Here are step-by-step instructions to best demonstrate the concepts covered in the video script:

1. Prepare a non-normalized example dataset
   * Create an example dataset in a spreadsheet or text editor to demonstrate a non-normalized table. This table should have duplicate rows, non-atomic values, and columns that are not fully dependent on the primary key.
2. Demonstrate First Normal Form (1NF)
   * Show the non-normalized table and explain the issues it has.
   * Remove duplicate rows and ensure that each column contains only atomic values. If necessary, split columns with non-atomic values into separate columns.
   * Explain that the table is now in 1NF and discuss the benefits of this transformation, such as reduced data redundancy and improved data integrity.
3. Demonstrate Second Normal Form (2NF)
   * Show the table in 1NF and explain that some columns may not be fully dependent on the primary key.
   * Identify columns that are not fully dependent on the primary key and separate them into new tables. Assign primary keys to the new tables and create foreign key relationships between the original table and the new tables.
   * Explain that the tables are now in 2NF, which further reduces data redundancy and enhances data integrity.
4. Demonstrate Third Normal Form (3NF)
   * Show the tables in 2NF and explain that there might be transitive dependencies between non-key columns.
   * Identify transitive dependencies in the tables and eliminate them by creating new tables to store the dependent data. Assign primary keys to the new tables and create foreign key relationships between the original tables and the new tables.
   * Explain that the tables are now in 3NF, which maximizes data integrity and minimizes data redundancy.
5. Discuss the benefits of normalization
   * Reiterate the advantages of applying normalization principles to database design, including minimized data redundancy, improved data integrity, and enhanced database performance.
6. Practice normalization
   * Apply the normalization principles they've learned to their own database projects, emphasizing the importance of efficient and robust database design.

By following these steps, you can effectively demonstrate the concepts covered in the video script on Database Normalization, helping viewers understand and apply the principles of first normal form, second normal form, and third normal form.

**Section Two**

I will provide sample tables at each stage of the normalization process to demonstrate the concepts covered in the video script.

Sample Non-Normalized Table:

| **Order\_ID** | **Customer\_Name** | **Customer\_Email** | **Items\_Purchased** |
| --- | --- | --- | --- |
| 1 | John Doe | [johndoe@email.com](mailto:johndoe@email.com) | Laptop, Mouse |
| 2 | Jane Smith | [janesmith@email.com](mailto:janesmith@email.com) | Keyboard, Headphones |
| 3 | John Doe | [johndoe@email.com](mailto:johndoe@email.com) | Monitor |
| 4 | Mary Johnson | [maryjohnson@email.com](mailto:maryjohnson@email.com) | Laptop, Laptop Bag |

1. First Normal Form (1NF):

| **Order\_ID** | **Customer\_Name** | **Customer\_Email** | **Item\_Purchased** |
| --- | --- | --- | --- |
| 1 | John Doe | [johndoe@email.com](mailto:johndoe@email.com) | Laptop |
| 1 | John Doe | [johndoe@email.com](mailto:johndoe@email.com) | Mouse |
| 2 | Jane Smith | [janesmith@email.com](mailto:janesmith@email.com) | Keyboard |
| 2 | Jane Smith | [janesmith@email.com](mailto:janesmith@email.com) | Headphones |
| 3 | John Doe | [johndoe@email.com](mailto:johndoe@email.com) | Monitor |
| 4 | Mary Johnson | [maryjohnson@email.com](mailto:maryjohnson@email.com) | Laptop |
| 4 | Mary Johnson | [maryjohnson@email.com](mailto:maryjohnson@email.com) | Laptop Bag |

1. Second Normal Form (2NF):

Table: Orders

| **Order\_ID** | **Customer\_ID** | **Item\_Purchased** |
| --- | --- | --- |
| 1 | 1 | Laptop |
| 1 | 1 | Mouse |
| 2 | 2 | Keyboard |
| 2 | 2 | Headphones |
| 3 | 1 | Monitor |
| 4 | 3 | Laptop |
| 4 | 3 | Laptop Bag |

Table: Customers

| **Customer\_ID** | **Customer\_Name** | **Customer\_Email** |
| --- | --- | --- |
| 1 | John Doe | [johndoe@email.com](mailto:johndoe@email.com) |
| 2 | Jane Smith | [janesmith@email.com](mailto:janesmith@email.com) |
| 3 | Mary Johnson | [maryjohnson@email.com](mailto:maryjohnson@email.com) |

1. Third Normal Form (3NF):

Table: Orders

| **Order\_ID** | **Customer\_ID** | **Product\_ID** |
| --- | --- | --- |
| 1 | 1 | 1 |
| 1 | 1 | 2 |
| 2 | 2 | 3 |
| 2 | 2 | 4 |
| 3 | 1 | 5 |
| 4 | 3 | 1 |
| 4 | 3 | 6 |

Table: Customers

| **Customer\_ID** | **Customer\_Name** | **Customer\_Email** |
| --- | --- | --- |
| 1 | John Doe | [johndoe@email.com](mailto:johndoe@email.com) |
| 2 | Jane Smith | [janesmith@email.com](mailto:janesmith@email.com) |
| 3 | Mary Johnson | [maryjohnson@email.com](mailto:maryjohnson@email.com) |

Table: Products

| **Product\_ID** | **Item\_Purchased** | **Category** |
| --- | --- | --- |
| 1 | Laptop | Computers |
| 2 | Mouse | Accessories |
| 3 | Keyboard | Accessories |
| 4 | Headphones | Audio |
|  |  |  |