Task 1 :- Create one fixed and one exclude LOD expression.

In Tableau, Level of Detail (LOD) expressions let you specify the level at which you want to perform aggregations, regardless of the visualization's granularity. Here are examples of a FIXED and an EXCLUDE LOD expression:

FIXED LOD Expression
A FIXED LOD expression computes a value using the specified dimensions, without regard to the dimensions in the view. For example, to calculate the average sales per category (regardless of what's in your view):

sql
{FIXED [Category] : AVG([Sales])}

This calculates the average sales for each category across the entire dataset, no matter how your view is filtered or detailed by other dimensions.

EXCLUDE LOD Expression
An EXCLUDE LOD expression calculates an aggregation while omitting the specified dimensions from the calculation. This is useful when you want to remove the influence of certain dimensions from your calculation. For example, to calculate the sum of sales for each order, excluding the detail of each product:

sql
{EXCLUDE [Product Name] : SUM([Sales])}

This calculates the sum of sales for each order without breaking down the sales by each product name, effectively ignoring the product level detail in your sales data.

Remember, to effectively use these expressions in Tableau, you'll need to incorporate them into your worksheets and understand how they interact with the data and visualizations you're working with.

Task 2 :- Create any 2 map visualizations using geographical data.

Creating map visualizations detailed step-by-step can be challenging without direct interaction with visualization tools like Tableau or similar platforms, and since I can't create live visuals or interact with your data directly, I'll guide you through the process of creating two types of map visualizations using geographical data in Tableau, which you can then apply to your own datasets.

1. Basic Geographic Map

A basic geographic map displays locations as points on a map. You can use it to show the distribution of stores, offices, or events across a region.

Steps to Create a Basic Geographic Map in Tableau:

1. *Prepare Your Data:* Ensure your data includes geographical fields such as country, city, state, or zip codes.
2. *Open Tableau and Connect to Your Data.*
3. *Drag a Geographic Field to the Canvas:* Drag a field like "City" or "State" to the Rows or Columns shelf. Tableau automatically recognizes geographical fields and displays a globe icon next to them.
4. *Convert the Field to a Dimension (if necessary)* and ensure it's recognized as a geographic role (e.g., City, State).
5. *Drag the Latitude and Longitude Generated Fields to the Rows and Columns Shelves,* respectively. Tableau plots each point on a map based on these coordinates.
6. *Customize Your Map:* Use the Marks card to change the type of mark (e.g., circle, shape), adjust size, color, or add labels.

2. Heat Map

A heat map uses color to represent the density or magnitude of data in different areas, useful for highlighting areas of high concentration or interest.

Steps to Create a Heat Map in Tableau:

1. *Prepare Your Data:* Similar to the basic map, ensure you have geographical data like zip codes or coordinates, along with a measure (e.g., sales, population).
2. *Open Tableau and Connect to Your Data.*
3. *Create a Basic Geographic Map:* Follow the initial steps for creating a basic map, plotting your locations based on latitude and longitude.
4. *Change the Mark Type to 'Density':* On the Marks card, select 'Density' from the drop-down menu. This will change your map to display density rather than individual points.
5. *Adjust the Density Color:* Click on the Color on the Marks card to adjust the density's color range, opacity, and intensity.
6. *Add Your Measure:* Drag your measure (e.g., sales) to the Color shelf on the Marks card to color-code the density based on the measure's value.

For both map types, you can further customize your visualizations by adding filters, additional data layers, annotations, or adjusting the map style and background. Remember, the effectiveness of a map visualization largely depends on the quality and granularity of your geographical data. Experiment with Tableau's features to explore different ways to represent your data geographically.

Task 3 :- Create Top N and/or Dynamic dimension parameters and utilize those in your workbook.

Creating Top N and dynamic dimension parameters in Tableau allows for interactive and flexible visualizations where viewers can adjust what they see based on their selections. Here's how you can create and use these parameters in your Tableau workbook:

Step 1: Create a Parameter for Top N Selection

1. *Go to the Data pane, right-click, and select "Create Parameter."*
   - Name the parameter (e.g., "Top N Selector").
   - For Data Type, select "Integer."
   - For Allowable values, select "List."
   - Add values according to how many top items you want users to be able to select (e.g., 1, 5, 10, 20).

2. *Click "OK" to create the parameter.*

Step 2: Create a Calculated Field to Implement the Top N Parameter

1. *Right-click in the Data pane and select "Create Calculated Field."*
   - Name the calculated field (e.g., "Top N Filter").
   - Enter a formula to rank your dimension based on a measure. For example, if you want to rank Sales by Category:

```
sql
RANK(SUM([Sales]))
```

   - Use this rank in an expression that compares it to the parameter:

```
sql
[Top N Filter] <= [Top N Selector]
```

2. *Click "OK" to create the calculated field.*

Step 3: Create a Dynamic Dimension Parameter

1. *Create another new parameter for choosing a dimension dynamically.*
   - Name the parameter (e.g., "Dimension Selector").
   - For Data Type, select "String."
   - For Allowable values, select "List."
   - Enter the names of the dimensions you want to be able to switch between (e.g., "Category," "Region").

2. *Create a calculated field to implement the dynamic dimension.*
   - Name the calculated field (e.g., "Dynamic Dimension").
   - Use a CASE or IF statement to return the appropriate dimension based on the parameter's selection. For example:

```
sql
CASE [Dimension Selector]
  WHEN "Category" THEN [Category]
  WHEN "Region" THEN [Region]
  ELSE "All"
END
```

Step 4: Utilize Your Parameters in the Workbook

1. *Add your dimensions and measures to the view as needed.*
2. *Right-click on the "Top N Selector" parameter and select "Show Parameter Control."*
3. *Do the same for the "Dimension Selector" parameter.*
4. *To apply the Top N Filter, drag the "Top N Filter" calculated field to the Filters shelf and set it to True.*
5. *Use the "Dynamic Dimension" calculated field as a dimension in your sheets to dynamically change the view based on the selection.*

By implementing these steps, you create a highly interactive dashboard where users can select a dimension dynamically and specify how many top items they wish to see, based on the measure you've chosen (like Sales). This setup enables a flexible analysis tool that can adapt to various user needs and questions.