

## **Drawing Entity Relationship Diagram (ERD)**

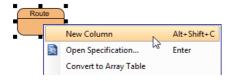
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<u>Entity relationship diagram (ERD)</u> is a kind of diagram for presenting visually the structure of relational database. In this tutorial we will make use of the ERD tool to model the database structure of a simple bus route management system.

- Create a new project by selecting Project > New from the application toolbar. In the New Project window, enter Bus Route Management as project name and click Create Blank Project.
- To create an ERD, select Diagram > New from the toolbar. In the New Diagram window, select Entity Relationship Diagram and click Next. Enter Bus Route Management as diagram name and click OK.
- 3. Let's start by creating the first entity *Route*. Select **Entity** in diagram toolbar and click on the diagram to create an entity. Name the entity *Route* and press **Enter** to confirm.



4. Create columns in *Route*. Let's start with a primary key. Right click on entity *Route* and select **New Column** from popup menu.



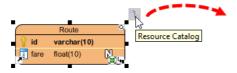
5. Enter +id : varchar(10) and press **Enter**. Note that the + sign means that the column is a primary key. Varchar is the column type and 10 is the length.



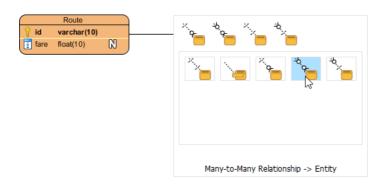
6. Enter fare : float and press **Enter**, then **Esc** to create another column.



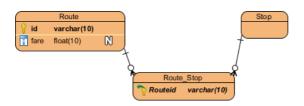
7. Create entity *Stop.* A bus route has many bus stops, while a stop can be shared by many routes. Therefore, there is a many-to-many relationship between *Route* and *Stop.* Place the mouse pointer over the *Route* entity. Drag out the **Resource Catalog** icon at top right.



8. Release the mouse button and select **Many-to-Many Relationship -> Entity** from Resource Catalog.



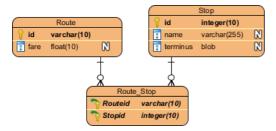
Name the new entity *Stop*, You can see that a linked entity *Route\_Stop* is automatically created in between *Route* and *Stop*, with foreign key added.



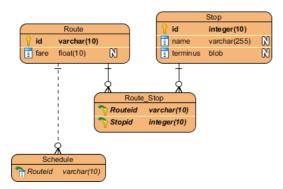
9. Create the following columns in *Stop*:

Key	Name	Туре
PK	id	int(10)
	name	varchar(255
	terminus	blob

The diagram should now become:



10. A route has multiple bus schedules. Create an entity *Schedule* from *Route* with a one-to-many relationship. Move the mouse pointer to *Route*. Press and drag out the **Resource Catalog** icon. Select **One-to-Many Relationship -> Entity** to create entity *Schedule*.



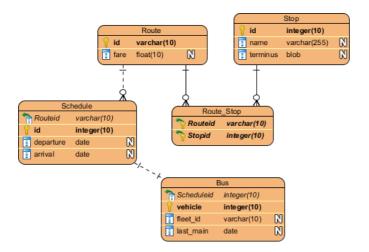
11. Create the following columns in Schedule:

Key	Name	Туре
PK	id	int(10)
	departure	date
	arrive	date

12. A schedule is handled by a bus. Create an entity Bus from *Schedule*, with an one-to-one relationship. Create the following columns in *Bus*:

Key	Name	Type
PK	vehicle_id	int(10)
	fleet_id	varchar(10
	last_main	date

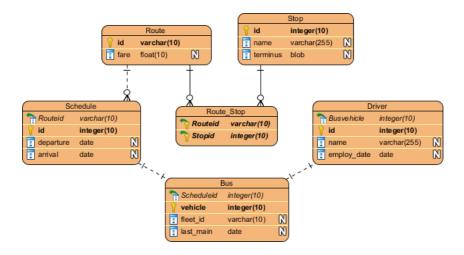
The diagram should become:



13. A bus is driven by a bus driver. Create entity *Driver* from *Bus* with a one-to-one relationship. Add the following columns to *Driver*:

Key	Name	Туре	
PK	id	int(10)	
	name	varchar(255)	
	employ_da	tedate	

This is the final ERD.



## **Related Links**

- 1. YouTube Video: How to Generate DDL from Your ERD
- 2. YouTube Video: Draw Many to Many Relationship
- 3. YouTube Video: Compare Logical and Physical Data Model Using Visual Diff
- 4. <u>Visual Paradigm Tutorial: From Data Modeling to Data Dictionary</u>



Visual Paradigm home page (https://www.visual-paradigm.com/)

Visual Paradigm tutorials (https://www.visual-paradigm.com/tutorials/)