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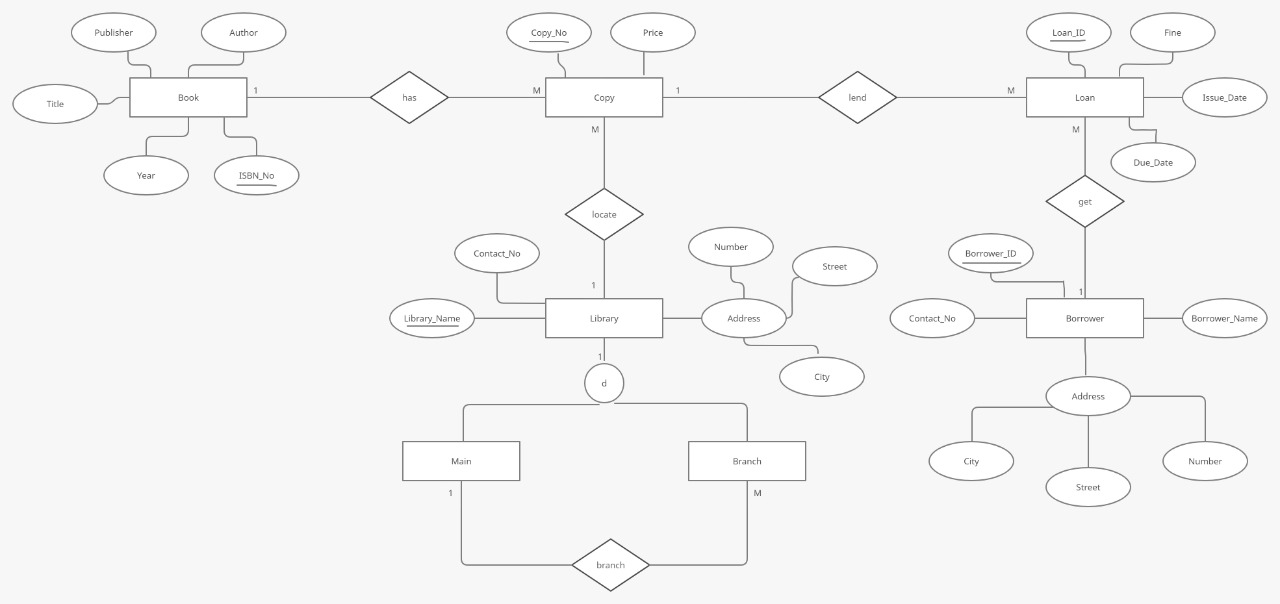
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# Introduction

Lanka library is a library service chain which is very poular in Sri Lanka.They offer many services such as keeping book records,book copy,records,l,borrowers records ,loan records.Lanka library needed a good database to maintain their records and provide good user experience to their library service.they want to track their records which contains Book,copy,borrower,loan etc. Introducing new Data Base Management System which maintain details about library, bookcopy, Borrower, Branches, Loan,and other details.

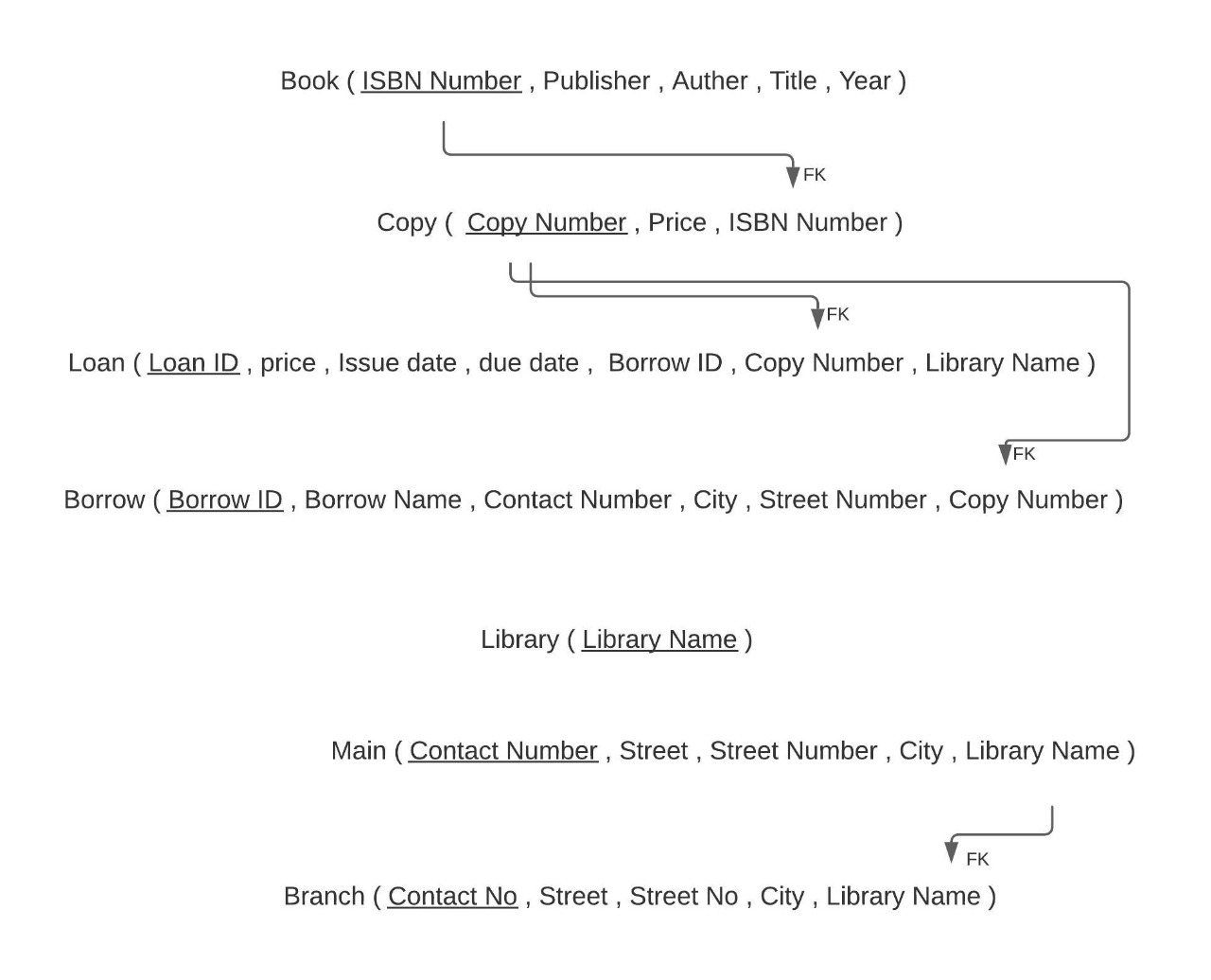
# ER Diagram



# Assumptions

* One book has many copies
* One borrower can loan several books
* Address in Borrower is a composite attribute
* Library has only one main branch
* Library can have many branches
* Primary key of book entity is ISBN\_NO
* Primary key of Book entity is ISBN\_NO
* Primary key of Copy entity is Copy\_NO
* Primary key of Loan entity is Loan\_ID
* Primary key of Borrower entity is Borrower\_ID

# Relational Schema



# Data Dictionary

**Book Table.**

|  |  |  |  |
| --- | --- | --- | --- |
| Fieldname | Datatype | Field length | Description |
| ISBN\_No | Char | 20 | Not NULL, Primary Key |
| Publisher | Varchar | 50 | Not NULL |
| Author | Varchar | 40 | Not NULL |
| Title | Varchar | 40 | Not NULL |
| Year | Date | - | Not NULL |

**Copy Table.**

|  |  |  |  |
| --- | --- | --- | --- |
| Fieldname | Datatype | Field length | Description |
| Copy\_No | Char | 20 | Not NULL, Primary Key |
| Price | money | 06 | Not NULL |

**Loan Table.**

|  |  |  |  |
| --- | --- | --- | --- |
| Fieldname | Datatype | Field length | Description |
| Loan\_ID | Char | 20 | Not NULL, Primary Key |
| Fine | Char | 10 | Not NULL |
| Issue\_Date | Date | - | Not NULL |
| Due\_Date | Date | - | Not NULL |

**Borrower Table.**

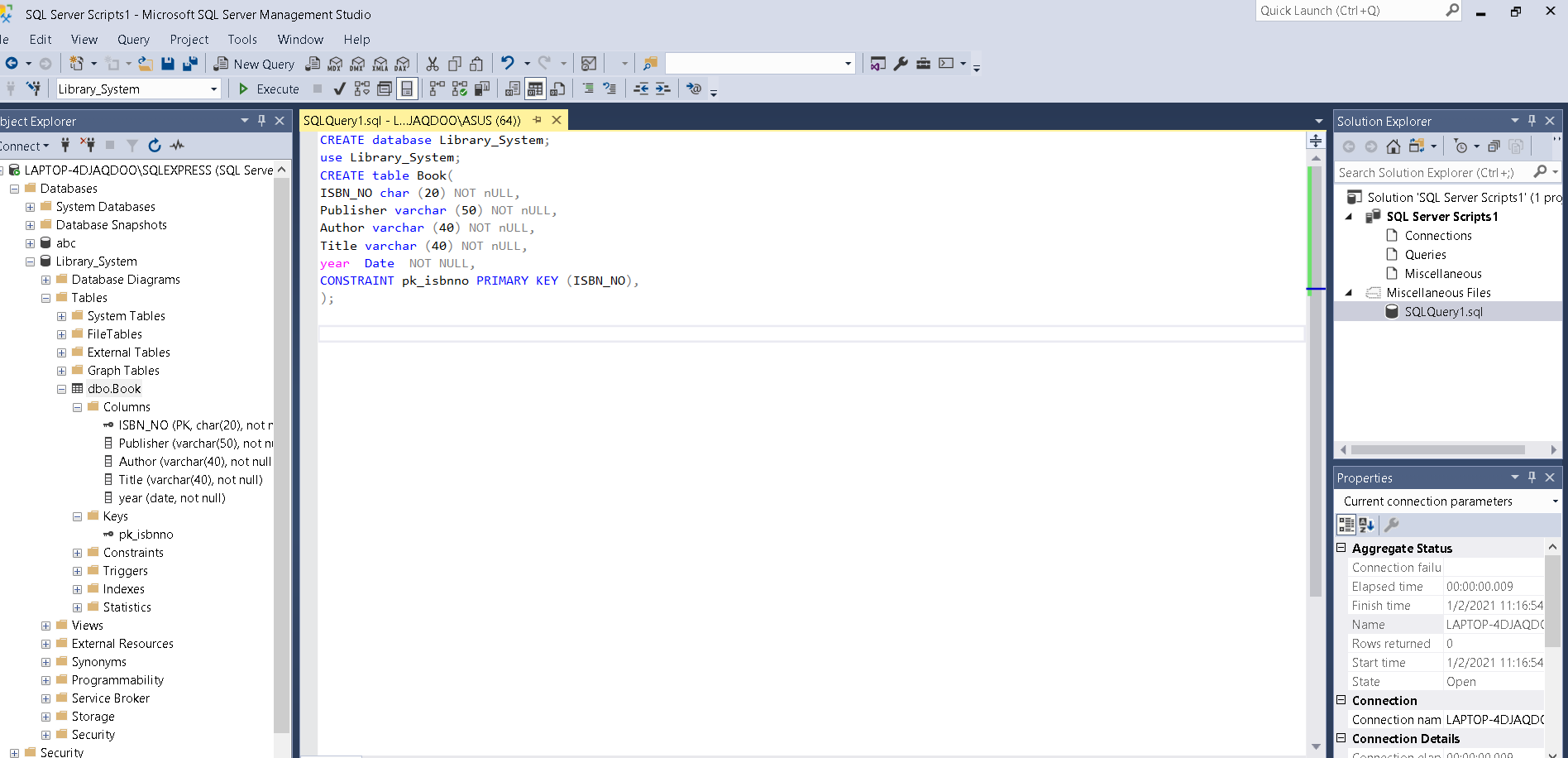
|  |  |  |  |
| --- | --- | --- | --- |
| Fieldname | Datatype | Field length | Description |
| Borrower\_ID | Char | 20 | Not NULL, Primary Key |
| Contact\_No | Char | 10 | Not NULL |
| Borrower\_Name | Varchar | 40 | Not NULL |
| City | Varchar | 20 | Not NULL |
| Street | Varchar | 30 | Not NULL |
| Number | Varchar | 10 | Not NULL |

**Library Table.**

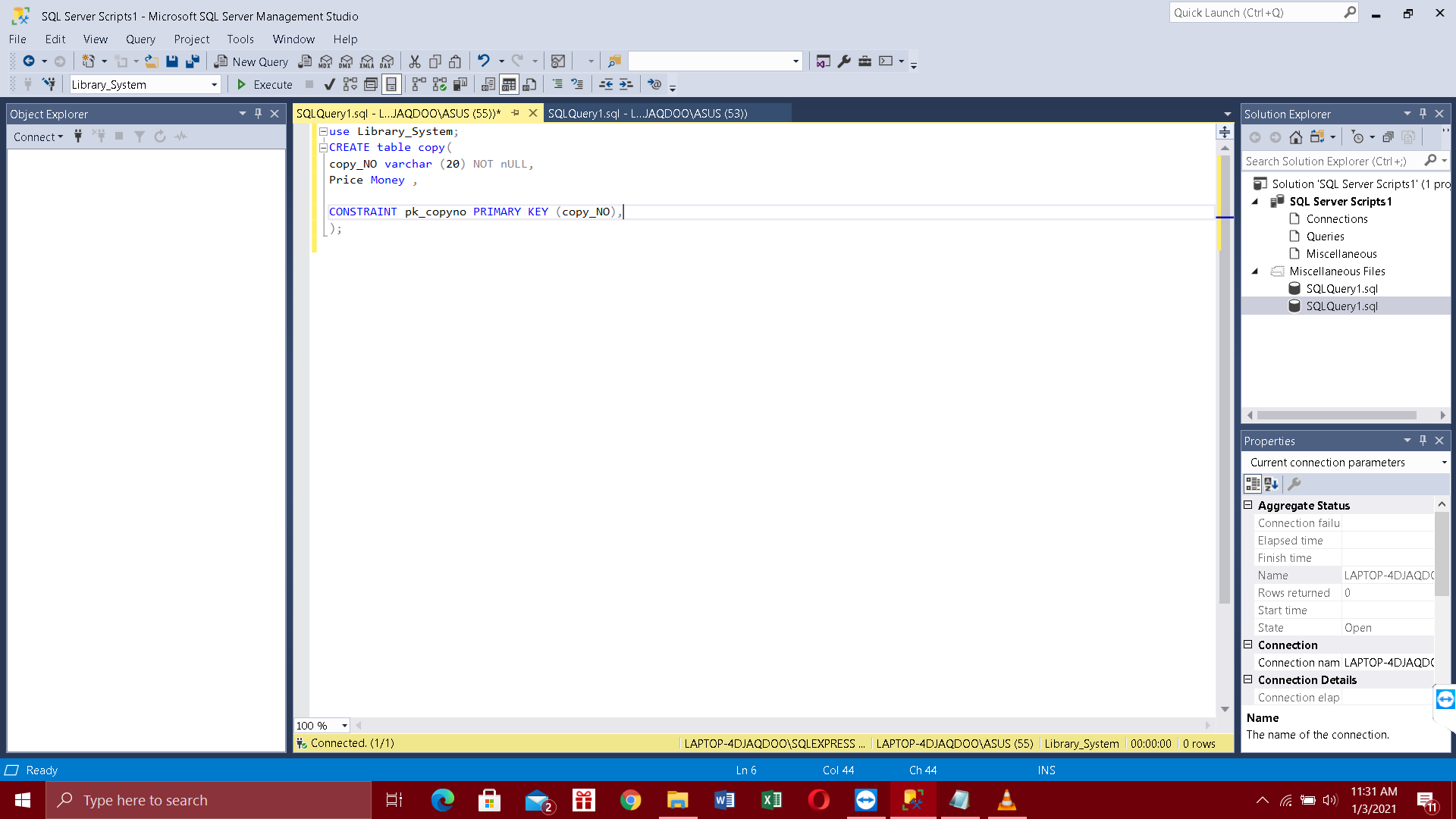
|  |  |  |  |
| --- | --- | --- | --- |
| Fieldname | Datatype | Field length | Description |
| Library\_Name | Varchar | 20 | Not NULL, Primary Key |
| Contact\_NO | varchar | 20 | Not NULL |
| City | varchar | 20 | Not NULL |
| Street | varchar | 20 | Not NULL |
| Street Number | varchar | 20 | Not NULL |

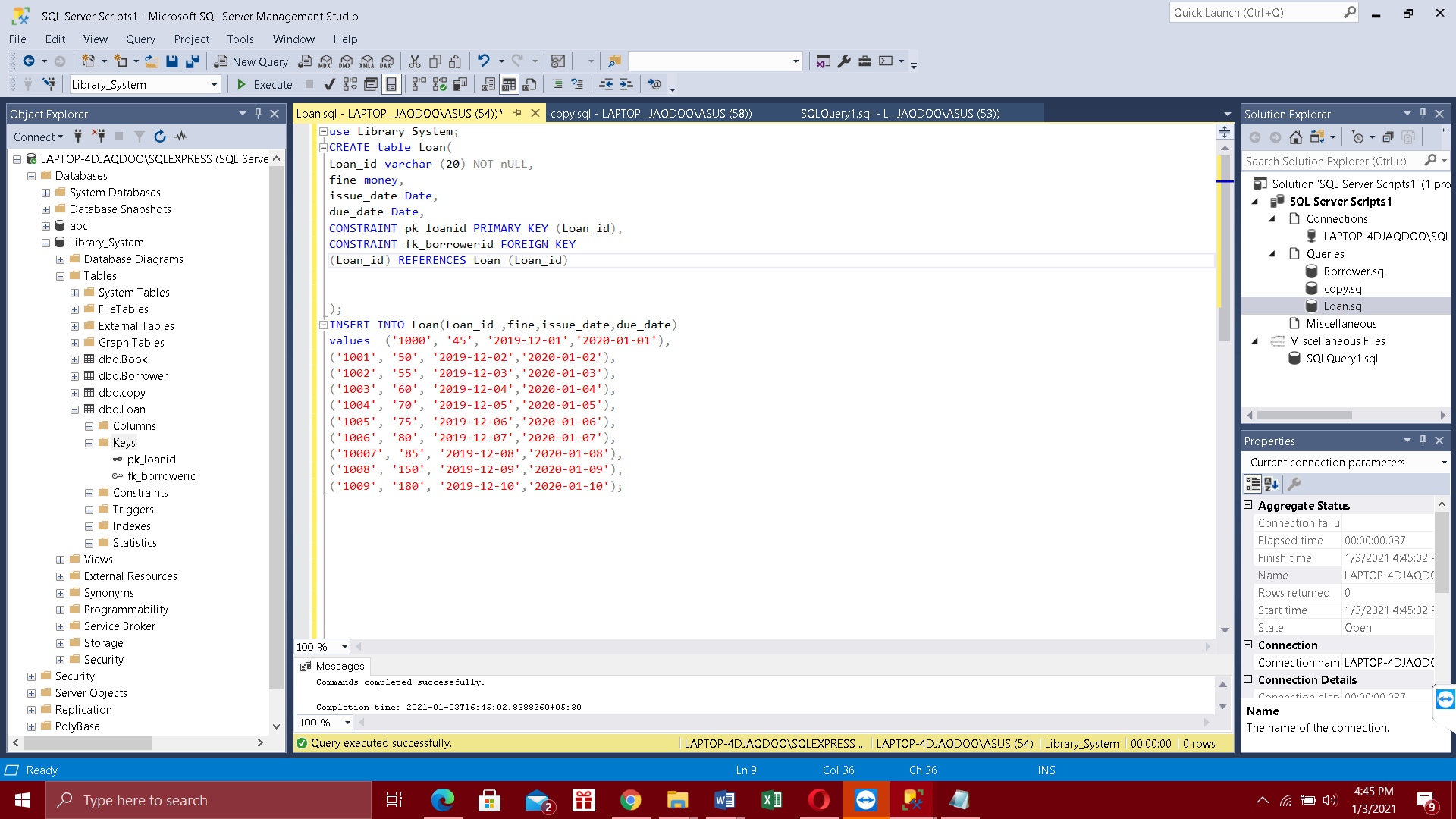
# Sql statements

Sql statement for Book table

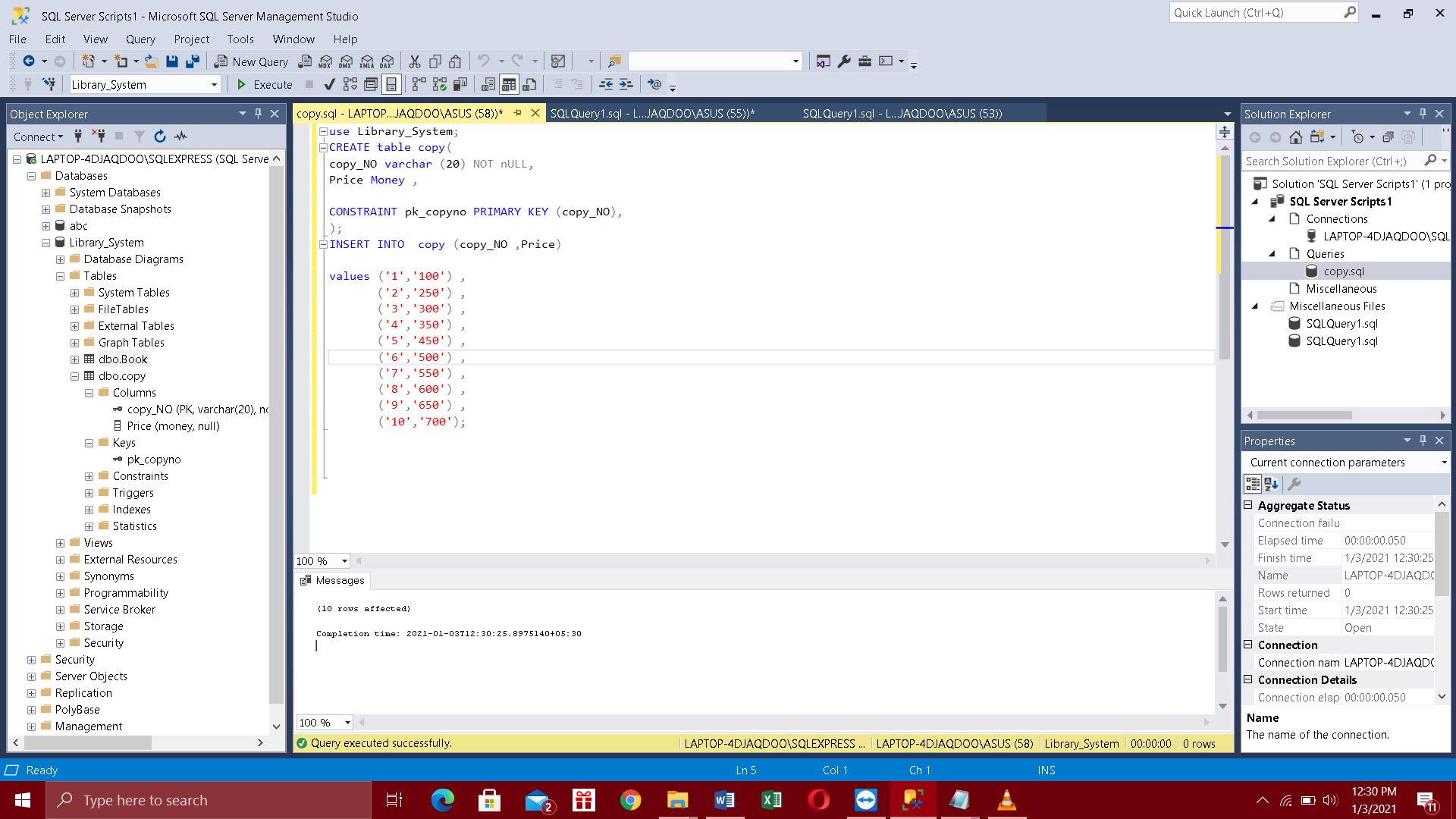


Sql statement for copy table

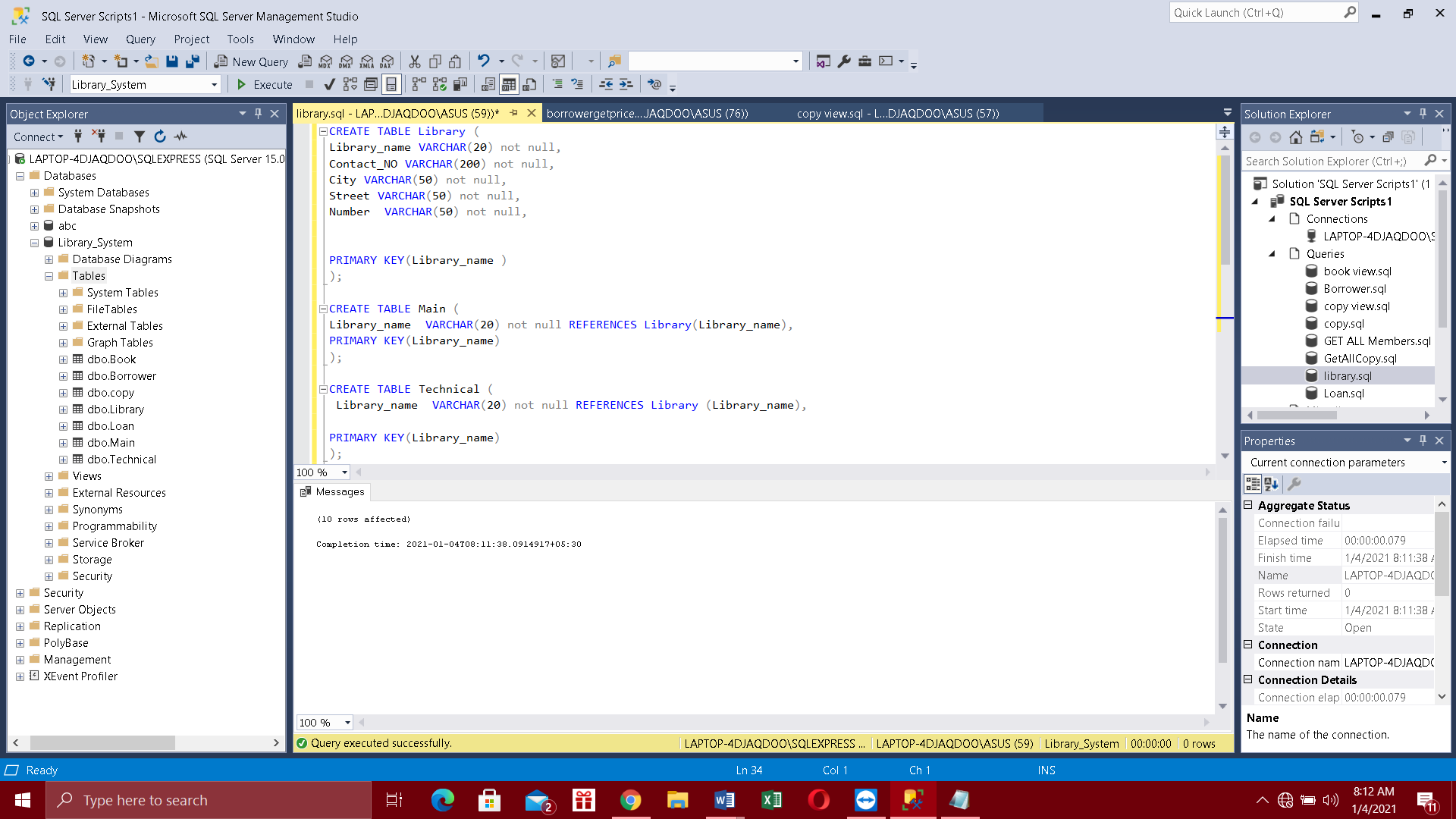


Sql Statement for Loan table and data insertion

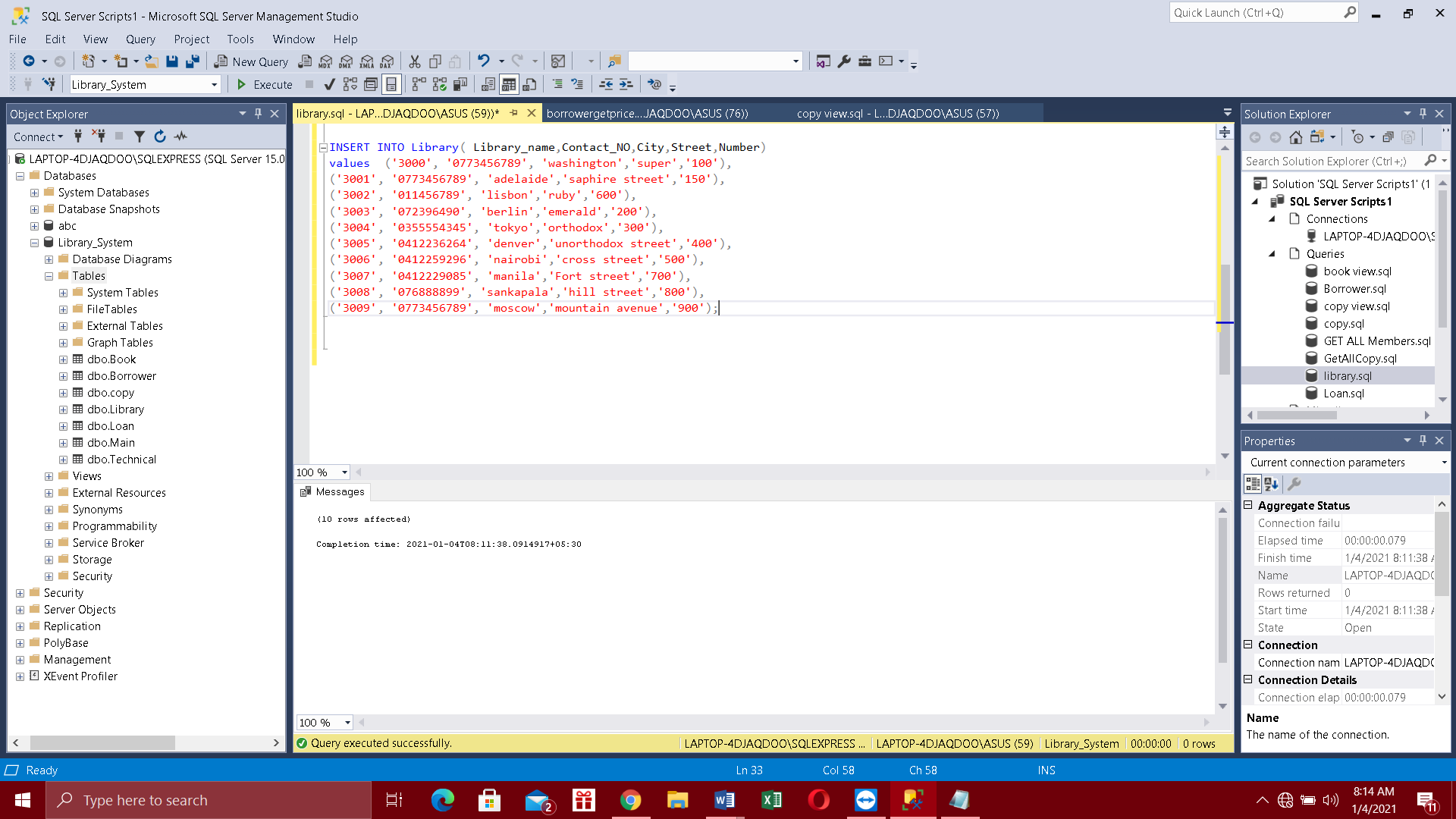
Sql statement for copy table data insertion

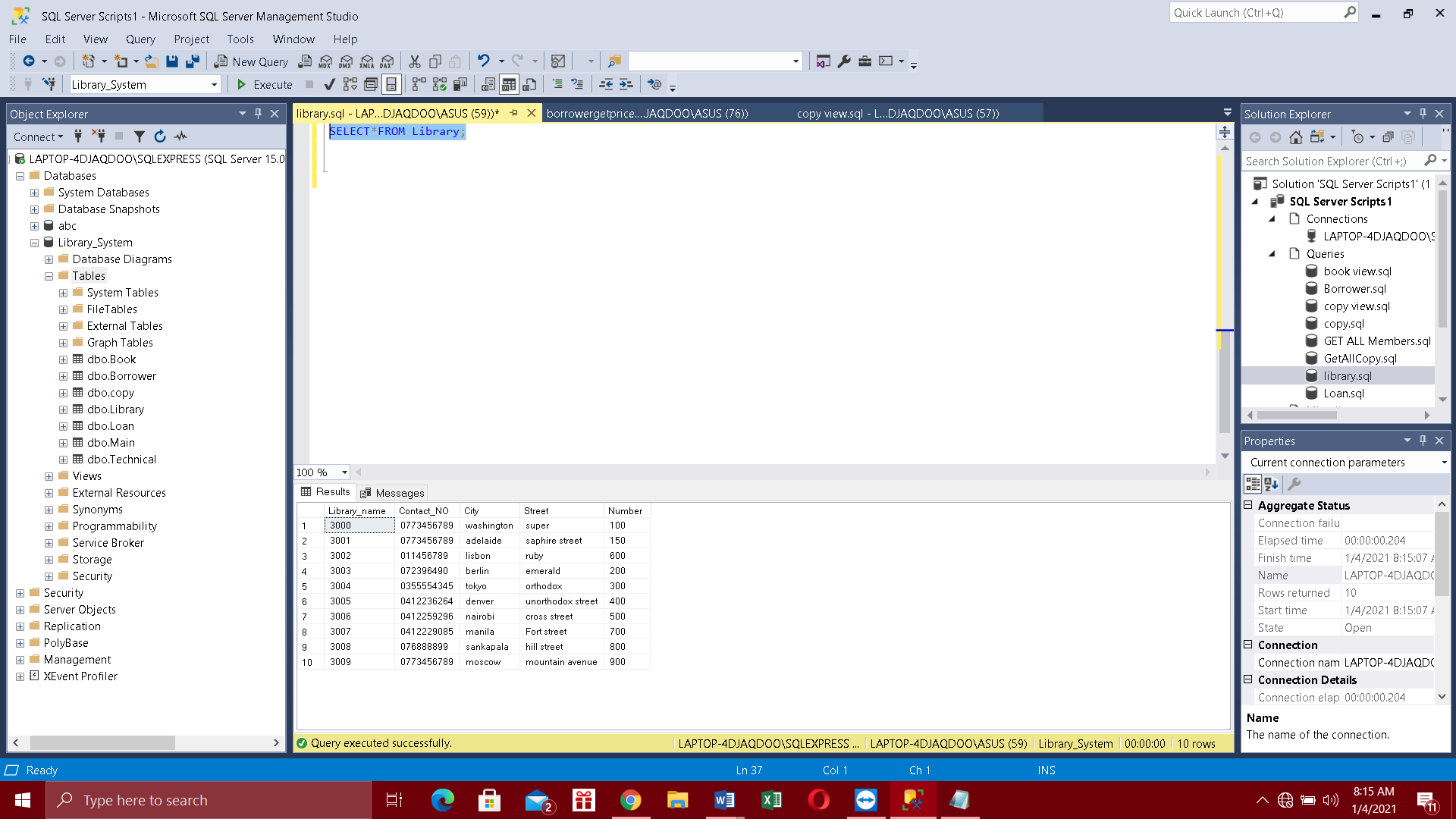


Sql Statement For Library Table

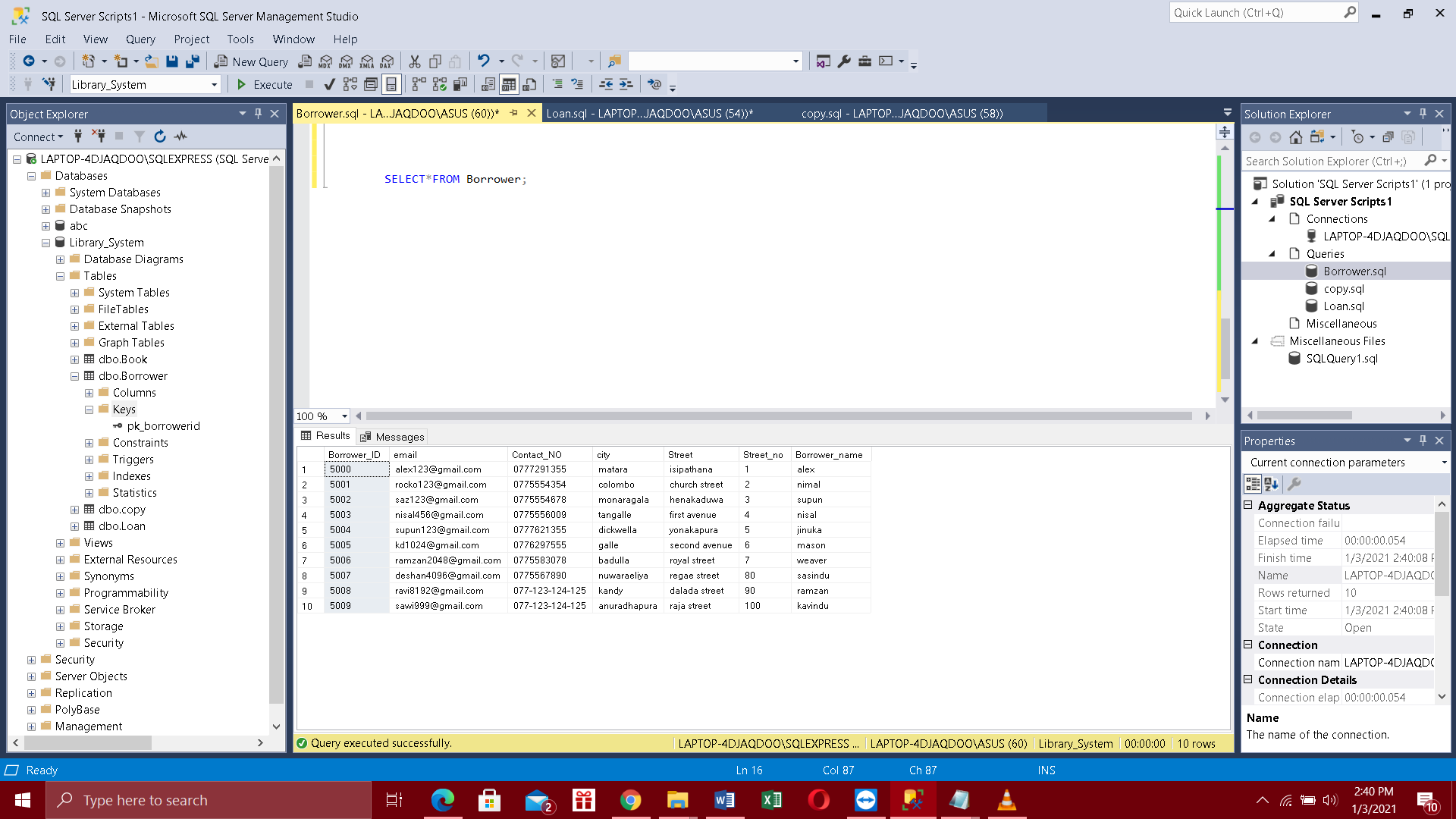


Inserting data into the Library table

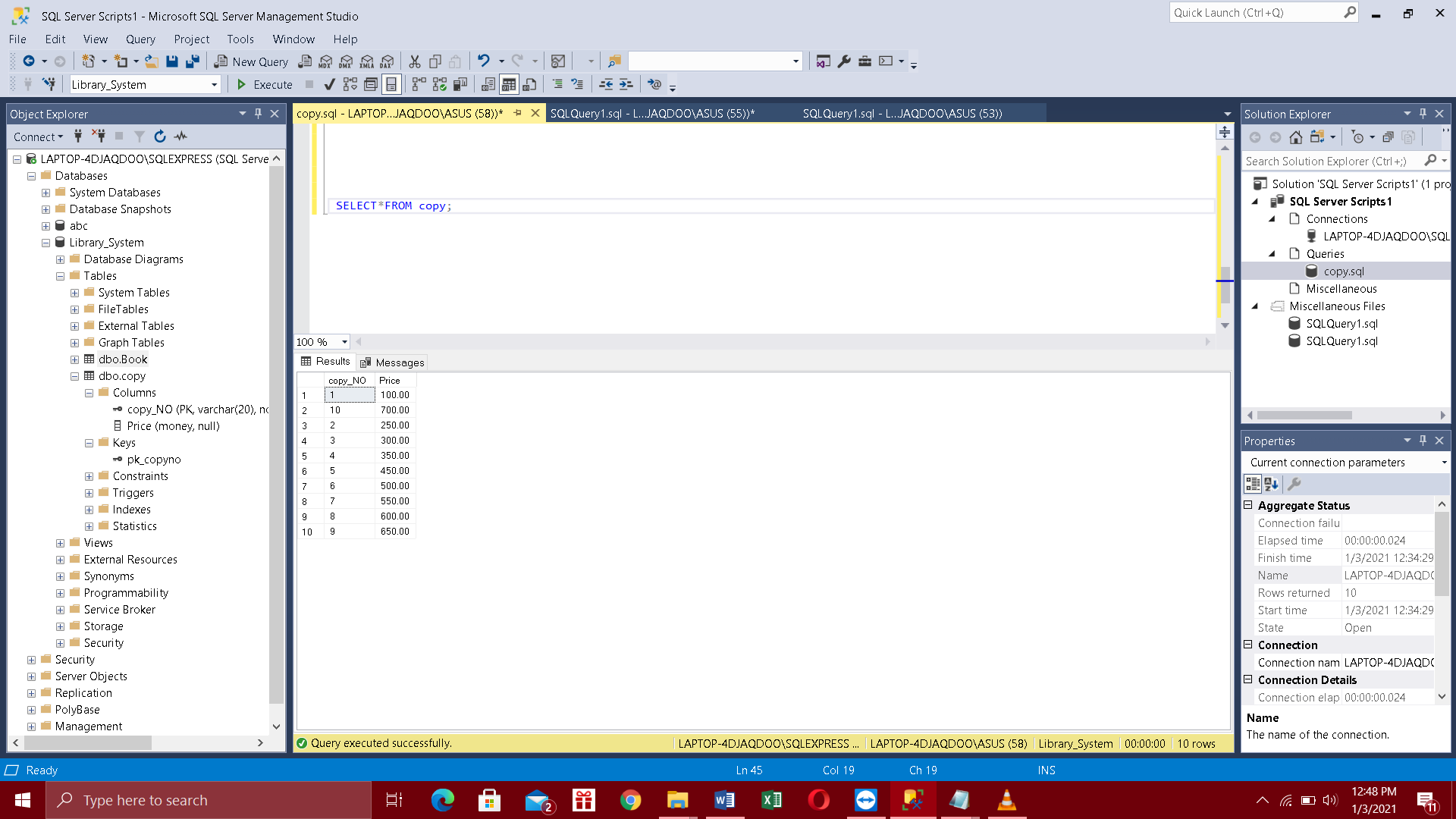
Data in Library table



Data in Borrower table



Datain copy table



# Data Normalization

**Book Table.**

|  |  |  |  |
| --- | --- | --- | --- |
| Book\_name | Book\_id | Author | Title |
| Intro to Zoology | 001 | Nimal | book |
| Intro to Zoology | 001 | Nimal | novel |
| Intro to Zoology | 001 | Nimal | fiction |
| Administration affairs | **002** | Sunil | adventure |
| Biology | **003** | Kamal | Fiction |

1NF

In first normalization values should be atomic and single valued

|  |  |  |  |
| --- | --- | --- | --- |
| Book\_name | Book\_id | Author | Title |
| Intro to Zoology | 001 | Nimal | {book,Novel,Fiction} |
| Administration affairs | 002 | Sunil | {Adventure} |
| Biology | 003 | Kaamal | {Fiction} |

2nf

In Second normalization partial depedencies should be removed from the table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ISBN\_NO | Author | Title | year | publisher |

ISBN title table

|  |  |  |
| --- | --- | --- |
| ISBN\_NO | Author | year |

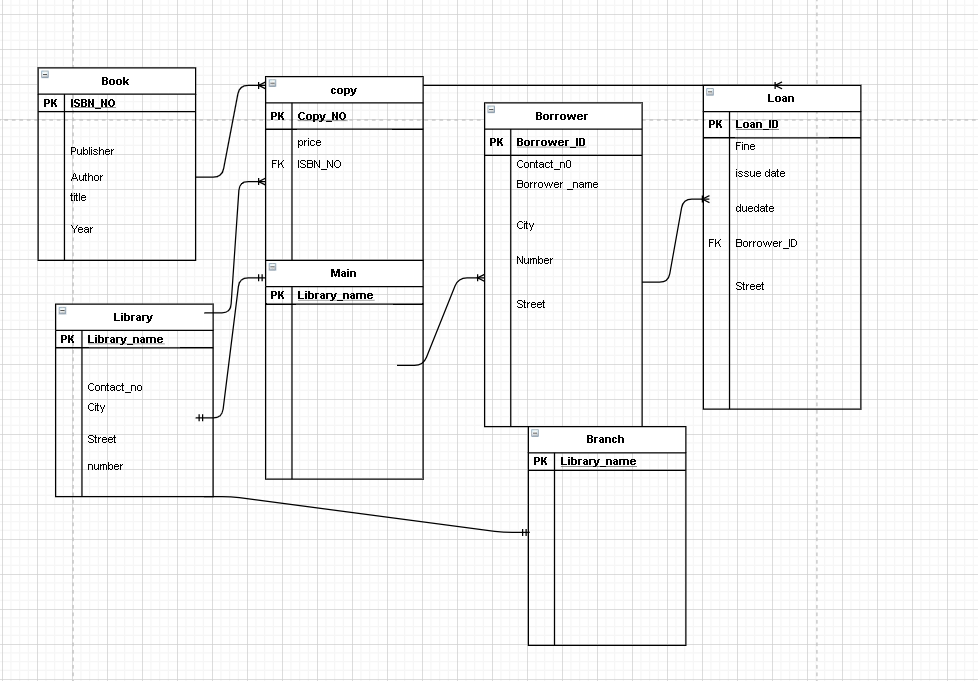
ISBN\_NO year table

|  |  |
| --- | --- |
| ISBN\_NO | year |

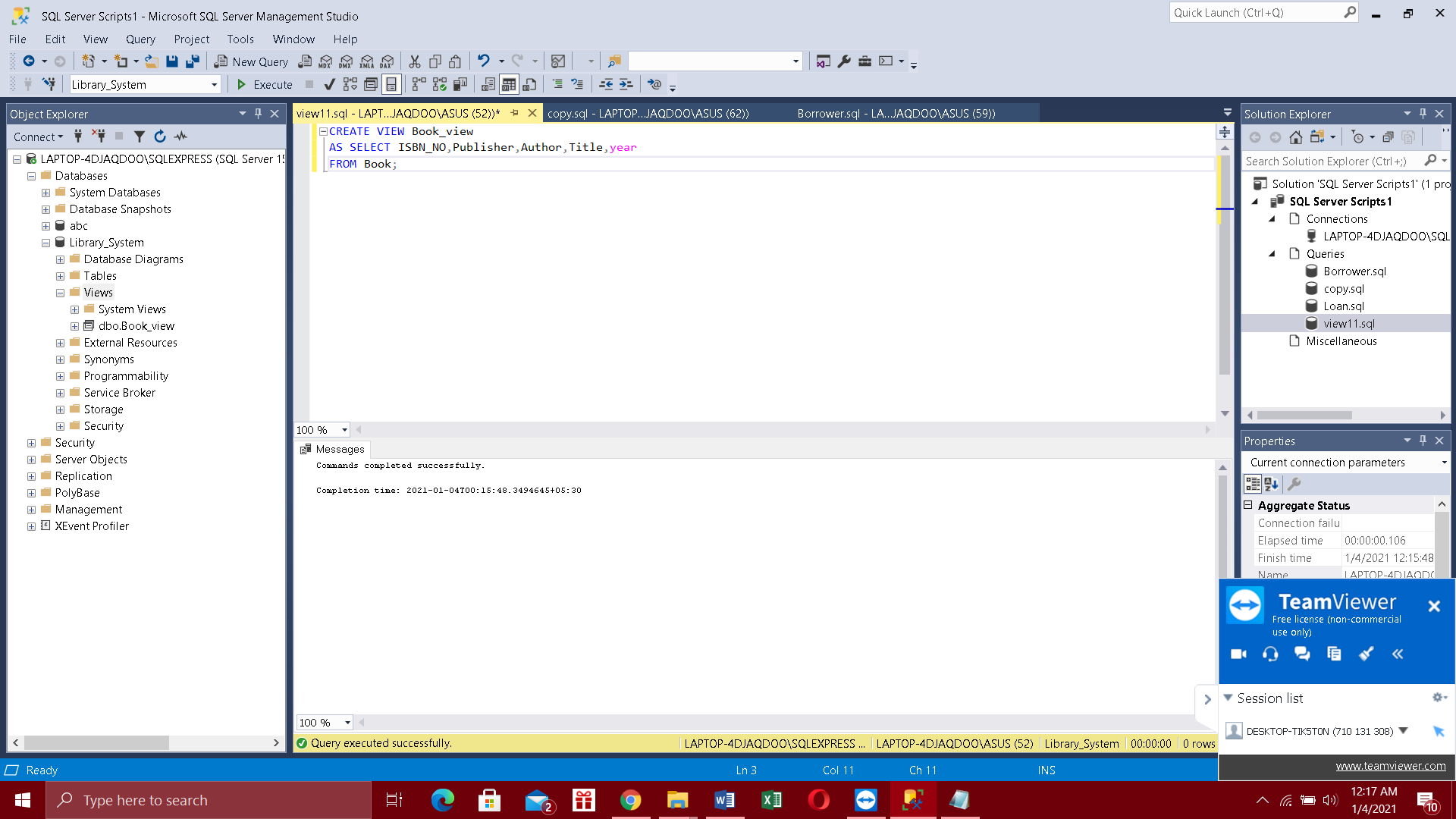
Author Year table

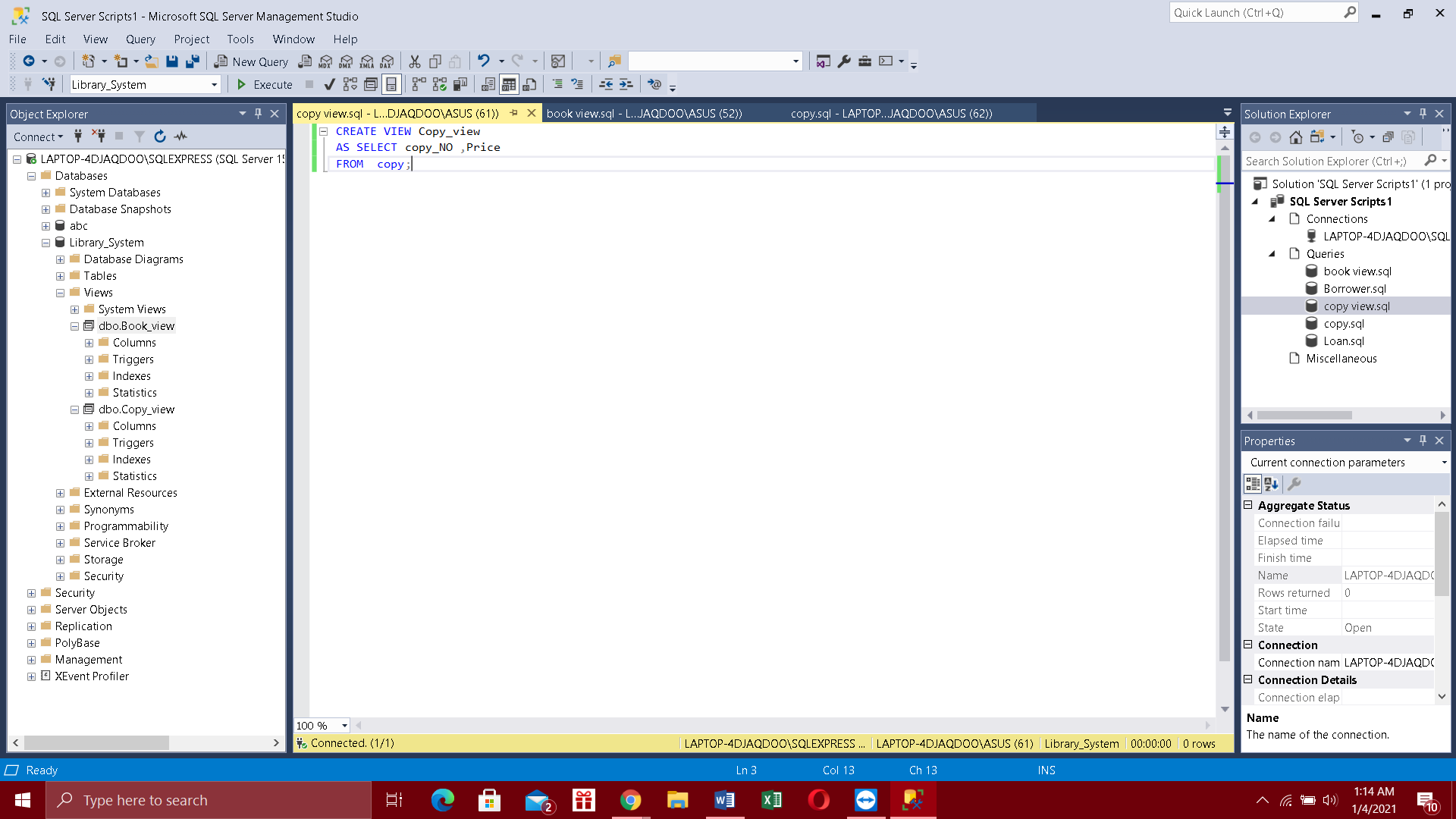
|  |  |  |
| --- | --- | --- |
| Author | year | publisher |

# Database Diagram

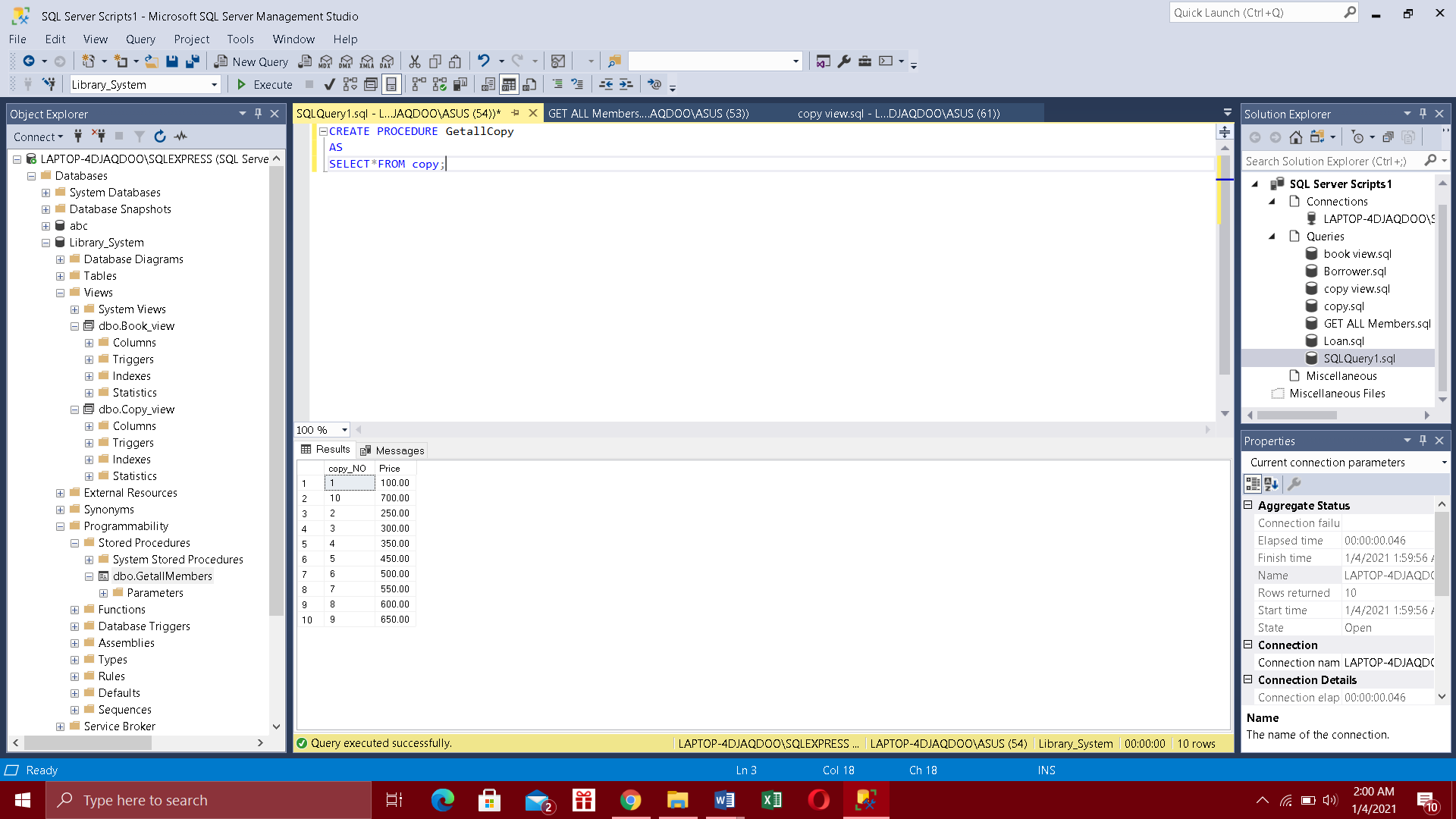


# Views

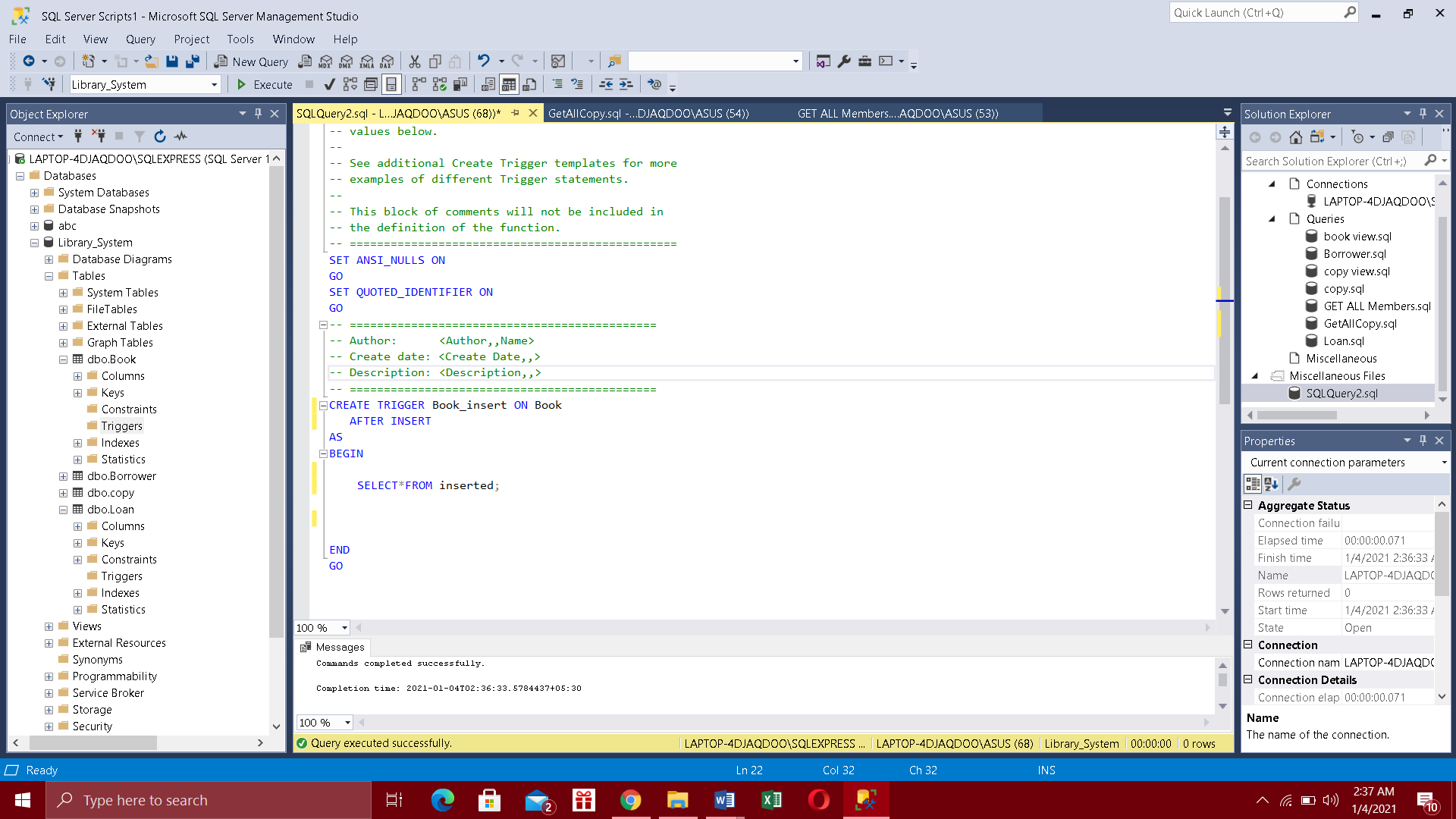




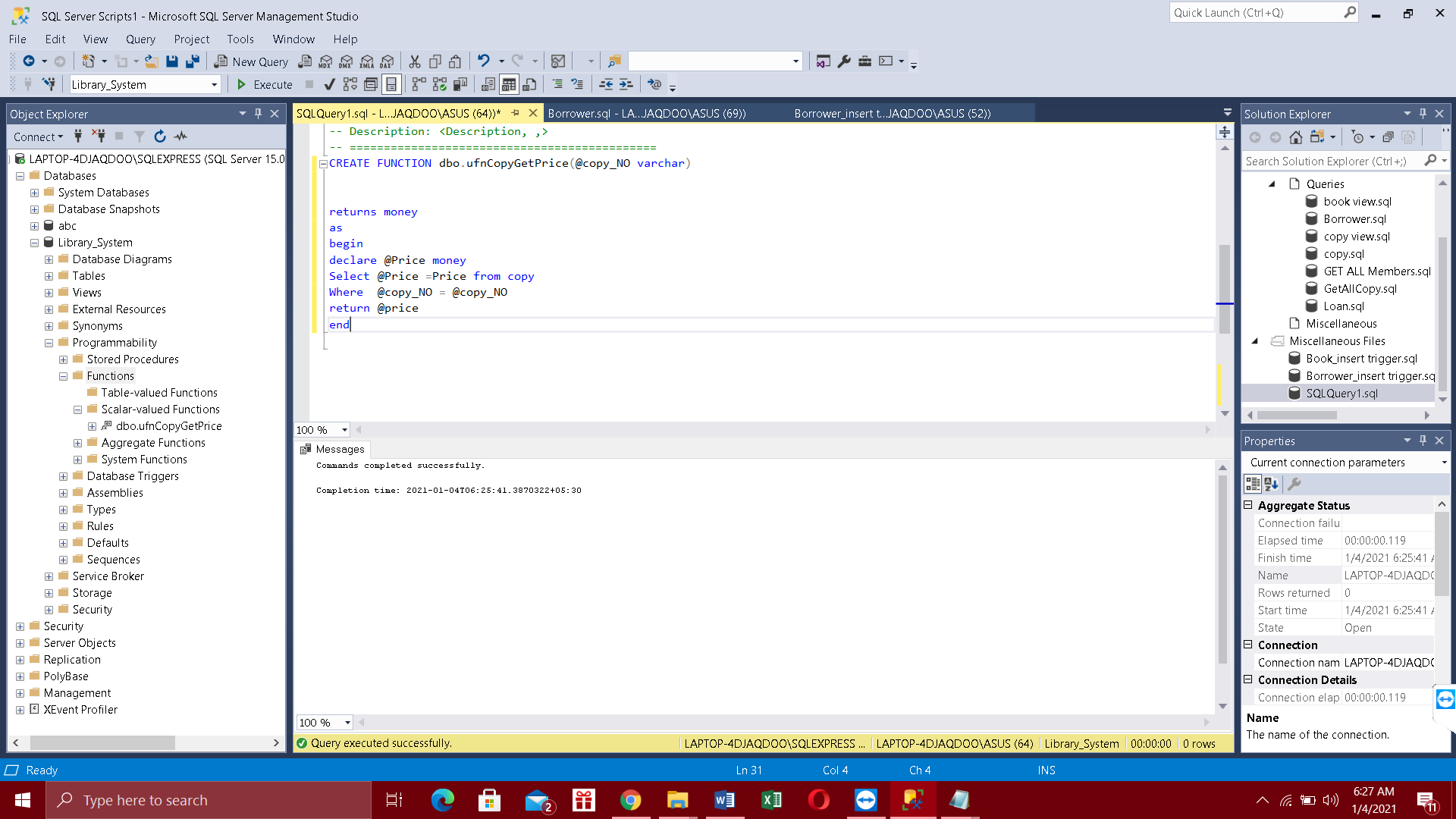
# Procedures

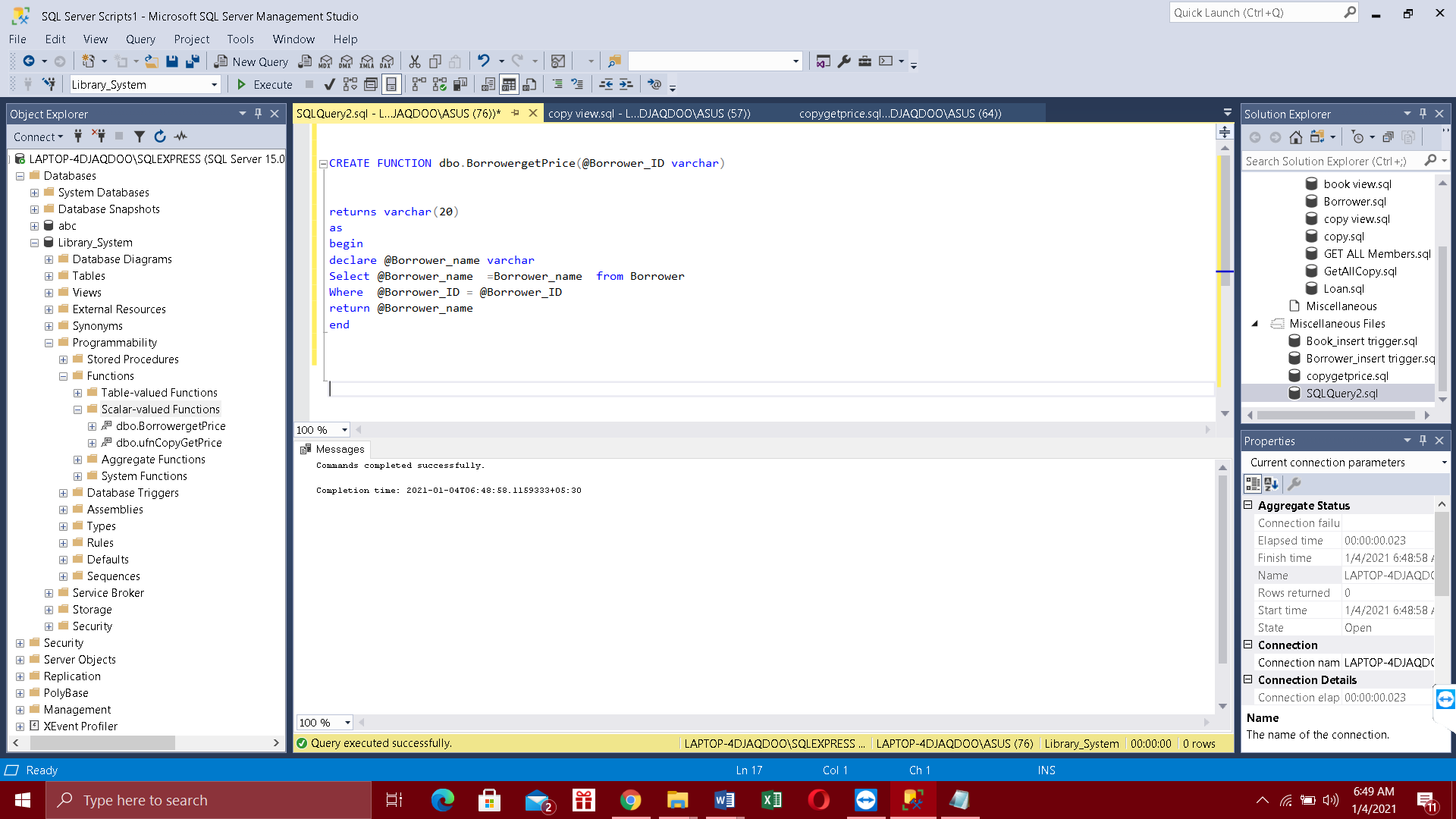


# Triggers



# Fuctions





# Work load Matrix

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Index number | ER diagram | Relational  Mapping | Normalization and data dictionary | SQL | Procedures, Functions | Triggers and  views |
| 10707202 | yes |  |  | yes |  |  |
| 10707362 |  | yes | yes |  |  |  |
| 10707193 |  |  | yes |  |  | yes |
| 10707375 | yes |  | yes |  | yes |  |
| 10707428 |  | yes |  |  | yes |  |
| 10707297 |  |  |  | yes |  | yes |