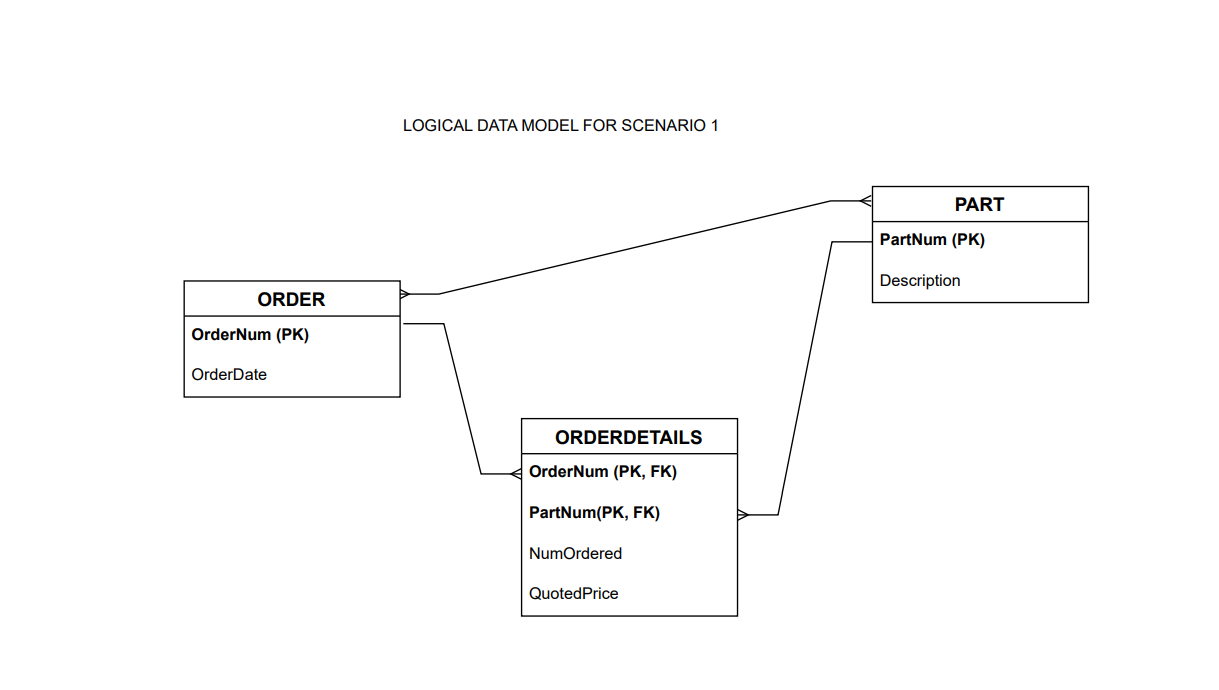
# SQL Query Design for Parts and Orders Tracking (SCHOOL PROJECT - ITD 256)

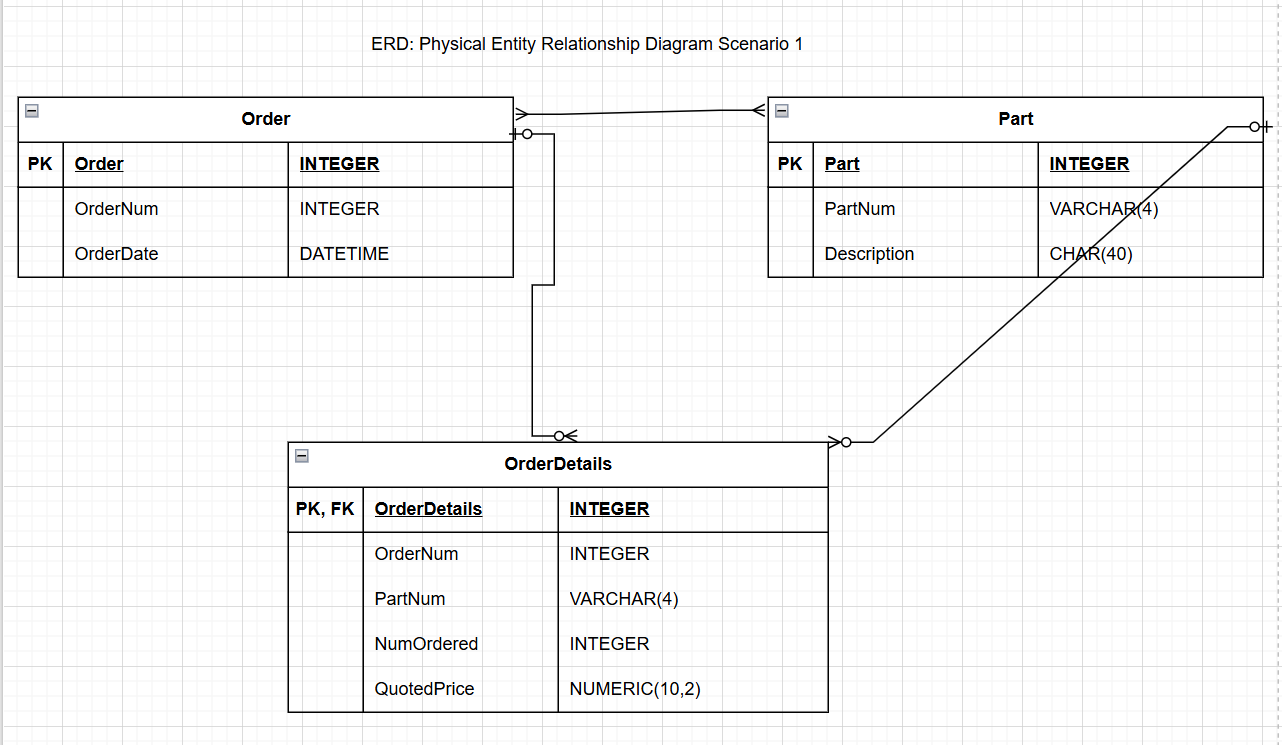
## Project description

In this project, I used Microsoft Access to develop SQL queries that analyze and retrieve data from a newly designed relational database that replaced a flat one-table system used to track parts and orders. I normalized the data to Third Normal Form (3NF) to eliminate redundancy and ensure data integrity by organizing it into related tables such as Parts, Orders, and Customers. I then created queries to join these tables, display complete transaction details, filter records based on conditions like part name or quantity, and identify trends such as frequently ordered items. This project strengthened my skills in data normalization, relational design, and writing efficient SQL statements using SELECT, WHERE, JOIN, and GROUP BY clauses in Access to support data-driven decisions.

## ERD: Logical Entity Relationship Diagram



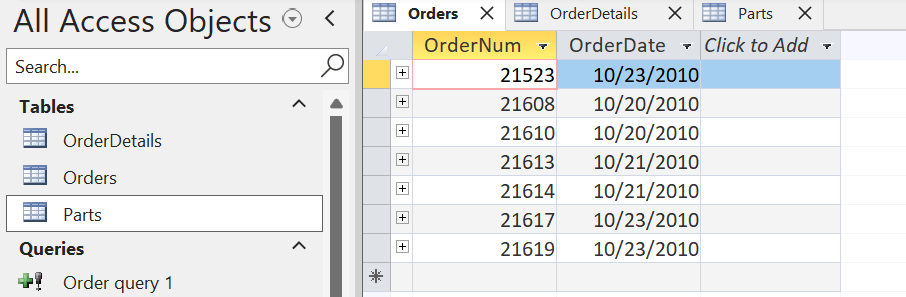
## ERD: Physical Entity Relationship Diagram

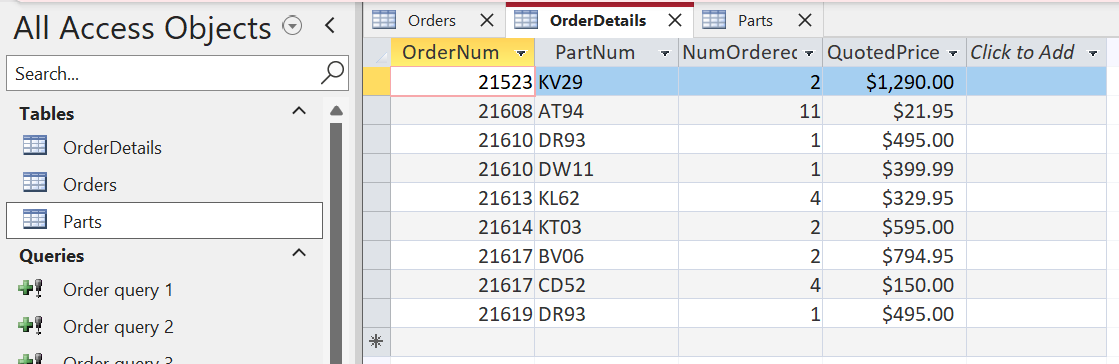


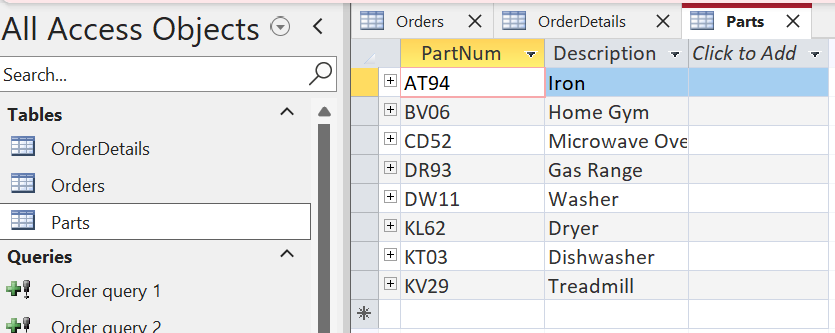
## Normalization

## [NORMALIZATION FORM](https://viewer.diagrams.net/?tags=%7B%7D&lightbox=1&highlight=0000ff&edit=_blank&layers=1&nav=1&title=normalization2.drawio&dark=auto#R%3Cmxfile%3E%3Cdiagram%20name%3D%22Page-1%22%20id%3D%22fLM6xif_BB8whk1d68X6%22%3E7Z1dd9u2soZ%2FTS6TJX5KvHSsOO1xmqSJT5KeO0Zibbay6EXTsbV%2F%2FQYkQhI5I5kExY9jvF1drUhRlDx4gHdmCAxeOee3T%2B%2FT8O7mj2QeLV7Zo%2FnTK2f6yrZtz56I%2F8kzq%2FyM4zmbM9dpPN%2Bcs3Ynvsb%2FifKTo%2FzsQzyP7gsXZkmyyOK74slZslxGs6xwLkzT5LF42d%2FJovitd%2BF1RE58nYULevZ7PM9uNmcn3mh3%2Frcovr5R32yN8nduQ3VxfuL%2BJpwnj3unnHevnPM0SbLNq9un82ghrafssvncxYF3tz8sjZZZlQ%2Bsgl%2BL8Y%2Bp%2B38%2FX9%2Fd2v9%2B%2B%2Ffi3ep1fpdf4eJB%2FcEfL%2FLfm62UEdLkYTmP5H2sV87bx5s4i77ehTP57qNod3HuJrtd5G%2FT36W%2BJEqz6GnvVP4730fJbZSlK3FJ%2Fq6jzJtT83pr78ddG1jKsDd79vfzc2He7Nfbe%2B8sI17kxqlhKJsYilhJNPCdfJmFP%2BWpt%2FdZmGY50SNxLBDNwngZpbmhZsliEd7dx%2BurN1fcxIv5h3CVPGTqPuroJGYtWXU8plYd%2B4xVXastszo1zfpF9qC3N0ka%2F0dac5Ebrmzq%2B8f4dhEuRdcM56VTb5P1WLT5VJr8G50ni0Q2Sby8idJYmjpL7vIrFtHfWf7yZ5JlyW1%2BkOa2GbHNOE%2BTu6swvY7UJX%2FHi4X6mmWylHDcJfEyW1vTeyv%2BFfY9H73xXnniLz4Xx9buWPwrL0%2Bz82QpfrEgSN42Cu%2Bzx%2BieJ%2BMowc%2Fj8hwOXls0uAwN%2FkL%2BjT%2FFi2v54lM6j9KPD7fqDfE92%2FcOoiNsk8Xh4osQiHB5ve6cewMWN57lchLuGvUQLIkw6N%2BL9cB%2BE8%2Fn0ZJv73pMremI0ne%2Fog0k%2FLh6tEfVamZ2LD3WzPnddhatf7twIf7CZZiJHinU5Z7As%2F2l%2Bjx5FXmail8BoBoD9VRq%2FZcPmP88YJ8FKhivToiX7TJ4WafFq8rtOsBr%2FDxe0%2Bh%2BlsZ3WZwsgdipEHO4cMM7LWJVbtcBYpPnEROj11olRQAIwk5EmDdiCHNPS1iV23VAWPA8YX8%2BJFk0%2F5zGM7hhJ0PM53TyZbphSq6RRhhSGmFV5OHZJFNbWQWLJjltyx9NMKzsd53m%2BYJjDagxjpRv18U4QrO80j4X9uY%2FylZApq2MwAtAiGa0z64CF%2BBogVM51m8ATpXbdQEOTX7%2FnsqgHuBogFM5gm8ATpXbdQEOzXIrjwfYtBWWN8Cmyu26wIbLXbu29SbwAI8WPJUD7hfg5XCZaQTcwwi4g94DbppUFgE3oqdi10HALYxBk8MIuJsgY17ArX7GHkLTL4EDcLTAMSjgtmla%2BL34env0RfzoCPxo8WNQ3K1c3n3tAjVa1BgUdtvcjGfXDbw3Izg7evQYFHfb3AxpxN3DiLsth3LYbeBt01QwAm%2FSdxB4C2PQ7C8C7ybIGBh40xzw9DuePGmCY1LgTdPD38N70ZRARwsdk2JuJl8MarSoMSjmVn55MeZ2guBNEIAeLXoMirkdmic%2BCA1i7q5j7solDNqKuR2aBpYxNx5AFfoOYm5hDJr63cTcFmJuLWTMi7kdmv%2B9%2FOAf1iOAg5h7YxyaGZ6mK4TcmuQYFHI7NFOM1Sx61JgUcnMThF3HDjC9XJcek0JurioFQu5hhNzb0pz9hdw0CyxDbshSoe8g5F69Vl%2BJkPtEyJgXcrs0%2FXt5NUJ6Tw8cg0JulyaGp%2FH9zSMedevjY1Dc7dJsMfJ8etQYFHe73ARh18P0cn16DIq7Xa5gMuLugcTdvRdSc2kqWMbdYwws%2B30HcbcwBk3%2FbuJuB3G3FjIGxt00B%2Fz228gHOFrgmBR30%2Bzwb%2BKm4sz71S3w0cLHoLhb%2FQzE3Y2pMSju9rhJwu44cPG8W5ceg%2BJuj6aKD0KDuLvruLv3emoekwpG3F3uO4i7hTFo%2BhdxdxNkzIu7PZoDPp96h%2FUI4CDu3hiHZof%2FiGdp8hj%2Bkr%2F4k7A3INKCyKTomyaOMa1PjxqTom9uvrArmMZTb116TIq%2BuR3qEH0PI%2Fp2ei%2Bqpr6sFH2jckSh7yD6FqTQJDCi7ybImBd9q7XcqGZ%2BCnAMir59miNGNfOm%2FBgUePtM5hjUaFFjUODtcxOGUc28CT0GBd4%2BtwUdAu%2BBBN69V1bzaS5YyKUNZ7jQdxB4C2PQ%2FC8C7ybIGBh40yTw5TcbST49cAwKvJVM7oFzlQrH4zaWnwU9GvQYFHaPacr4sA8MahB2b6ihWWL5vNsO8MBbGx%2BD4u4xM5%2F44wXhJpU%2FIJof4WMPH9ou9Ytq5pZQ864rtod%2FpD2abWPN7E58sHPlnYTkImYyUREvozS3E80XzG7ixfxDuEoeMnUfdXQSq3pFs3K7lLkBY1enPcMye%2FYeNywSP9qJnx3FtTIFLBKtpXosZjPeV7a%2FkH%2FnT%2FHiWr74LBr748OtOi%2B%2BaPsWNK%2FQrZATktbgnKQSUtPofpbGd1mcLIHVCbA6ljdyTotZldt1UaqW3dC3hJkYtT6l8ygVzhQoOxllXEGcF0qZVYWyPx%2BSLJp%2FTmNBBDA7GWbOxJhcpoX9pYfpmK%2BKSPTop9MJH2dXAZboFHsP%2FG9pDTq74%2Fc0wRrAuqiY6FMzkxExG1ETHKPcZHbbGdtCFR5tfIxyf7HvzJDdX4bErt1f%2BkQIy3NI74H7K6zBbDqOBTn6xJjoBdNYG06wJjcmOcHshvVYlNOIH5O8YGZHe3jBw%2FGCOQns2A1mdrKffkeGptR94AZLa9BU3nfsgKYDi4keMH2EgEFGkxujPGB2WboTBG8CrOjS5McoDxgL0wftAfv9e8D0QdPlB%2F8wJWYNLlibvm8N%2BlBpmq7gANdmxUQHGOWQT8aNUQ4wt3LNdewAEyG0%2BTHJAVbfCQd4kA6wzSx179gBdulDpsurEWZCFLsPHGBpDfo8aRrf3zwiDawDjIleMI2gEGlrcmOSF%2Bxyi%2BZcDxMhGvBjlBeM1XCD9oL7Xw7n0gdN2KSedB94wdIa9JkStqXXBsZEL5jm9OAFa3JjlBfMronD1vRN%2BDHKC8aiuEF7wf2vinOpMmHLaNJ94AULayjdxSbRp8PGQF%2BYWVyJeRGa3JjkC3vs0jhsFN2EH5N84e0%2B2vCFh%2BgLO%2F0vjfPoMyfsI0O6D3xhaQ36eAk7x%2BjyYqITjL1jTsaNUU4wuzoOu8c0AsggL9iptFlDGt%2BGawNdRqtK5aiFobMiVOEivhYoTGeRbEhxQjZHPAsXZ%2FkbtwKWNYkcfrvta0Zsy9feSUWZeluHwaJNPmGayGnL2XSYxfUH%2B%2B9gN6gp70%2FDjMQ2S77Vnl25ERJhXith3g7iWkEBj4TdGhHciuDSkLfe4gEb1FTpV%2FXiv1HNpn5GRqvcrhP%2FnXswzzE1Fb8DUJ0AqqcSAc86V%2FqQVbldF5D5kLJBStmqiER%2FyuZTZZMFFiYYXArdB4olrUEVS8J6YW%2F%2BYyF7UBcaAxWJqYcBRRqOIk3cvhWJKV4gFAmDS6n7QJGENZhCBVCkRtAYqEhMLQMo0nAUabuT2LOS5LQlSUwJA0gS7T8nkKQjTagjSaXbdTKa0BlAkKRG0NSWJH2IqtyuE4iw9HzQkuQHfUdJzNJzKUmowFTsP4iSpDWYOuprNbIgSXrQmBglcY8rIUlDkaTtDrk9ShJTp0tIElZmFfsPJElagyZ5IUmNoDFQkpjVxJCkAUmSWgzVnyQxCz6lJI0xuhT6DyRJWoMmeSFJjaAxUZK4mqOQpMFIkqp51aMk0dQuJIn2H0iStAazBfhakhxIkh40JkoSdrMbsiRt14E8K0lua5JEU7tSklC1oth%2FTiBJR5pQR5JKt%2BtkNKFJXkhSI2hqS5I%2BRFVu1wlE3P5kkKTBSNKk4rMkVdiohWVJNLVrW56N6Q3F%2FtNcko41oYYklW%2FXybIkmuSFJDWCpq4kNYCoyu06gajusiRGfnqvpbEtjJoP5D5Tlcbm6p85QfAm2Ptn0tq4DuXvTvl9rbVCLCCtVUx0xtxDXJTWqDm4%2B3oewQutUDWuUqFK4AGkToPUU6n9TUDMhpANUchWRSR61DX6JBiFNWj3gV5Ja9BnwmdXASbO1kXFRB1Cgach61DVALxFHWILPCEpVuo%2B0CFpDfogePolQNK9Liom6hDKOg1Zh7iNEboWItR1qtJ%2FIETCGspt2hei72qFI1CBEB1BB9WcBi1Efu9CNKGpW5TOoP0HQiStwezn9sE%2FPKIAFQiRsg5qOA1ZiGxmclPXQsTXcELev9h%2FIETSGjSNe3k1gs9SFxUThQiVmwYtRP3PVZjwlZuwJrnYfyBE0ho0jfv228gHKjVRMVCI1FbsEKJhClH%2FkxUC1Guq0n8gRNIaNI17PvUOjyhABUKkrIMqTUMWIqf%2FyQoBX6UJJTGK%2FQdCJK1B07iYNaeBiolChNpMgxai%2FicrBFxtJhTCKPcfCJG0Bk3jXn6z4bPURcU8IXJHNJimK6bT%2BDZcG%2BgyWlVaNy0MnR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## Create the database in MS ACCESS







If you are interested in query code, please send me a message and I will show it to you. I couldn’t do it now because I am more than 15 individuals code.

## 15 SQL Queries

[LINK](https://1drv.ms/w/c/5db82be82310d3c0/EfSeiQdOBiBOk0ofQtwN3DoBzeiPyNW5eEmXENdEEA33yw?e=EAGb85)

## Summary

I successfully completed a database design project in Microsoft Access by transforming a flat-file parts and orders tracking system into a normalized relational database. I applied Third Normal Form (3NF) to structure the data into separate tables for Parts, Orders, and Customers, improving data integrity and eliminating redundancy. I created and executed SQL queries to join tables, filter records, and analyze trends such as frequently ordered items. This project demonstrated my ability to design relational databases, apply normalization, and write efficient SQL queries to support business insights.