run, and debug the Java (Swing) client and the Spring Boot backend.



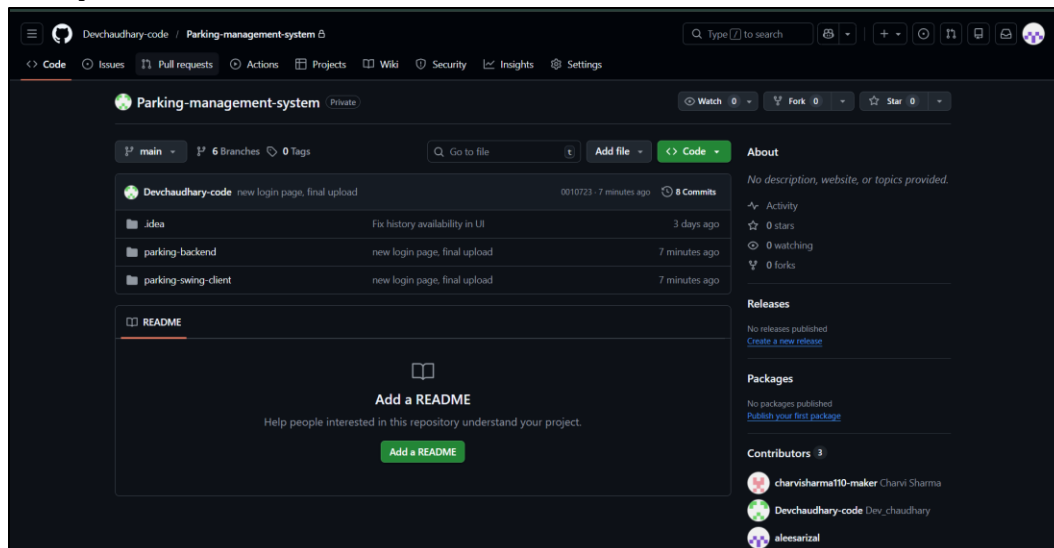
2. MySQL Workbench

MySQL Workbench is used to manage the project database, where all parking records are stored. It allows us to create and maintain tables, run SQL queries, and view or update data when needed.



3. GitHub

GitHub is used for version control and collaboration. It stores the complete project source code (backend and Swing client) in a shared repository, allowing team members to contribute through branches, track changes, and merge updates safely.



Conclusion.

In conclusion, with this given task, it has taught us the various usage and importance of the development process for a system and how it influences our everyday life.

For future additional features that we plan on adding would be for example, a pagination component in the dashboard, where the table of data is displayed. For a proper, easier navigation rather than having to scroll through the table. Aside from that, a register entry/exit feature that allows the **Admin** to manually register new vehicles into the parking lot or modify the exit time for vehicles that wish to leave.

Important Details

1. GitHub Repository Link - <https://github.com/Devchaudhary-code/Parking-management-system.git>
2. Admin Log in Details
 - Username: admin
 - Password: admin123