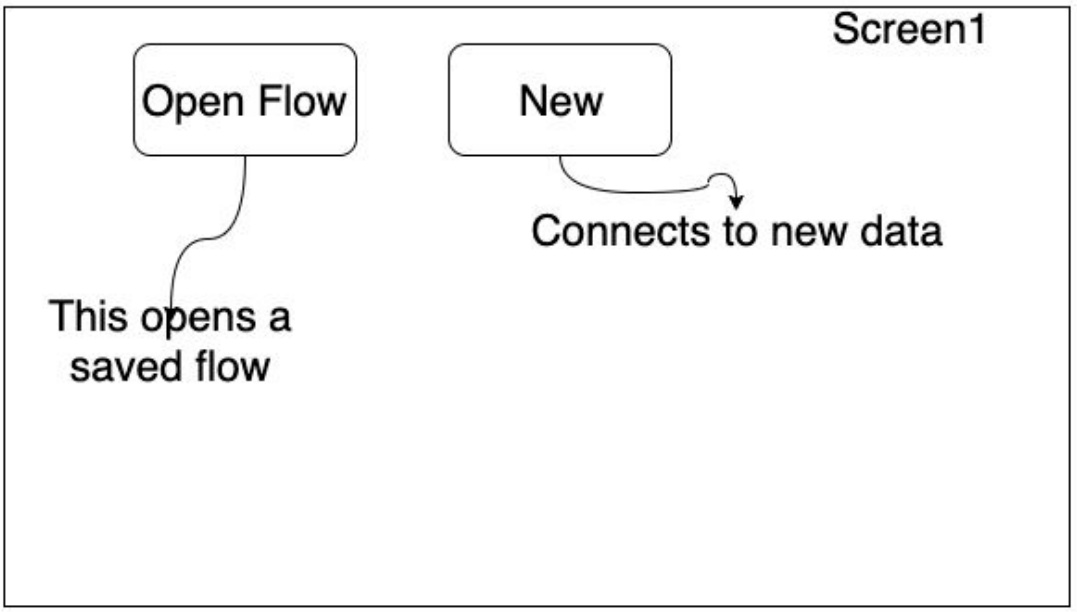
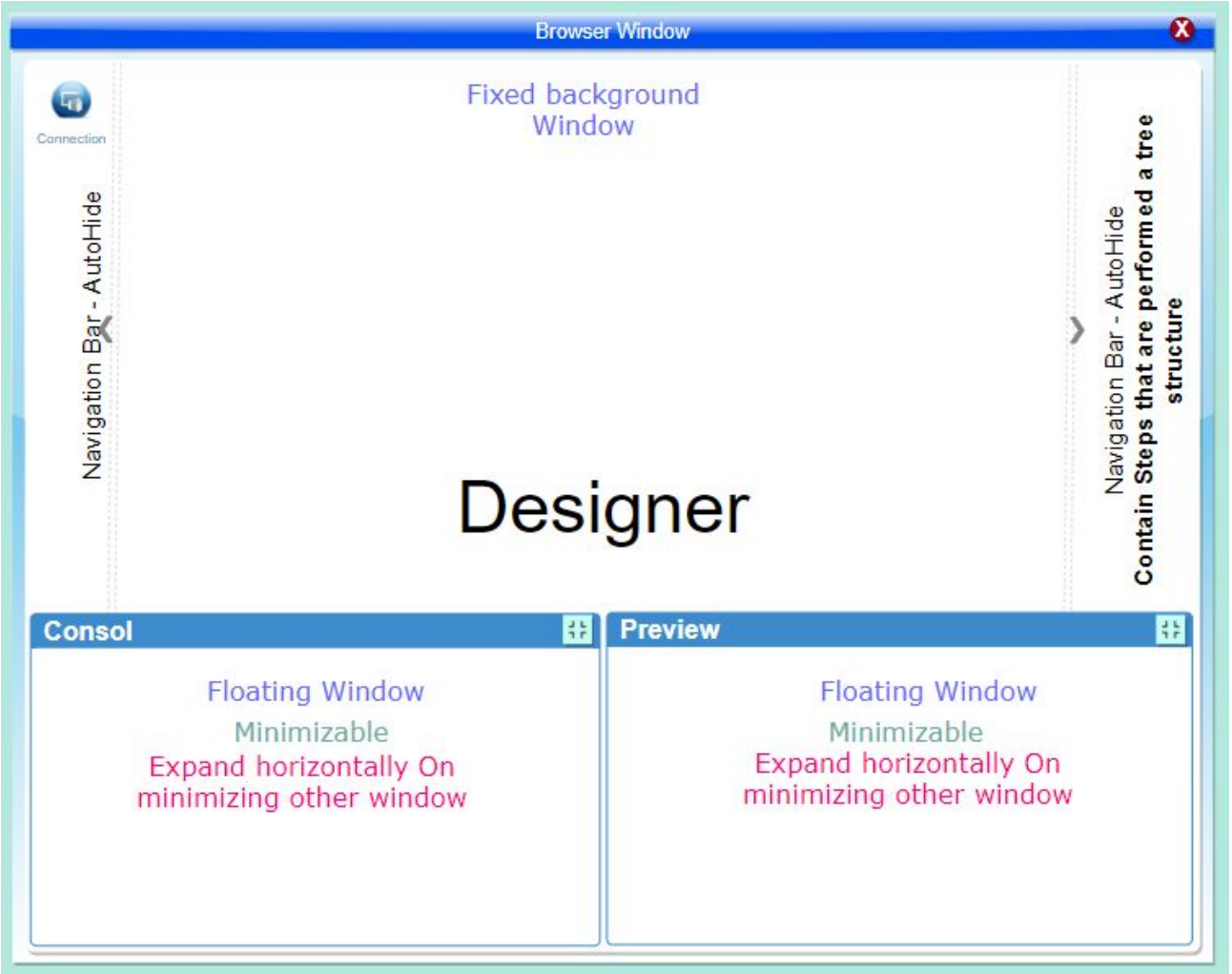
Ui Design :
Technologies to be used.
D3JS: for geometrical design.
Angular: for whole web application to accommodate. (try to create as many reusable components as possible. Whenever required just call that directive to use)
Bootstrap or any equivalent technology: For rich UI.
Please advise me on the icons (How to design or buy)
(**No compromise on the quality and Look and feel**)
Maintain proper CMS (Please suggest a better way)
All the applicable CSS options for each component as dynamic functions. (Currently I am not clear on this. Get back to you soon)
Initial Screen (Landing Page)

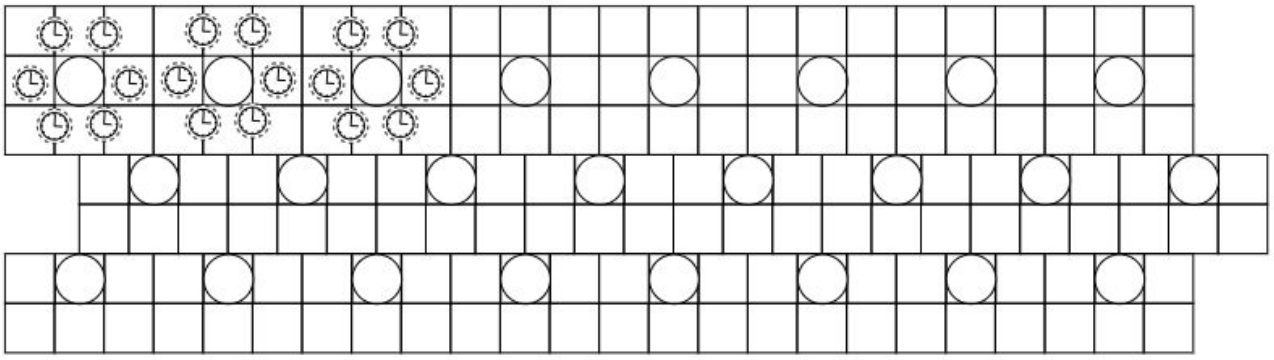




Designer Window:

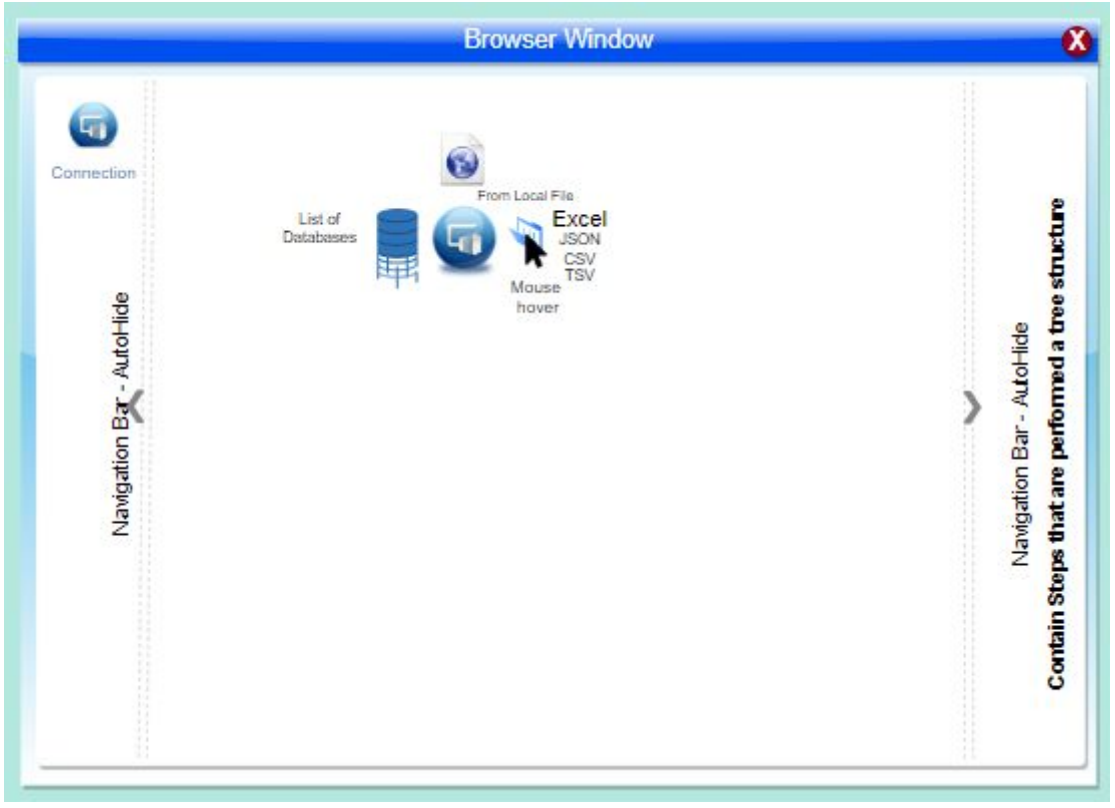
1. Designer window should be divided into 12 columns (a typical website style).
2. Should not be responsive. Fit to any size of the screen. If we make the screen smaller then it shouldn't be shrunk. User need to scroll in such cases.
3. 12 columns should be formed(invisible). Any node should be placed on the centroid of the square. Layout divisions should show as below (Don't get confused with the boxes and circles in the below screen. They are just placeholders for user to place the icon. The space that needs to be maintained for each icon) (Note: I have changed the requirement after I saw your efforts on this) (Please feel free to suggest me if you

have any better ideas on this)



4. When we drag an icon on to another icon then the new icon should stick to the mouse. User will place the icon where the empty space available.
5. In your last delivery we are able to remove the link. But unable to reconnect the same link back to the same node. I will explain it by a video.
6. PreviewWindow and Console windows are just like layers on the designer window.

Connection Screen:
Drag and drop the connection Icon at the top left corner, and user can place it on the designer window by another mouse click.



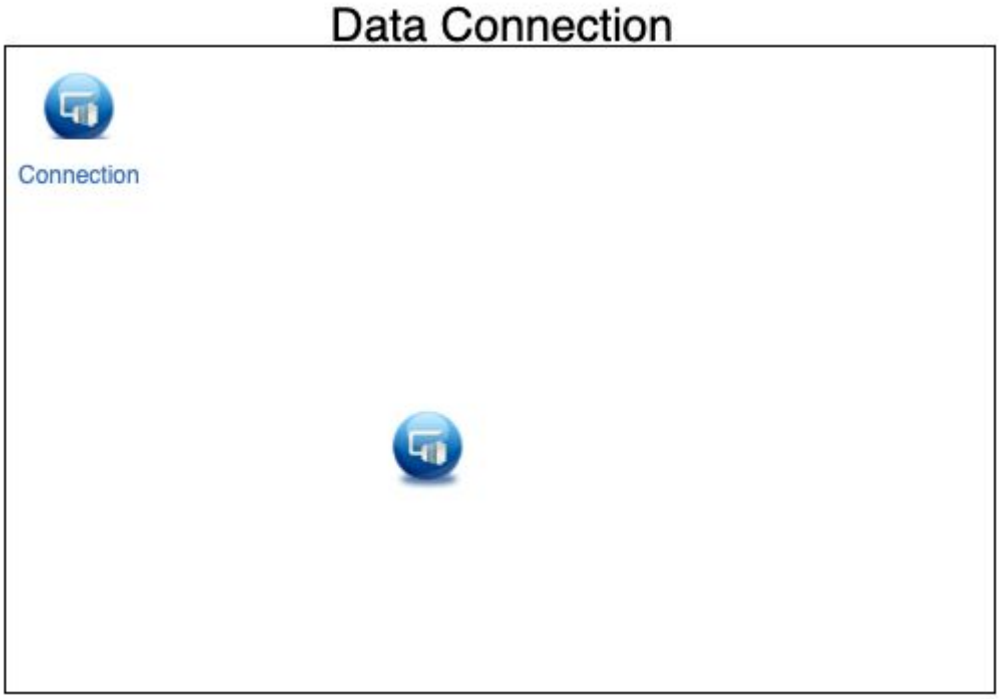
1. When hover mouse on  three icons  ,  and  .

2. When hover on any of the three icons should show the list of options accordingly.
3. Displaying these options from UI must be dynamic. Information will receive from API Endpoint about what to display as specified below.
4. Invoke ReST API to GET Request for the list of elements to display as dropdown for each icon on mouse hover on child icon.
    a. *Database Icon*: Invoke ReST API Get endpoint as multilevel JSON format for list of Databases and show the list as dropdown and submenus
        i. Invoke ReST API POST endpoint with selected dropdown element data in JSON format "{'DB': 'selected element from the dropdown','submenu':'submenu element'}"
        ii. if user selects New option in submenu then it should open dynamic form to user to enter the DataBase details by invoking RestAPI GET endpoint for dynamic form fields

    ServerSide Note : Server Side capture and SAVE the details in metadata into SQLITE Database

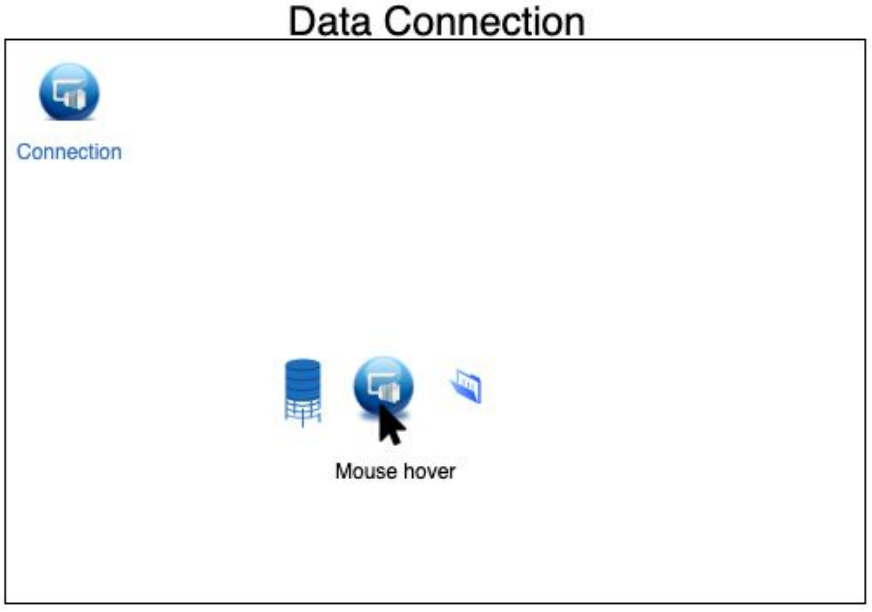
    b. *Web Icon*: An input box to accept URL. Allow copy/paste. OK button.
    c. *Local File Icon*: Invoke ReST API Get endpoint for list of various file types and show the list as dropdown
        i. when click on any of the item from the dropdown should open file browser select desired file
        ii. Invoke REST API POST endpoint with selected file type and filename (with PATH) in JSON format
        "{"filetype":"selected file type", "filename":"file name with PATH" }"
        Example : {'filetype':'excel', 'filename':'c:/documents/emp.xlsx'}
        iii. Only for excel there will be another API Endpoint to get sheet names and shows dropdown ,allow user to select sheet name
        Example : {'filetype':'excel', 'filename':'c:/documents/emp.xlsx', 'sheet_name':'sheet1'}
        iv. invoke ReST API GET api endpoint to generate a dynamic form based on JSON format received . JSON format contains

Visual description for the above explanation.



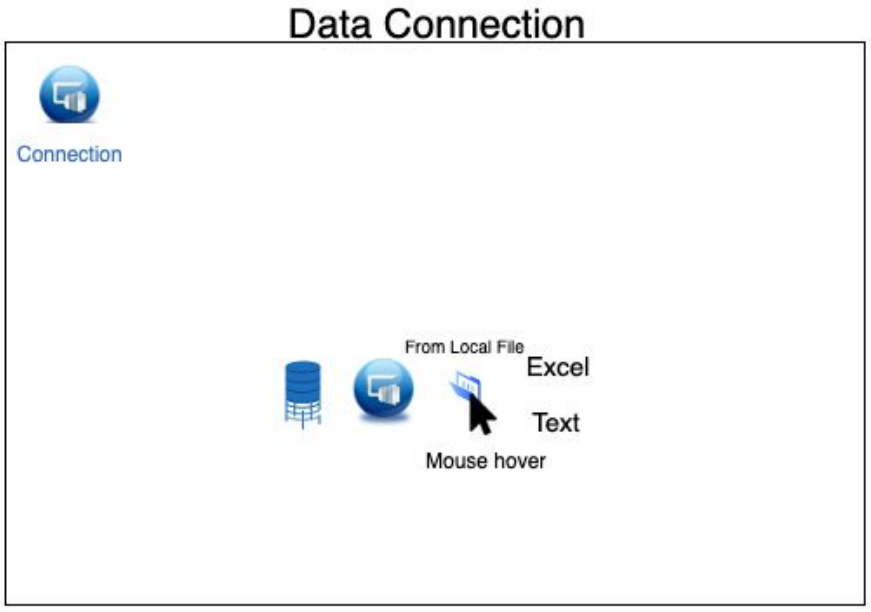
Screen 1: Initial Page(Starting Page)

When user hover on the connection icon that is shown in the middle of the Screen 1, two icons will be shown either sides of the connection icon as shown in the Screen 2.

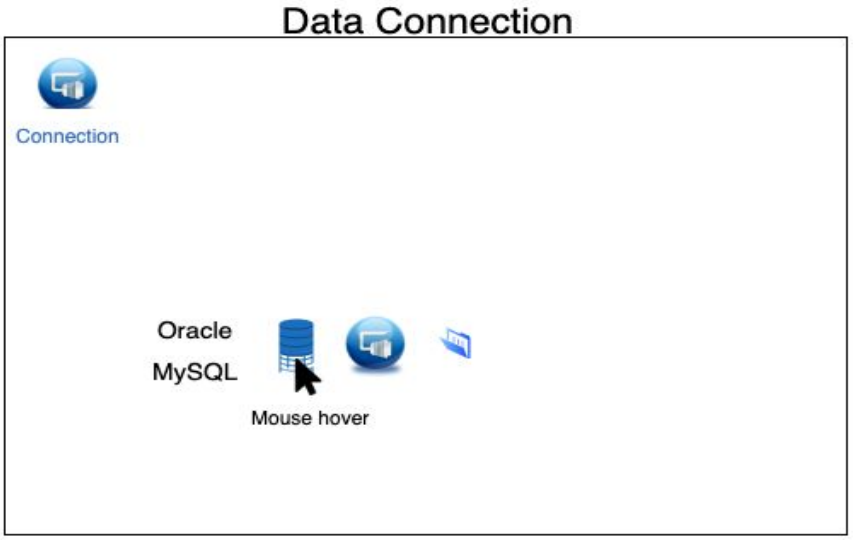


Screen 2: When hover mouse pointer on connection icon.

When user hover the mouse pointer on either of the icons the possible connection options will be shown as Screen 3 and Screen 4

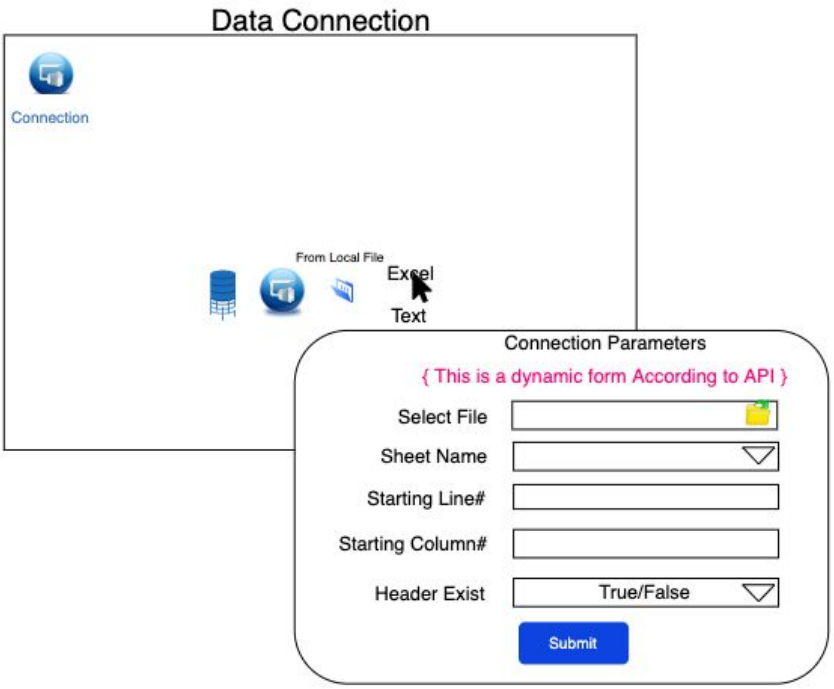


Screen 3: When hover mouse pointer on right side of the connection icon.



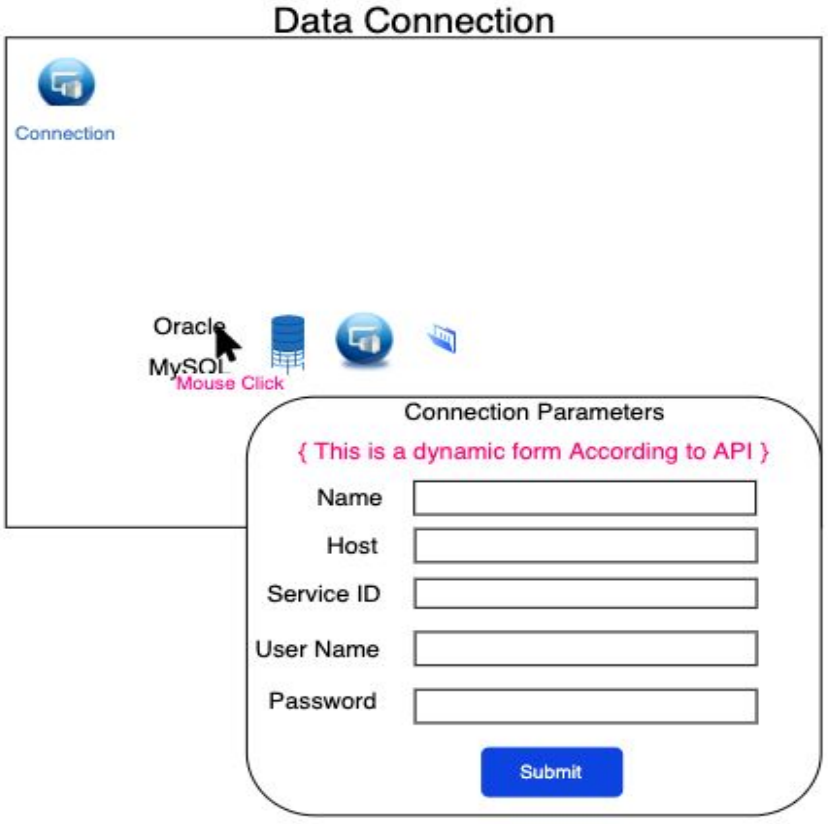
Screen 4: When hover mouse pointer on left side of the connection icon.

When User Clicks on any option a **dynamic form** with the parameters given in the API should be generated. For example if user selects Excel the form should look like the Screen 5. Other than excel the sheet name field won't displayed in the below screen. All these fields are specified in the API in JSON format.



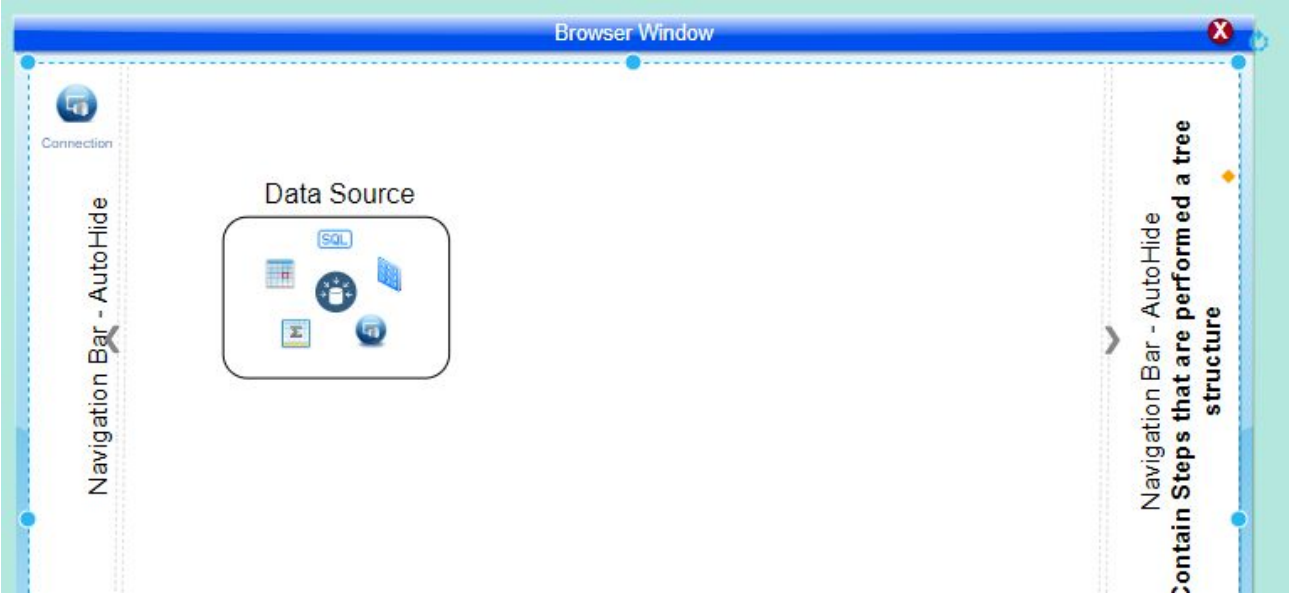
Screen 5: When clicks on excel.

Similarly if user clicks on the other side that is database side the dynamic form should be generated accordingly. For example if user clicks on oracle the dynamic form should be shown as Screen 6.



Screen 6: When clicks on Oracle.(Name is to save connection)

After assigning the data source to the node:



Once data source is assigned to the connection node then different items to show around the node on mouse hover.

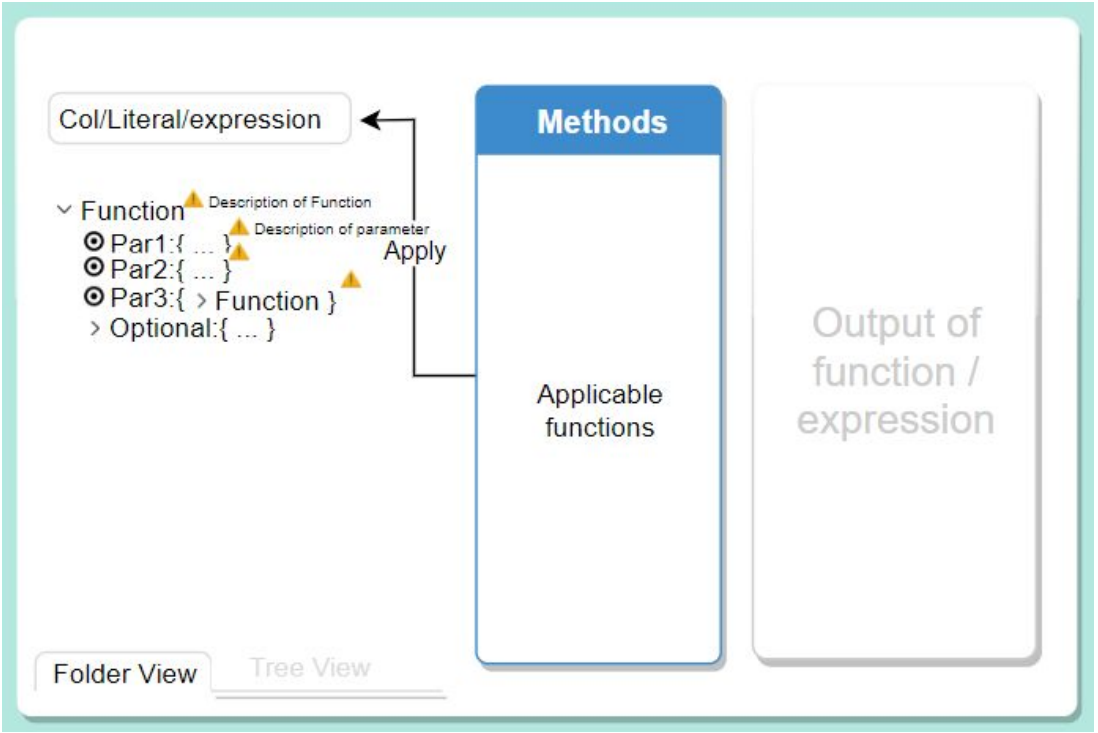
1. Edit DataSource
2. SQL
3. Show Data
4. Show Summary
5. Output

Description for the above 3 items

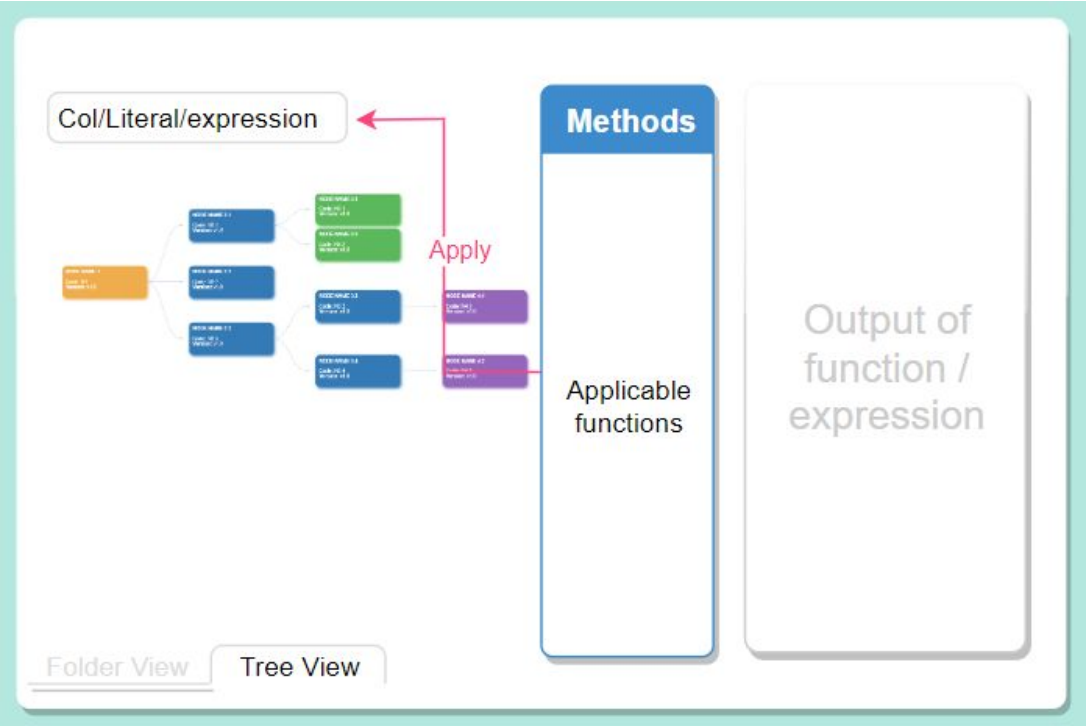
1. Edit DataSource: The data source can be changed at any time after data is connected. Once data is connected the icon will be changed to . When click on icon shows in the child icons around the data source(parent) , will open the edit form of the current data source connection (screen 5 or 6). If user wants to change the datasource then it will go back to the initial nodes state (screen1).

2. SQL:
   A column has few properties as below
   1. Is a textbox element.
   2. User can enter the literal or expression
   3. In order to apply functions or any other complex expressions click on the small button at the right side of the column field.

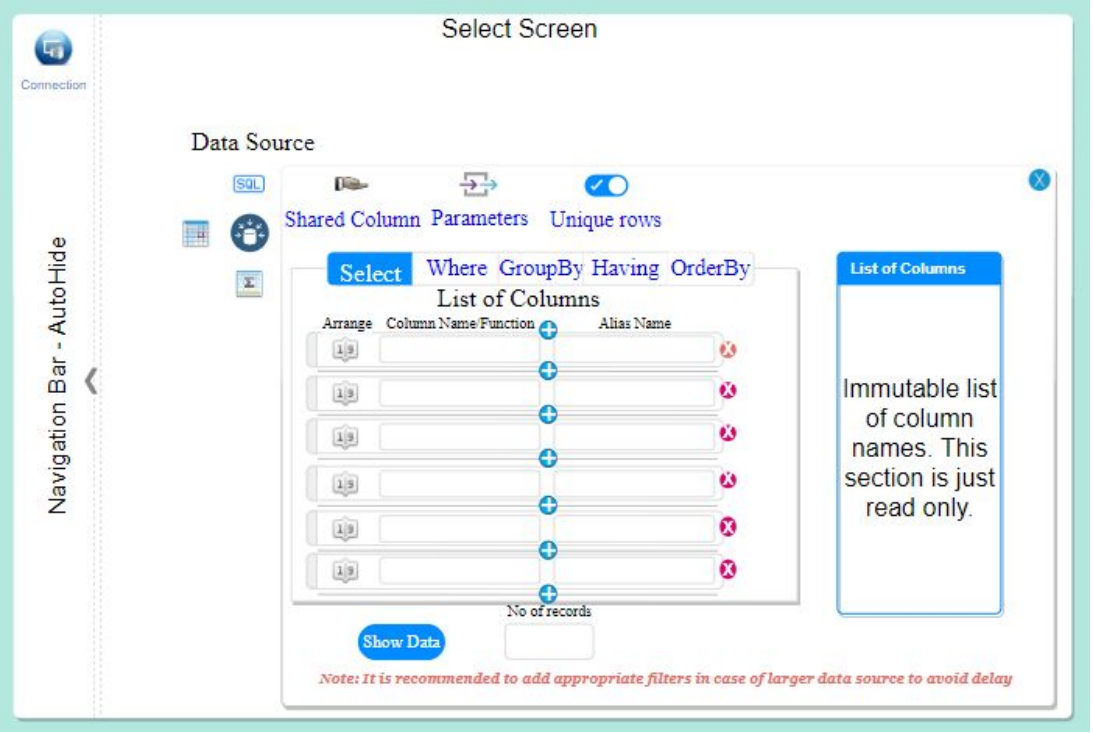
4. On click on the button, it should open the form window as shown below screens.
5. All the applicable functions(according to the datatype) will be
6. u listed down in the methods frame
7. Click on any function should open as a form with all the parameters as fields in the form with the description in the tooltip.
8. All the mandatory fields will be displayed and the default parameters will be displayed as collapsed tree structure as shown in the pictures below.
9. Output of the function should be evaluated and displayed at the output window spanned at the right side of the screen immediately after the focus of the function.
10. These properties are applied to the below fields
    1. Column Name
    2. Alias Name (Conditional)
    3. LHS (In Condition)
    4. RHS (In Condition)
    5. GroupBY
    6. OrderBy

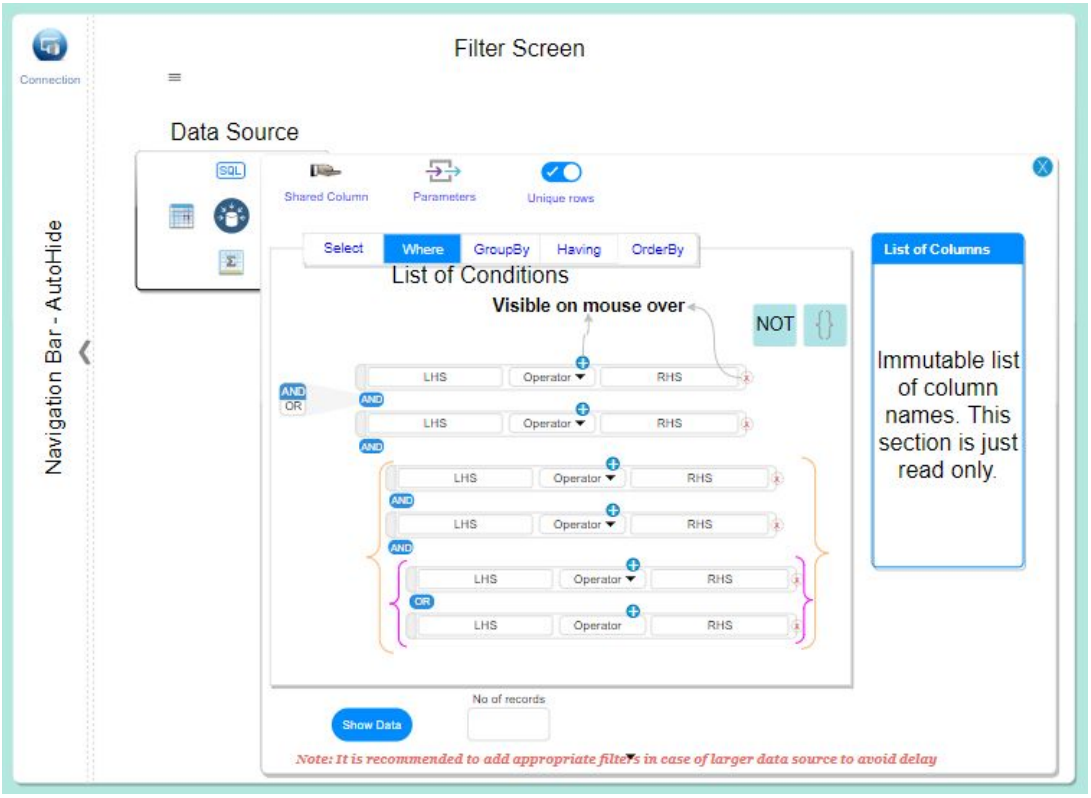


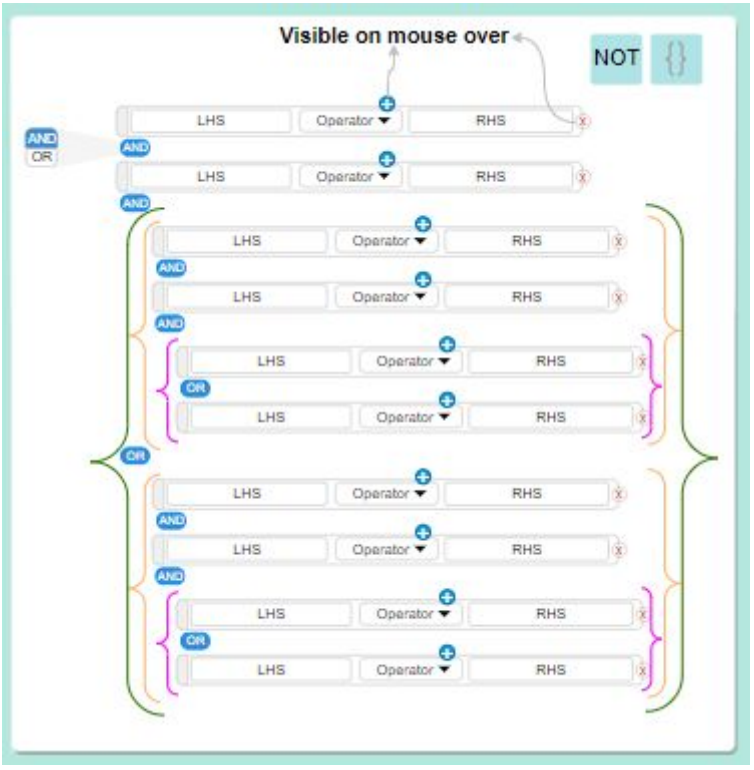
https://observablehq.com/@sethuram975351/treelist-in-d3-v5

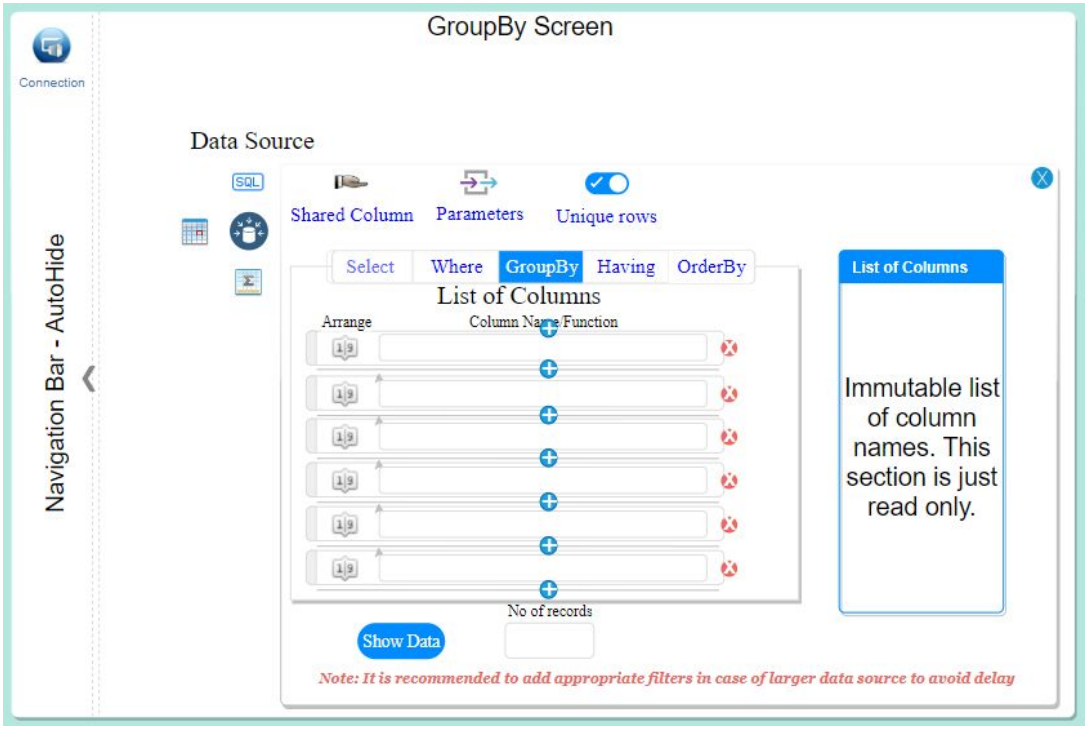


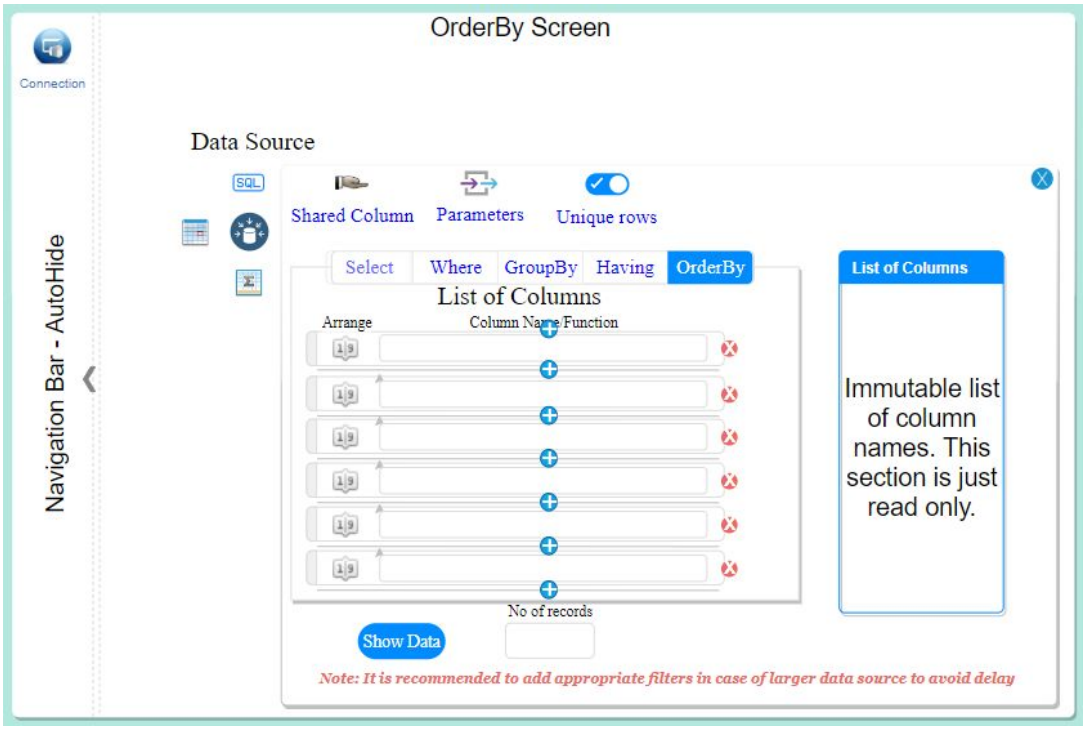
https://vizhub.com/sreeanthrds/367da5345ce1466087463f0e006657c1?edit=files&file=tree-boxes.js




Filter Screen
Connection
Navigation Bar - AutoHide
Data Source
SQL
Shared Column
Parameters
Unique rows
Select
Where
GroupBy
Having
OrderBy
List of Conditions
Visible on mouse over
NOT
LHS
Operator
RHS
AND
OR
List of Columns
Immutable list of column names. This section is just read only.
No of records
Show Data
Note: It is recommended to add appropriate filters in case of larger data source to avoid delay


Visible on mouse over
NOT
LHS
Operator
RHS
AND
OR



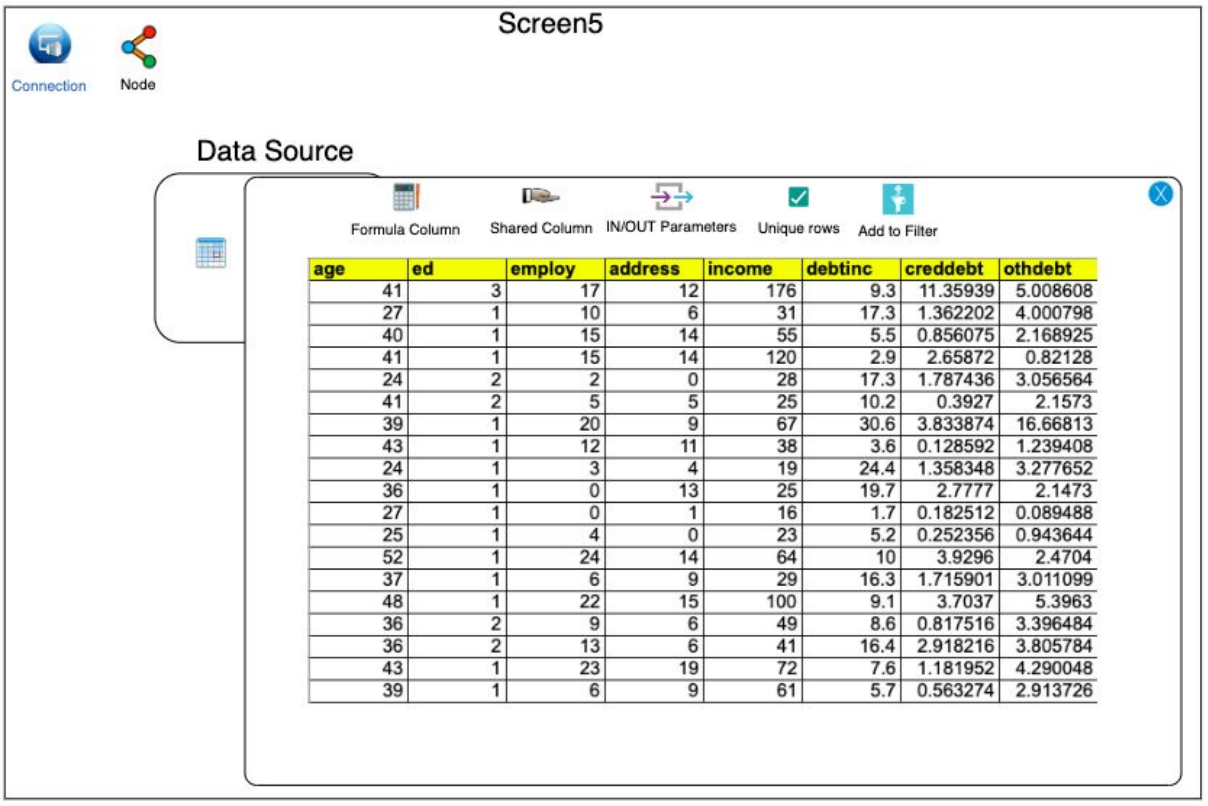


This item shows a window that contains the below sub-items

- ☐ All the field components should be dynamic according to the API contract.
- ☐ In order to display each component in the form we will provide the appropriate JSON data through API

3. Show Data: This opens a new window and displays the data as the grid. This data grid must be interactive. (I need to modify the display of the data

grid a little more) . But, there won't be huge changes. Overall idea is same as this.

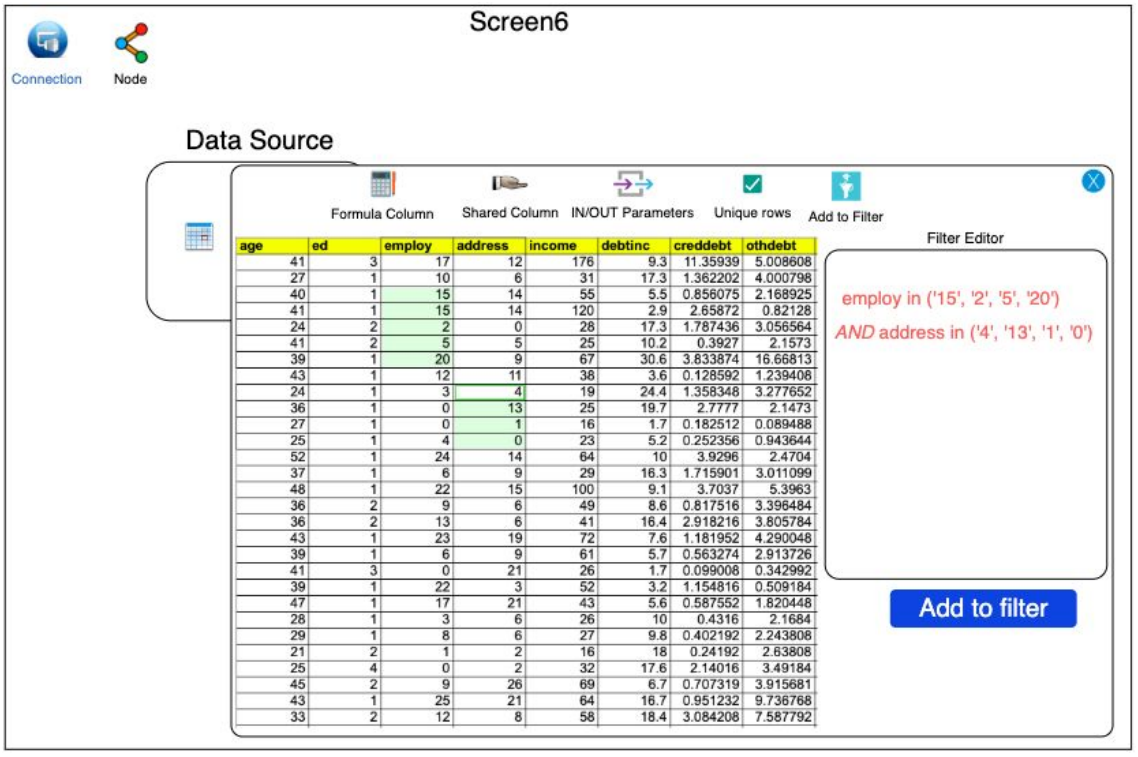


age	ed	employ	address	income	debtinc	creddebt	othdebt
41	3	17	12	176	9.3	11.35939	5.008608
27	1	10	6	31	17.3	1.362202	4.000798
40	1	15	14	55	5.5	0.856075	2.168925
41	1	15	14	120	2.9	2.65872	0.82128
24	2	2	0	28	17.3	1.787436	3.056564
41	2	5	5	25	10.2	0.3927	2.1573
39	1	20	9	67	30.6	3.833874	16.66813
43	1	12	11	38	3.6	0.128592	1.239408
24	1	3	4	19	24.4	1.358348	3.277652
36	1	0	13	25	19.7	2.7777	2.1473
27	1	0	1	16	1.7	0.182512	0.089488
25	1	4	0	23	5.2	0.252356	0.943644
52	1	24	14	64	10	3.9296	2.4704
37	1	6	9	29	16.3	1.715901	3.011099
48	1	22	15	100	9.1	3.7037	5.3963
36	2	9	6	49	8.6	0.817516	3.396484
36	2	13	6	41	16.4	2.918216	3.805784
43	1	23	19	72	7.6	1.181952	4.290048
39	1	6	9	61	5.7	0.563274	2.913726

- ☐ All the cells are interactive
- ☐ Coordinates of each cell can be tracked. Similar to excel when we select a cell in excel the cell address shows as 

.
- ☐ Should be able to select multiple cells by applying ctrl button. Similar to excel.

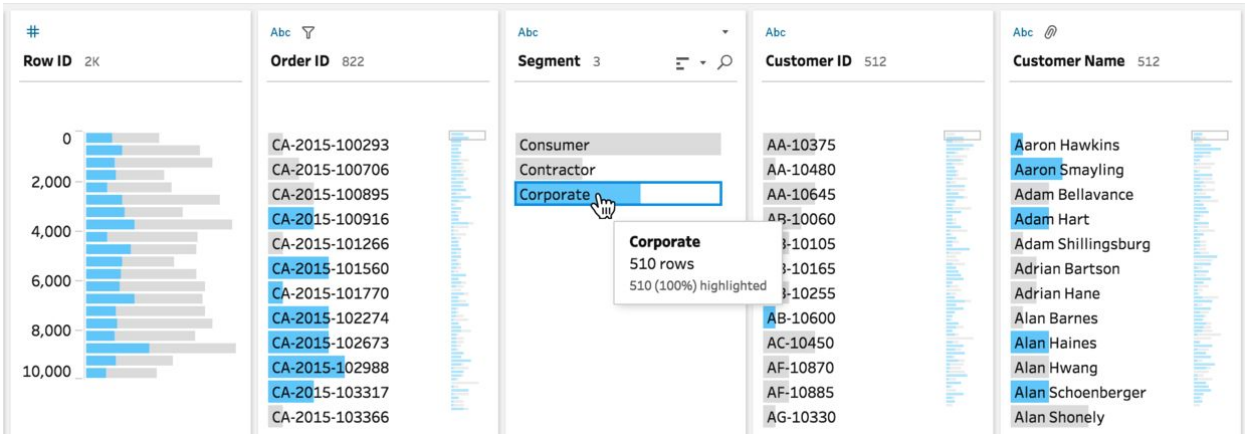
- ☐ Can write filter conditions by selecting cell. Values of the selected cells should be listed in the IN clause.



age	ed	employ	address	income	debtinc	creddebt	othdebt
41	3	17	12	176	9.3	11.35939	5.008608
27	1	10	6	31	17.3	1.362202	4.000798
40	1	15	14	55	5.5	0.856075	2.168925
41	1	15	14	120	2.9	2.65872	0.82128
24	2	2	0	28	17.3	1.787436	3.056564
41	2	5	5	25	10.2	0.3927	2.1573
39	1	20	9	67	30.6	3.833874	16.66813
43	1	12	11	38	3.6	0.128592	1.239408
24	1	3	4	19	24.4	1.358348	3.277652
36	1	0	13	25	19.7	2.7777	2.1473
27	1	0	1	16	1.7	0.182512	0.089488
25	1	4	0	23	5.2	0.252356	0.943644
52	1	24	14	64	10	3.9296	2.4704
37	1	6	9	29	16.3	1.715901	3.011099
48	1	22	15	100	9.1	3.7037	5.3963
36	2	9	6	49	8.6	0.817516	3.396484
36	2	13	6	41	16.4	2.918216	3.805784
43	1	23	19	72	7.6	1.181952	4.290048
39	1	6	9	61	5.7	0.563274	2.913726
41	3	0	21	26	1.7	0.099008	0.342992
39	1	22	3	52	3.2	1.154816	0.509184
47	1	17	21	43	5.6	0.587552	1.820448
28	1	3	6	26	10	0.4316	2.1684
29	1	8	6	27	9.8	0.402192	2.243808
21	2	1	2	16	18	0.24192	2.63808
25	4	0	2	32	17.6	2.14016	3.49184
45	2	9	26	69	6.7	0.707319	3.915681
43	1	25	21	64	16.7	0.951232	9.736768
33	2	12	8	58	18.4	3.084208	7.587792

- ☐ If the cells from multiple columns are selected then the filter conditions should generate with so many filter column conditions by AND option.
- ☐ Can be minimized.
- ☐ Should be able to run the same data with multiple instances of Data Grid. Multiple tabs can be displayed in the preview window. they should be able to close.
- ☐ Basic formatting options (Typography) (Basic CSS for formatting)
- ☐ Duplicate a row
- ☐ Duplicate Column
- ☐ Insert columns/rows by paste
- ☐ Save button to save as different file formats.
    i. Excel
    ii. CCSV, TXT, TSV
    iii. XML
    iv. JSON

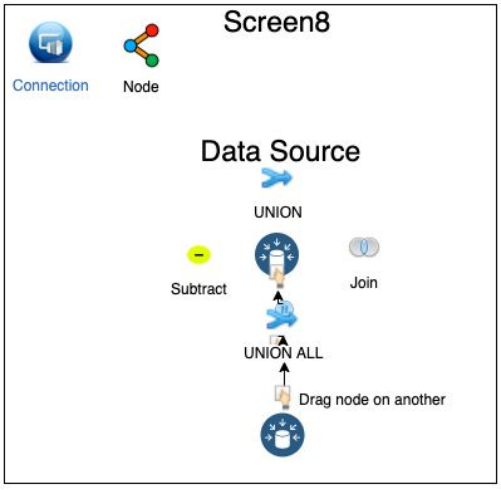
4. Show Summary: (No need to worry about this part. the data will be given by API. Just need to display as in the above section)



This is the table of summary for all the columns of the data source.

1. Character columns: Shows each distinct value including nulls with their counts. Right-Top corner of the column
2. Number Columns: Should show the range as box plot (Not like the above figure)
3. Date Column: Show as a hierarchy of Year☐Quarter☐Month☐Date☐Hour☐Minute☐Second☐Fracti on of second

Once user drags a node to another node, the below options have to be displayed on hover.

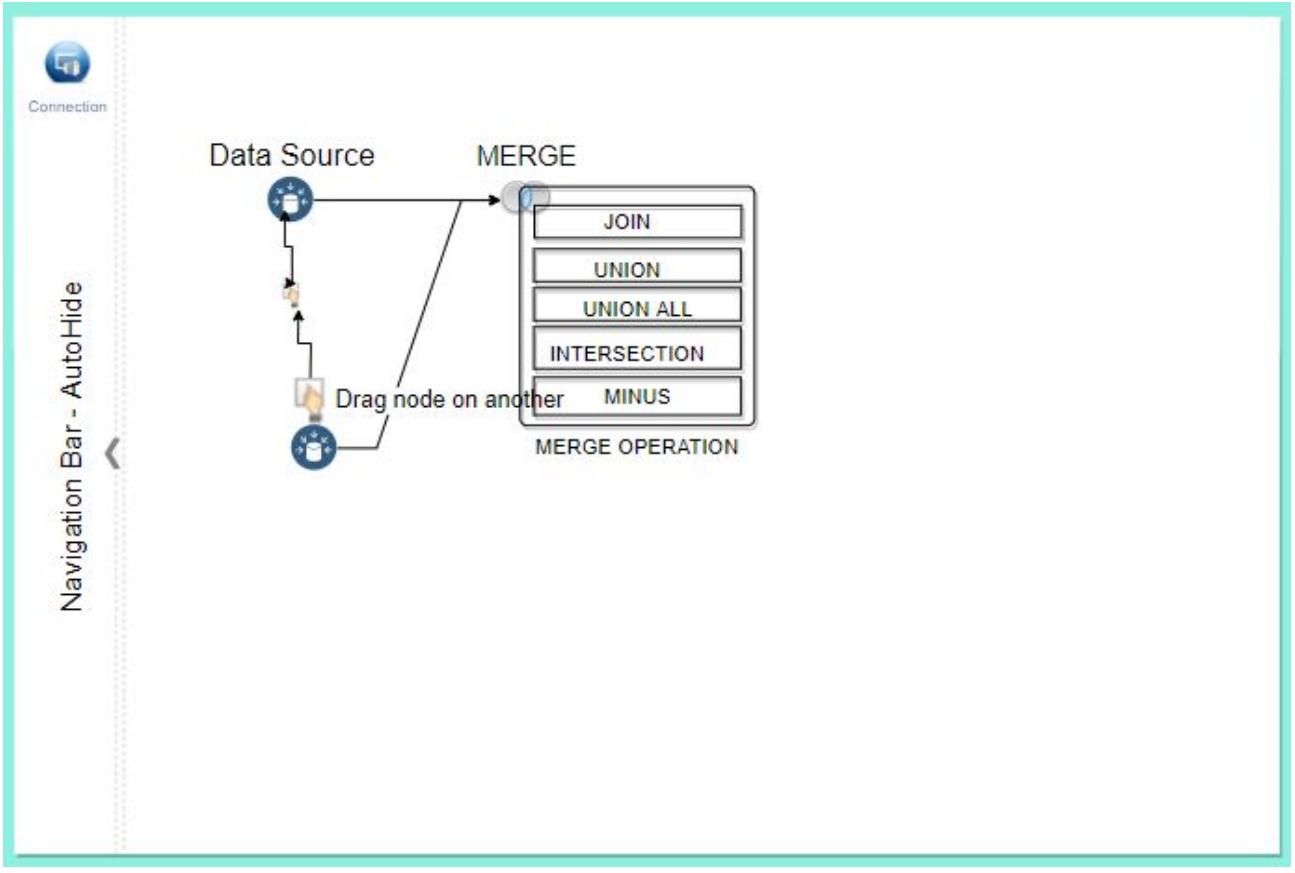


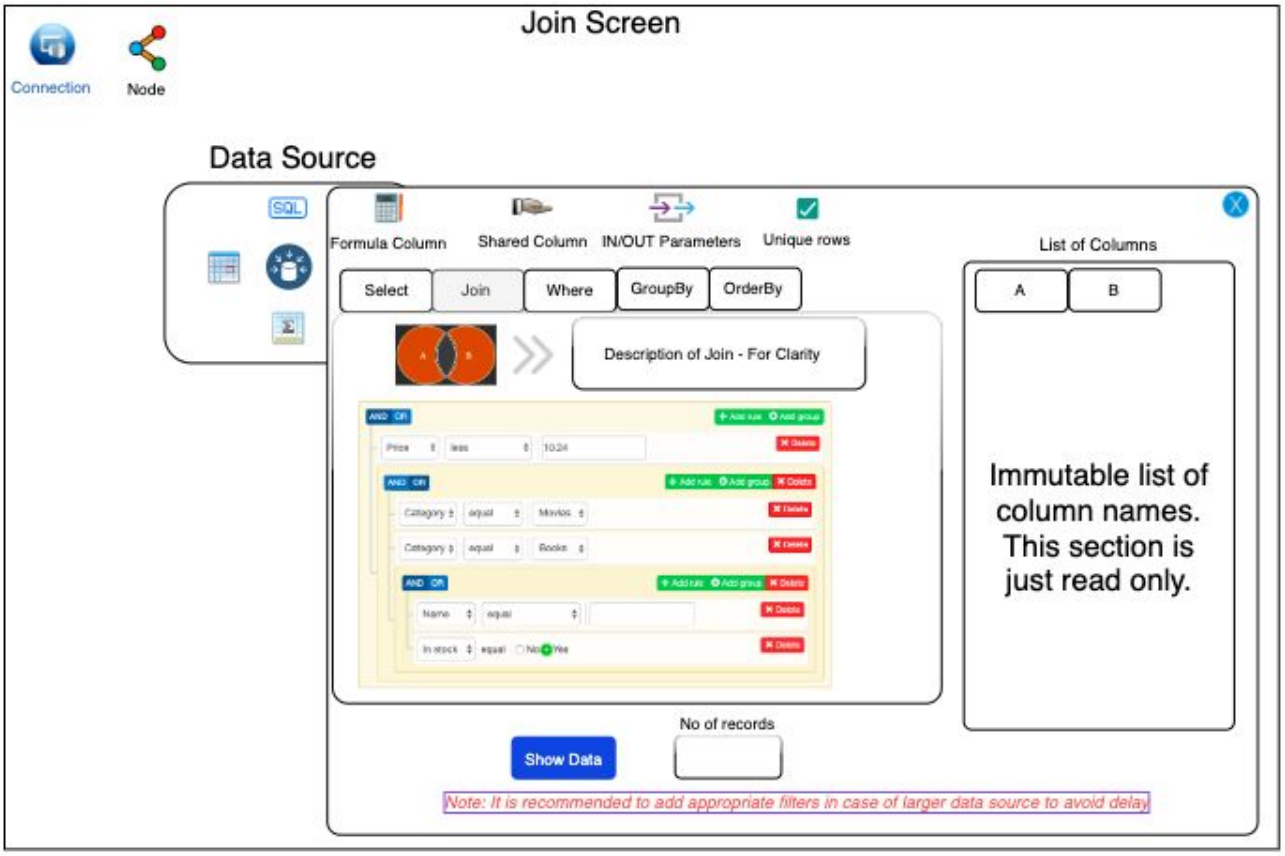
1. Join
2. Set Operations
   a. Union
   b. Union All
   c. Minus
   d. Intersect

Descriptions for the above items

1. Join: when we drop a node on the other node then the different options to be shown around the target icon. Once drop the node on Join on another node below operations based on the column conditions as

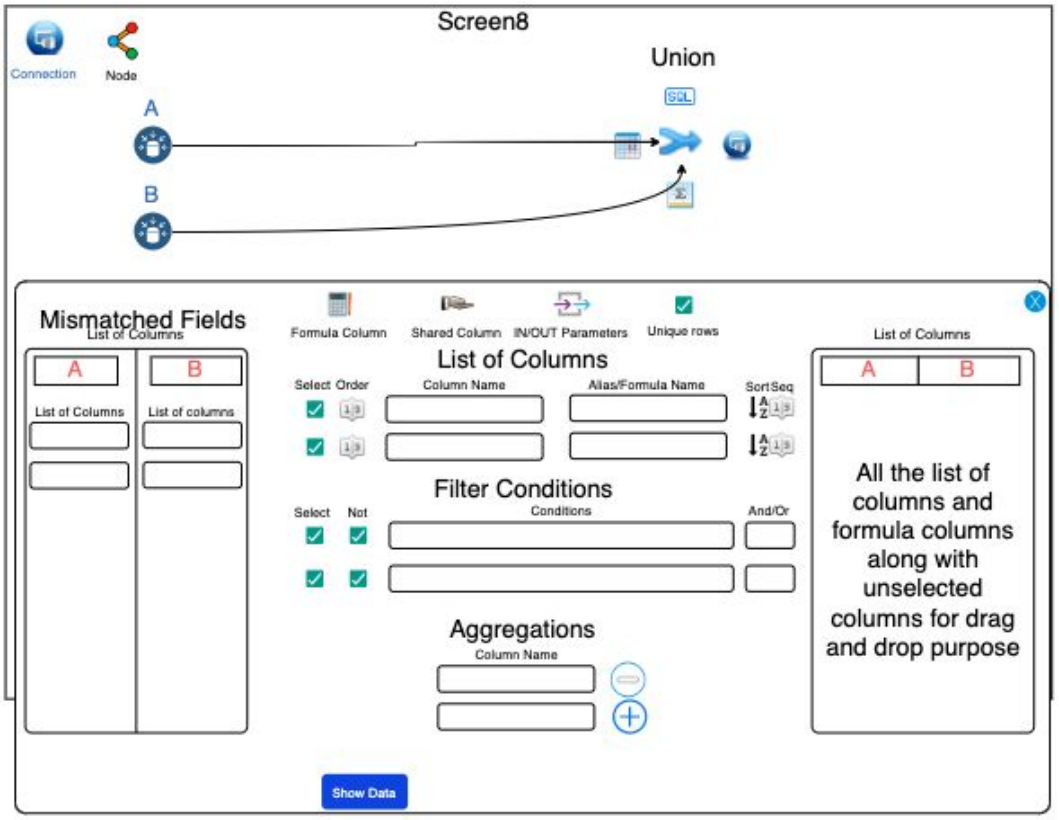
shown in the web URL. https://sql-joins.leopard.in.ua/



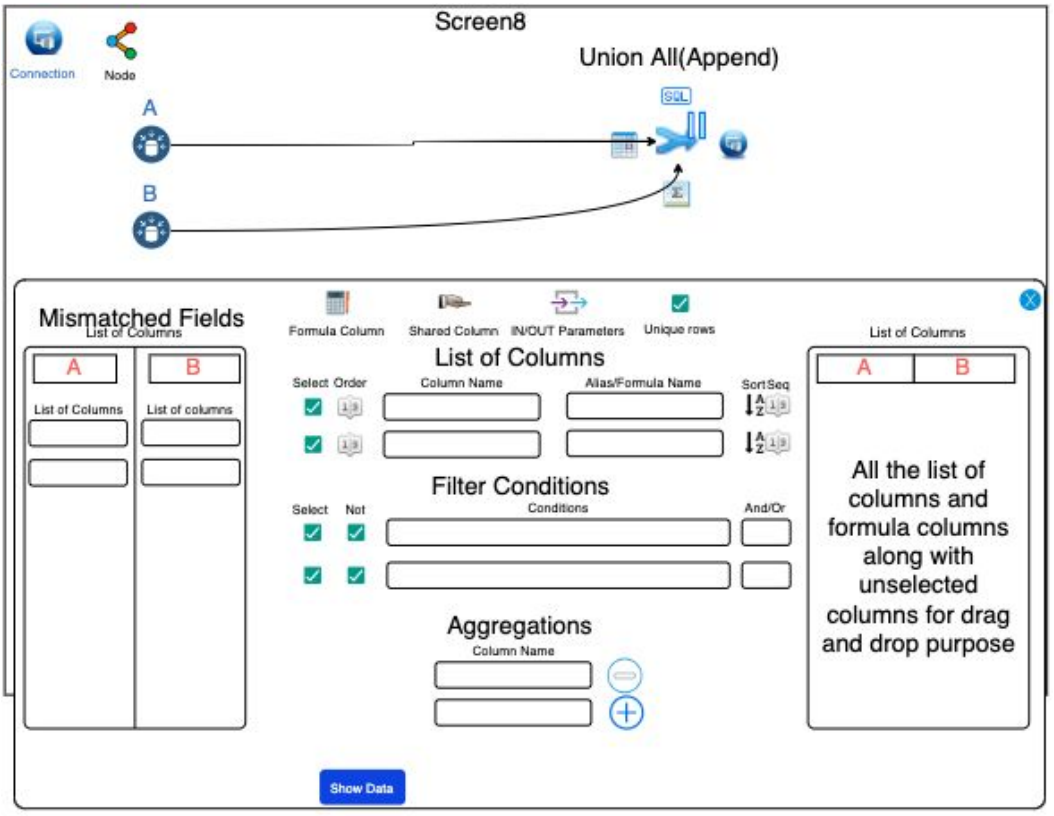


Reference: https://sql-joins.leopard.in.ua/
https://querybuilder.js.org/

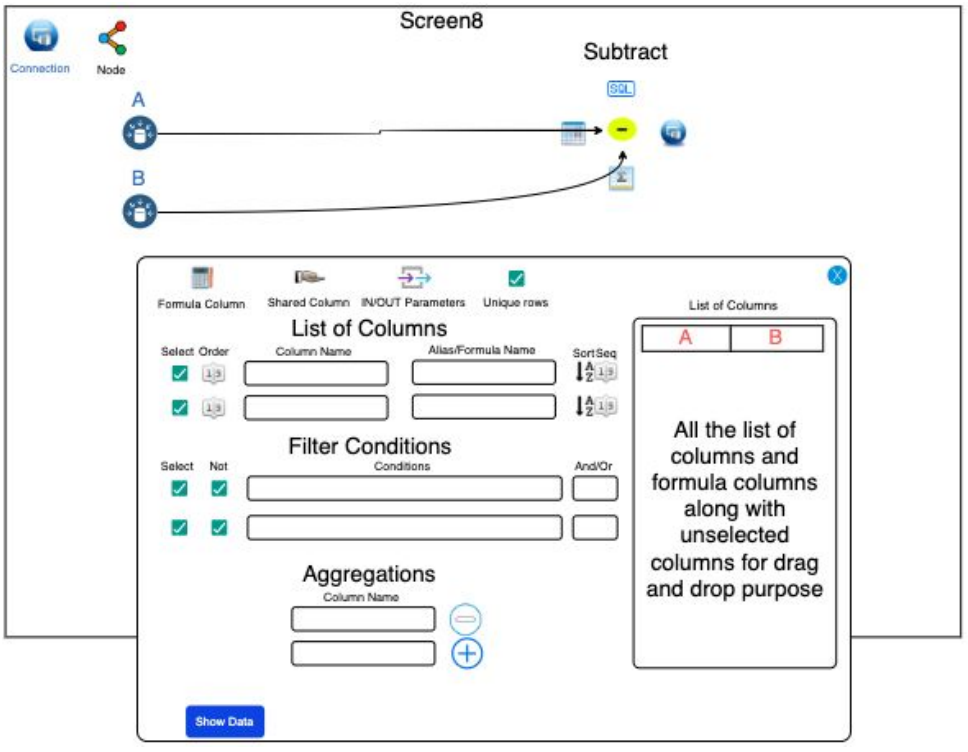
2. Set Operations: These operations perform on all the columns
    a. Union: This appends the data of one data source to another and removes duplicates from the result. This operation can be performed on 2 or more data sources without duplicate records.



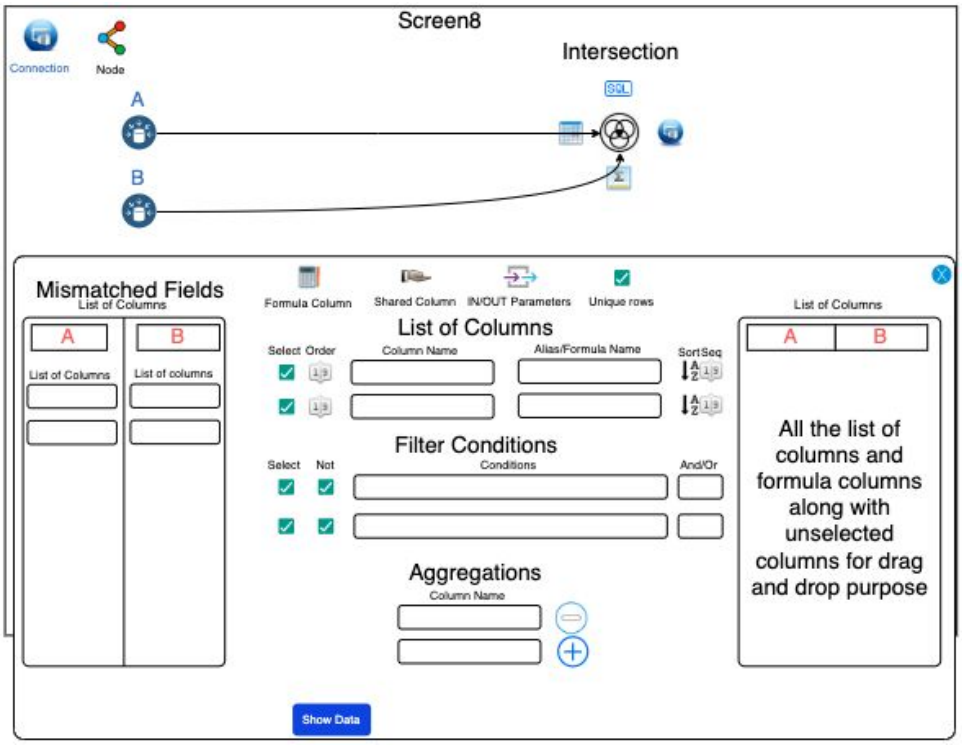
b. Append (Union All): This just appends the data of 2 or more data sources including the duplicates



c. Minus:
    i. Removes matching (common) data from the first data source. Data from other nodes would be discarded.



d. Intersect: Shows only matching data from all the data sources



<u>Creates a new node:</u>
Once a data source or a node has been dropped on any of the above described hover options of another node then it should create another node (Icons will be changed according to the hover options)

Apart from the Connect Data node, all the <u>data nodes</u> (Which contains Data) are having SQL, Show data and Summary Data on Mouse Hover. In addition to these there may be some other specific Hover Icons would be assigned.

- ❖ Two link lines connect these nodes when a new node created by an operation.
- ❖ This link line is removable and can be joined the same link again by dropping on a hover node Add Link.