1. Add a New column to calculate profit by substracting box office and budget values or anything.
2. Show profit by categories.
3. Format column as currency using column tools.
4. Create a cluster column chart to show profit by categories.
5. Create a new column using IF function explain syntax and [] means, consider run time > 120 minutes as long movies or short movies.
6. Now average show profit according to the short long movies and film type wise using matrix and charts.
7. Create New measure to show average profit loss using AVERAGEX Function by substracting box office and budget values.
8. Show the average show profit according to the short long movies and film type wise using matrix and charts with averagex measure.
9. Use AVERAGEX with filter function to show average profit loss of long film only using run time > 120 condition.
10. Use calculate function along with measure in expression do the same thing for short films condition runtime < = 120.
11. Show the result in a matrix of short long and overall average.
12. Create a new table using filter function where Oscar win = 1
13. Create another table using calculate function where Oscar win = 0
14. Union function to combine these two table in a table.
15. Disconnected slicer so it can compare one selected film type average with all the film type.  
    for this create a separate table using values function and select the file type in it.
16. Create new measure for this using selectedvalue, calculate, average and variables and return show it on bar chart.
17. Condition formatting make the colors on chart

Function Covered

1 AverageX

2 Filter

3 Calculate

4 Calculate Table

5 Values

6 SelectedValues

7 Union

8 Variables

1. Create New column to get profit by using field pane, data view column, and ribbon, (Fx indicates a function)
2. How to edit a column calculation and name
3. refer columns without preceding by table name using [] (not a good practice)
4. to see only list of tables and columns without functions and measures name use ‘ after = sign.
5. Add Comments in DAX ------ using --, //, multi line /\*………..\*/
6. Write DAX in multiline using shift enter.
7. Change default summarization, and format of column using column tools.
8. Create a profit margin using box office – budget / box office  (following bodmas rule) and change format as percentage.
9. Use pre created profit column to show profit margin without bodmas.
10. Ignore infinity error and get blank using divide function.
11. Create a column cost per minute using same data type column like budget/runtime using divide function (dax convert data type automatically when it is sensible to do so show example of whole numbers converted as decimal number. Implicit conversion.
12. Create a column run time label in hours and won’t change the data type as well using divide with int (runtime / 60 )
13. Use & and mod divisor as 60 to show the remaining minutes. And use M and H with hour and minutes.

Day – 3

1. Create a column Oscar success using if function to get info a film wins a Oscar or not if not treat it as loser as winners also introduce blank concept for false value.
2. Show it in a chart as genre runtime average and Oscar success as legends.
3. Create an another column if box office value > 1 billion collect tax 20 % of box office else 10%.
4. Change format as currency and summarization as average for this column show it in previous chart in place of runtime replace tax.
5. Make changes in previous expression as box office – budget and collect tax according to the previous criteria introduce multi cursor concept using alt and click.
6. Other if condition if nomination = 0 then not nominated else if Oscar win = 0 loser else winner show it on chart legends.
7. Using and create category of high performance film box office >= 1 billion and nominations >=3 than high else normal.
8. Replace and with && in previous example and add Oscar wins >= 1 condition.
9. Other column with or operator if or genre = “awful”, director = “Michael bay” then avoid else probably safe.
10. Replace or with || in previous example.
11. Use ‘and’ and or operator together see example there in phone or create your own
12. Multiple or example to check your favorite director files.
13. Report multiple or with In.
14. Show favorite directors in legends with genre and tax.

Day 04

1. Use switch function to create a win label column as Oscar wins 0 loser, other blanks leave other criteria.
2. Modify previous example as 1 one hit wonder, 2 double winner
3. Modify again for else multi winner
4. Create another column length using switch as run time < 100 it’s a short file introduce switch expression and value concept.
5. Modify previous example run time for < 150 medium, runtime < 200 long else epic.
6. Introduce the condition order should be right.
7. Modify previous example win label as nomination = 0 not nominated Oscar wins = 0 loser Oscar wins = 1 one hit wonder wins = 2 double winners else multi winners
8. Insert matrix length as column win label as rows id as values create a column chart also using same.
9. Create a new column to sort the chart as win labels as win label sort as nominations = 0 then 0 oscar wins  = 0 then 1 for 1 as 2 for 2 as 3 else 4 using switch function.
10. Hide and column from using table view.

Day 4 Working with Blanks

1 Create a budget approved column if box office is blank then pending else approved using If and Isblank.

2 Show genre runtime and budget approved column in column chart.

3 other column box office status if box office = blank() then incomplete else final show it in legends of previous chart.

4 In dax blank and 0 are same check this thing using column name = blank() function.

5 to make 0 different from blank use == operator with blank() function.

6 check same things using column name = 0 so in place of blank and 0 we will get same value.

7 resolve same issue using == to make them different during comparison.

8 if any one budget or box office is blank it should return blank as result using if isblank, or, not operator.

9 Create made in column as if country == “”, unknown else countryname, do same thing using Isblank function.

10 use of coalesce function in place of if (isblank ) function.

Day – 5

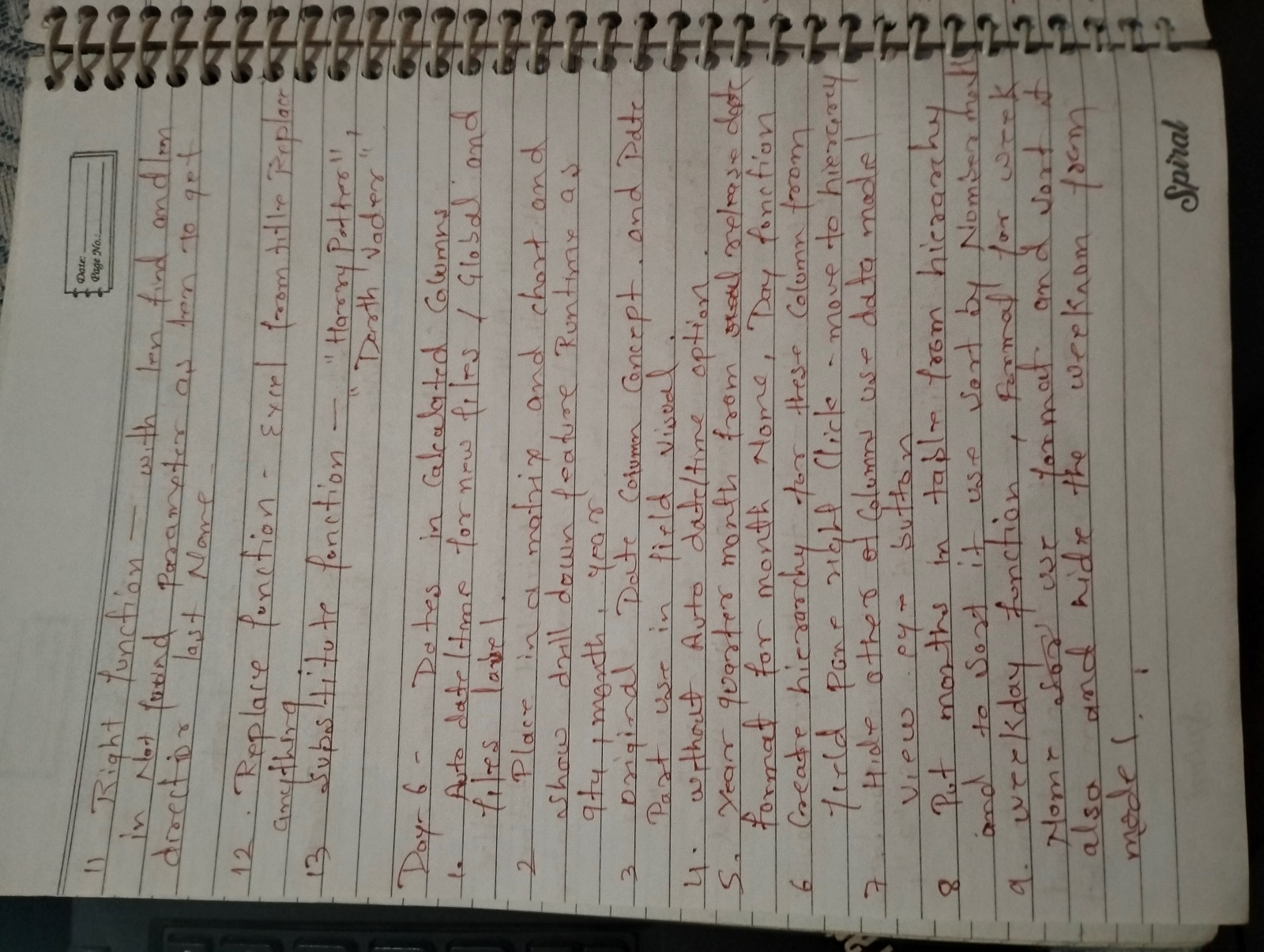
1. To get count of films put a run time as count and filmtitle.
2. Concatenate to combine two text

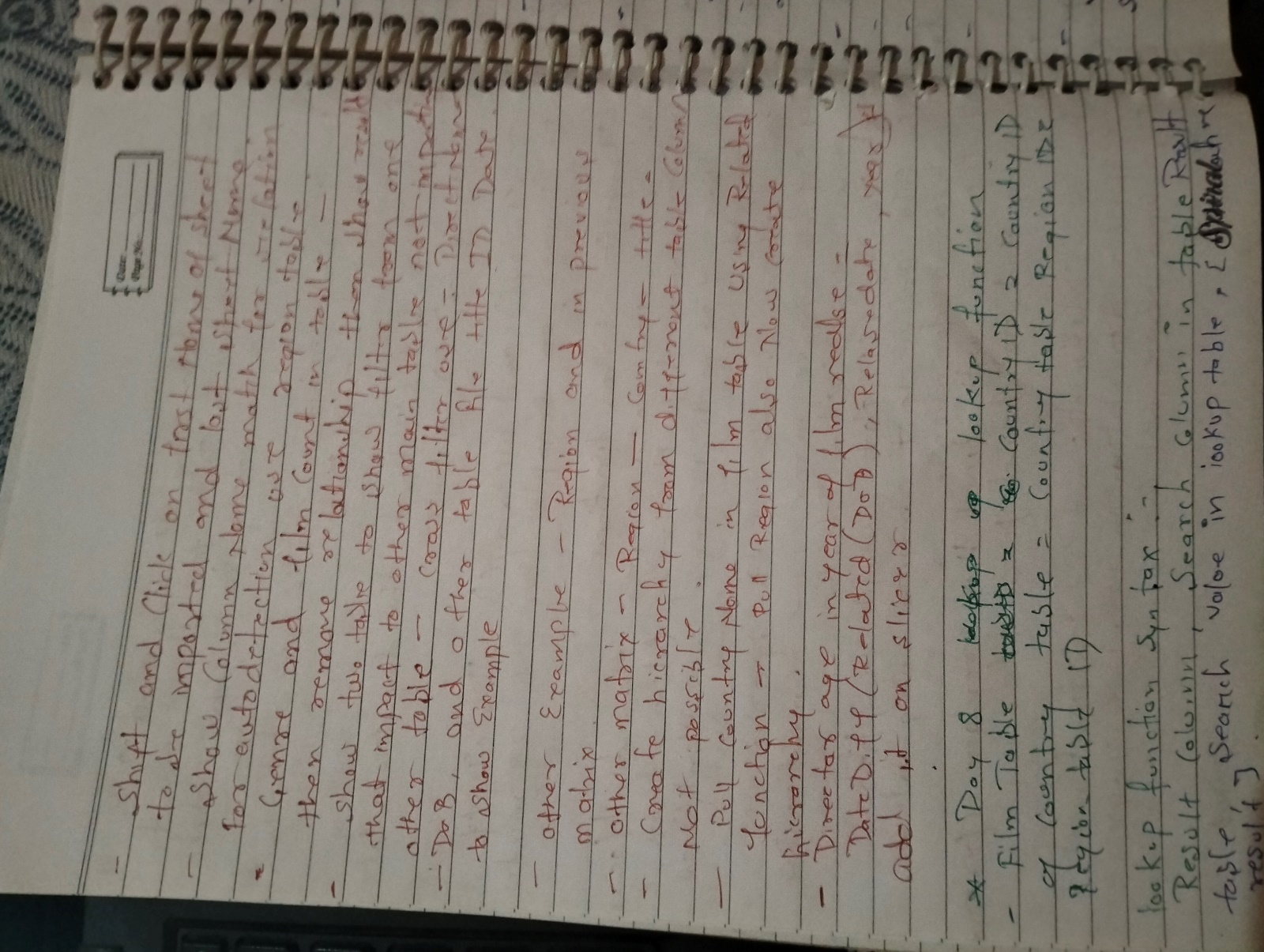
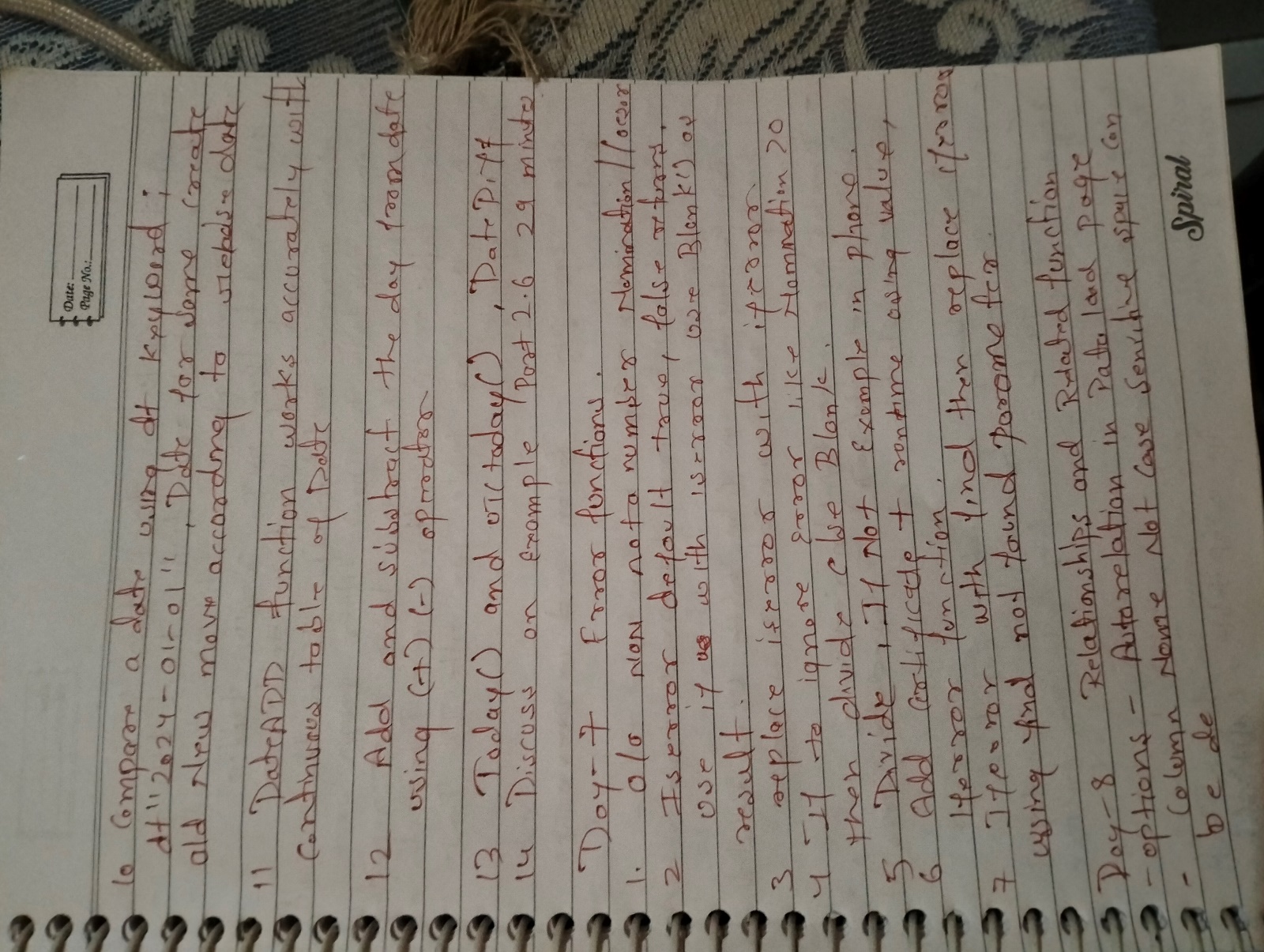
Example title and its ID Combine.

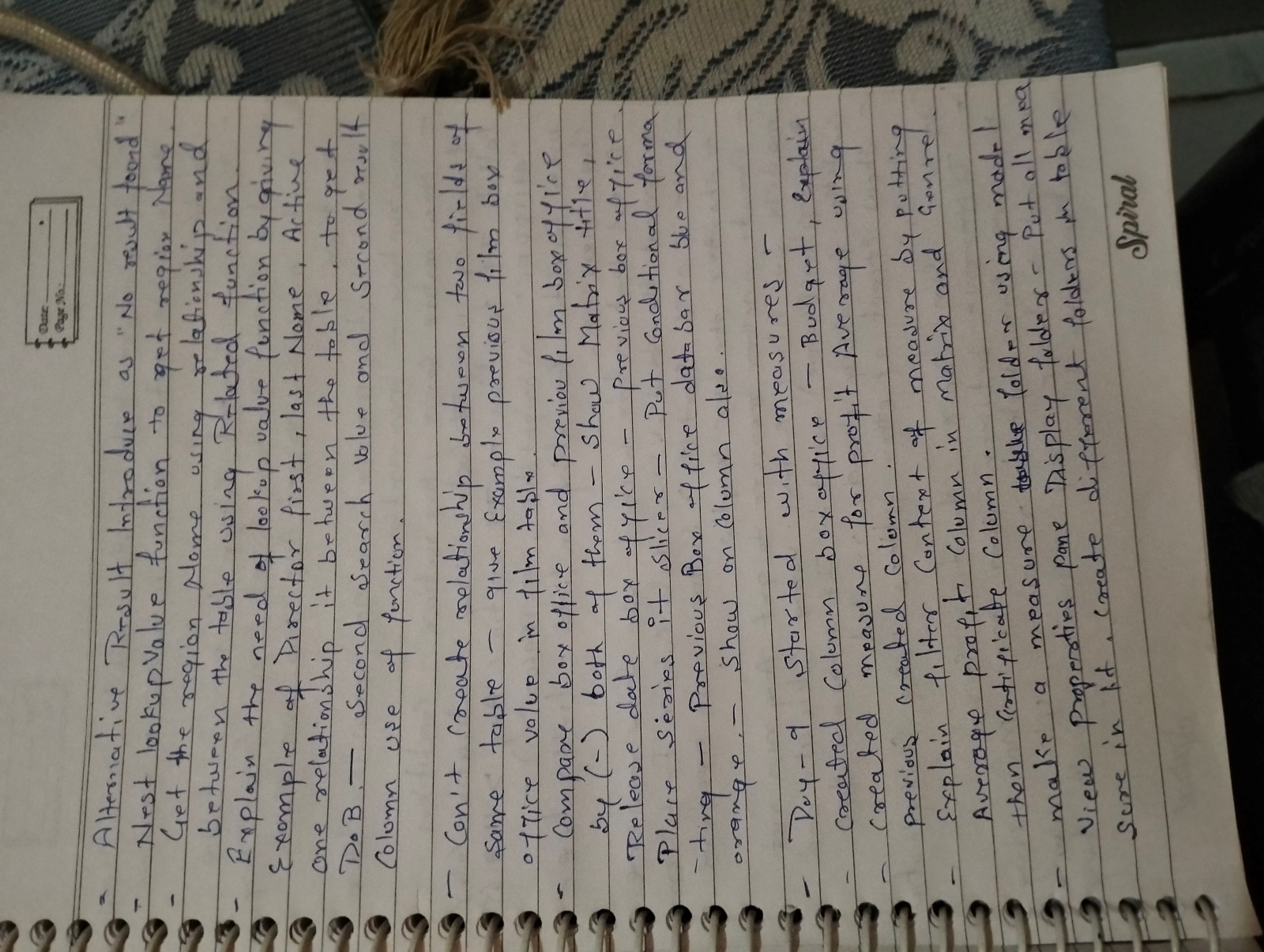
1. Introduce index column feature of power query to make unique film title.
2. Nested Concatenate to add space in between.
3. Combinevalues to combine ID and Title, Title with Space and bracket, Limitation of combinevalues function as separator will not accept “” string.
4. Use & operator to concate String.
5. Introduce format function – “Currency” $0.00, “#,##0.00” (repeat three digits), “#,##0,.00” (show values in thousands), $#,##0,,.00/m (for millions).
6. Left function – first letter from movies title.
7. Put it in a slicer --- to avoid numbers lik 0-9 in slice use

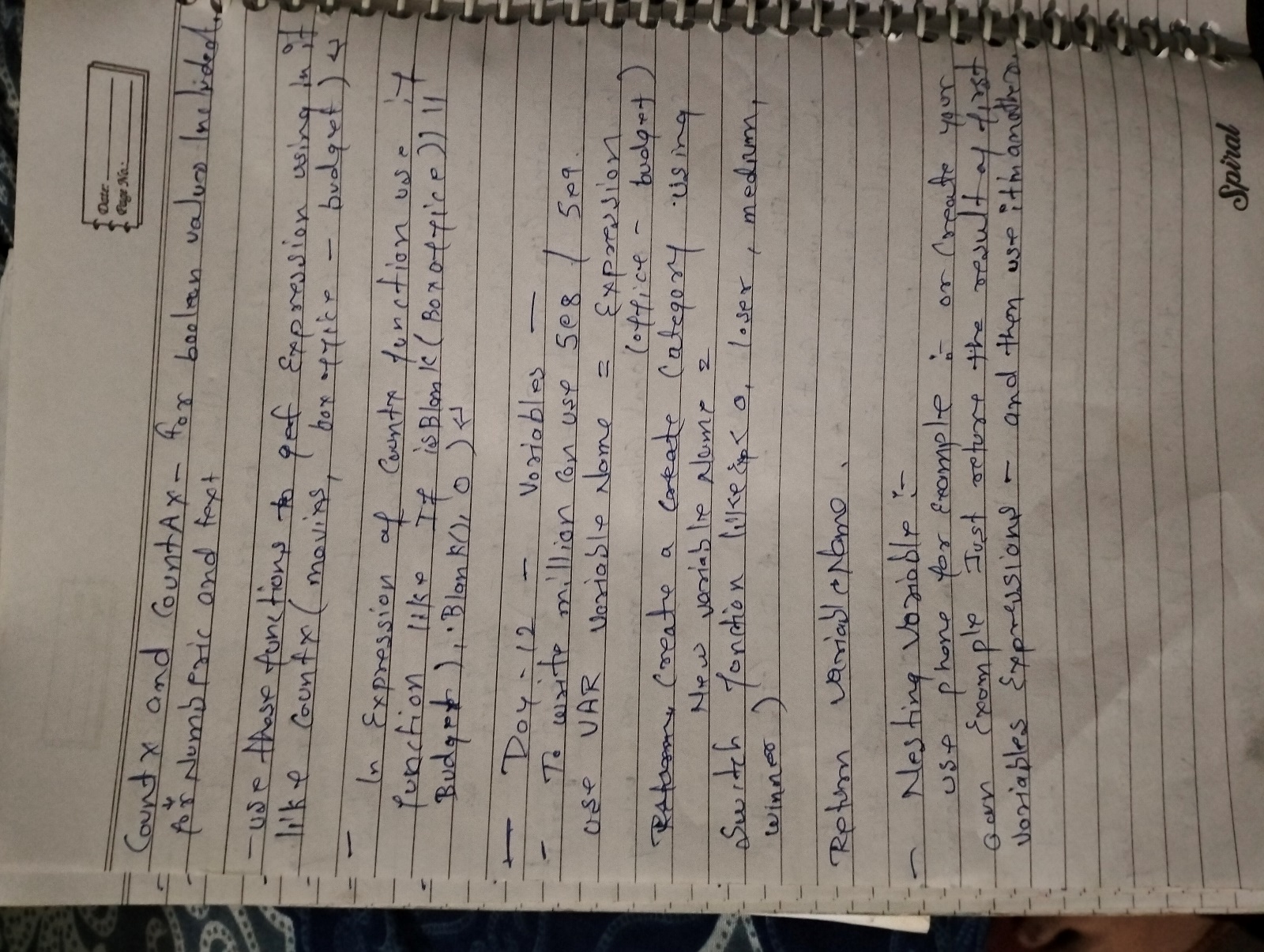
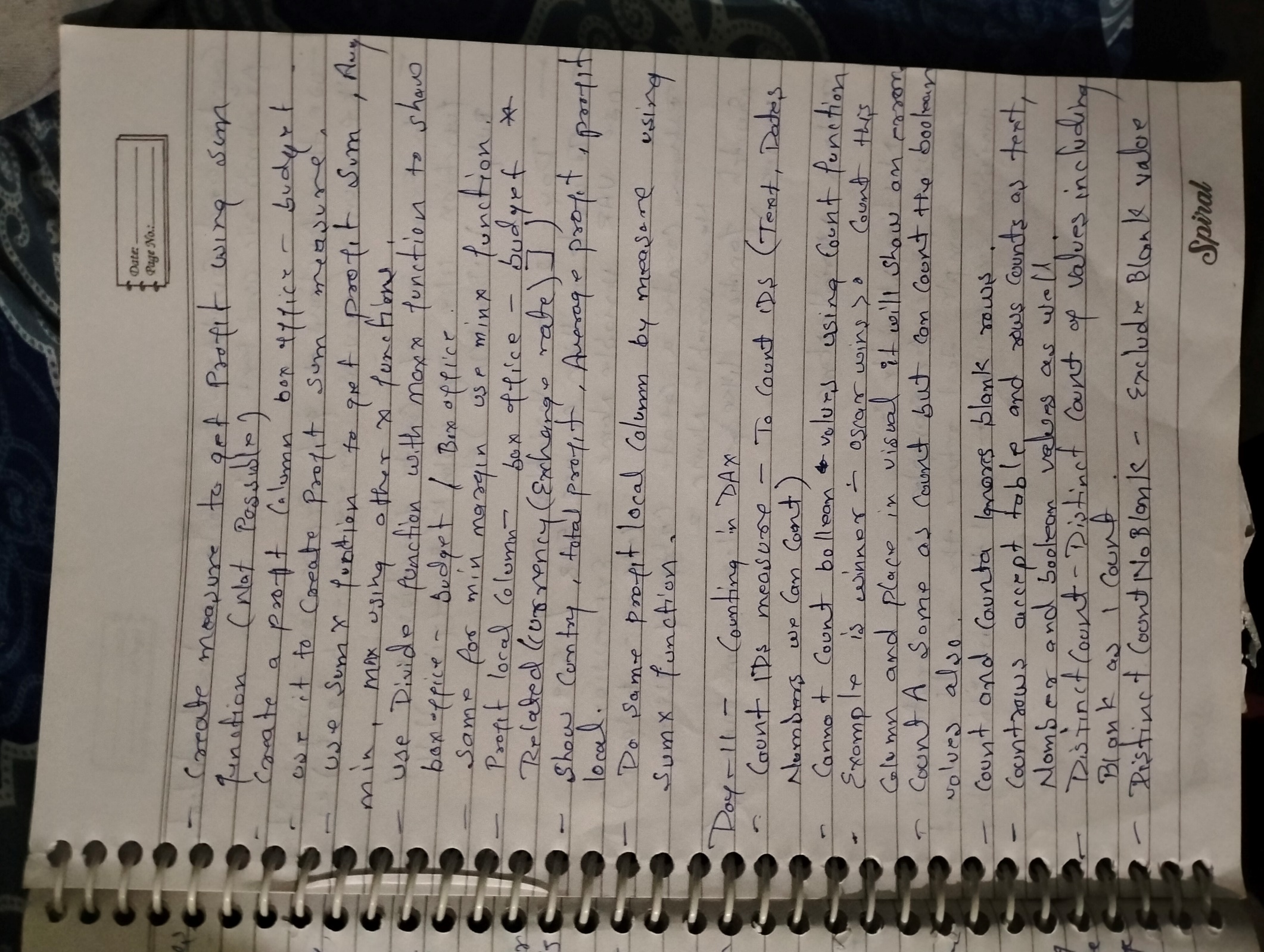
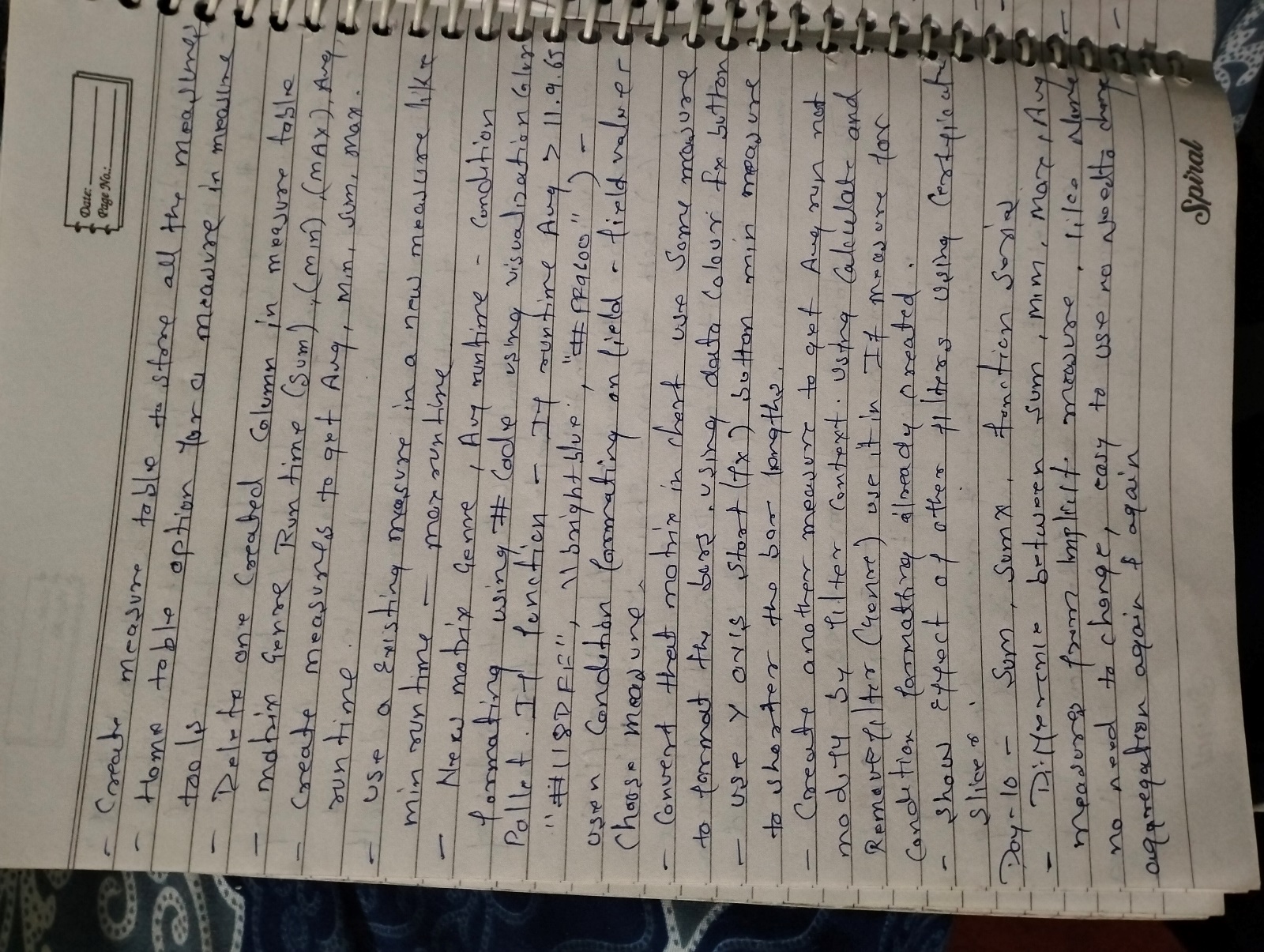
Hint:- if((left(column,1)<”a”,”0-9”,”left function)

1. Find function to extract first name of director using left and find, Not found parameter, --- Trim Function, Len if Not Found.
2. Right function ---- with len find and len in not found parameter as len to get director last name.
3. Replace function --- Excel -- from title anything.
4. Substitute function --- “Harry Potter’ with “Darth Vader”.









1. Create a quick measure to show average runtime of files having Oscar wins 0 using filter value option of quick measure and show it by genre.
2. Make changes in quick measure using formula bar name, replace in operator with = .
3. Create new measure using for Oscar wins > 0 using old quick measure code.
4. Create another quick measure using mathematical operations subtraction by subtracting Avg run time winner measure – avg run loser measure.
5. Modify the previous measure as avg runtime winner is blank then blank else subtract.
6. Percentage difference from Avg runtime for genre vs science friction films. Use percentage difference from filtered value put avg runtime in base value in filter put genre and filter out the science fiction.
7. Change the percentage in the data bars using condition formatting from visual pane negative value orange and positive value blue.
8. Can remove the \_\_ from name of the variables.
9. Other quick measure put a year field in line chart x axis and average budget, now use quick measure calculation type year over year change base value as avg budget from release date put in date bucket number of period 1.
10. Put it in secondary axis of line chart. Look at the calculation of this measure.
11. Put the release date in x axis to get the custom error message.
12. Take a cluster column line chart x axis release data y axis Oscar wins – quick measure running total – base value Oscar wins field release date direction ascending.
13. Put it in line field of previous measure.
14. The genre titles I have selected in from the slicer that should only be visual in title or in card.

Quick measure – concatenate list of values – field genre—number of genre can be selected.

Select chart – format pane – general – title – fx – field value – choose measure created previously.

Exercise 5.1

Calculate, Filter and Calculate Table.

1. Create a measure to get average runtime.
2. Show it in matrix as genre and average runtime.
3. Average run of film which have not win Oscar using calculate function.

Hint:- calculate(average(runtime) or use measure previously created, Oscar = 0)

1. Add it to the previously created table.
2. Create another measure for Oscar wins > 0 by coping previous measure.
3. Average budget for film which is 1 to 2 hours long.

Hint:- calculate(average(budget),runtime >=60, runtime<120)

Note:- Here , is acted as and operator.

1. Create another measure to show avg budget of films runtime 2 to 3 hours. Using and operator and single filter parameter.

Hint:- instead of , use && in the previous example.

1. Calculate avg runtime for the films which belong to fantasy or science fiction genre.

Hint:- calculate([Avg runtime measure], genre = “fantasy” || genre=”Science friction”)

1. Put it on table show as country and avg runtime of fantasy and science fiction measure.
2. Use IN operator put instead of || in previous example and add one more genre as martial to show average.
3. Avg run of films release in year 2000.

Hint:- calculate([Avgruntime Measure],release date >= date(200,1,1),release date <= date(2000,12,31).

1. Show it with certificate field.
2. Other useful functions for dates. (Datesbetween)

Hint:- calculate([Avgruntime Measure],Datesbetween(release date, date(200,1,1),date(2000,12,31)).

1. Average run time of Oscar wins japanees film.

Hint:- calculate([Avg run time measure], oscarwins >= 1, country = “Japan”).

1. Put it with genre field in table.
2. **Note:- we can’t put multiple columns in the same filter argument of calculate function.**

Hint:- calculate([Avg run time measure], oscarwins >= 1 && country = “Japan”).

To achieve this use “,” instead of &&.

1. Similar things applied on or operator use of || also restricted in place of && it will also through an error.

Error Hint:- calculate([Avg run time measure], oscarwins >= 1 || country = “Japan”).

1. Avg runtime of Films that have win Oscar or either released in Japan.

Hint:- calculate([Avg run time measure], filter(table, oscarwins >= 1 || related(country)= “Japan”)).

1. Avg run time of films which generate only profit.

Error Hint:= calculate([avg runtime measure], boxofficedollars > budge) (will not work as to two different column we can’t use in a single filter expression.

Correct Way:= calculate([avg runtime measure], filter(film, boxofficedollars > budge))

1. Referring measure in a filter argument ( genre total number of Oscar wins where average run time > 100.

Error Hint:- Total Oscars for long Genres = calculate(sum(oscarwins), [Avg runtime measure]> 120) )(will not work as we can’t use any measure in filter argument of calculate function.

Correct Way :- Total Oscars for long Genres = calculate(sum(oscarwins),filter(genre table, [Avg runtime measure]> 120)).

1. Put this measure along with genre.
2. Total Oscars for long genre but include only profitable films.

Hint:- = calculate(sum(oscarwins)),filter(genre table, [Avg runtime measure]> 120), filter(film,boxofficedollar > budgetdollars)).

1. Show it with genre in table.
2. Calculate table return a table and calculate function returns a scalar value.
3. Avg profit of all the films
4. Hint:- averagex(film,boxofficedollars – budgetdollars)
5. Avg profits of films where both box office and budget values are filled.

averagex(calculatetable(film,not isblank(boxofficedollars), not isblank(budget)), boxofficedollars – budgetdollars).

1. Avg profit only film made profit

Error Hint:- averagex(calculatetable(film,not isblank(boxofficedollars), not isblank(budget),boxoffice > buget), boxofficedollars – budgetdollars)

(not work as different column used in one filter parameter.

Correct way :- :- averagex(filter(film,not isblank(boxofficedollars) && not isblank(budget) && boxoffice > buget), boxofficedollars – budgetdollars)

1. Put it with genre.
2. Create another same measure for loss making films.

Exercise 5.2 Removing Filters in Measures:-

1. Measure to get Total run time minutes .

Hint:- sum(runtimeminutes)

1. Put it on card visual.
2. Introduction of filter pane.

Hint:- on page drop certificate field select any one of them.

1. Add slicer with country field.
2. Add a table assign total run time measure to it then add genre field to show filter context of measure.
3. Create a measure which hasn’t effected by filters.

Hint:- Total run time no filters = calculate(sum(runtime),all())

**Note: All function used for two purposes (i) remove all the filters applied on the measure.**

Hint:- Total run time no filters = calculate(sum(runtime),removefilters())

**Note: Remove filters only used to remove filters applied on measure.**

1. Put it on card visual and on table with genre then apply filters from filter pane and slicers
2. Measure to calculate the one genre run time contribution to total run time.

Hint:- divide(sum(runtime),calculate(sum(runtimeminutes),removefilters()))

1. Show it on genre table.
2. Remove only certain filters ---- put genre, certificate, and sum of run time measure in a matrix visual take a copy of that matrix and replace run time measure with runtime measure with no filters.

**Remove filters from specific tables.**

1. Create a measure that should not be modified by the genre field filter context

Hint:- Total run time all genres = calculate(sum(runtimeminutes),removefilters(genre))

1. Replace the runtime with no filters measure with new measure.
2. Compare filter measure with unfiltered one.

Hint:- run time percentage of all genre = divide([total run time measure], [total run time all genres measure]).

1. Replace the Total run time all genres measure with new measure in matrix.
2. Remove filter from genre table and certificate table together and other filter should work.

Hint:- Total run time all genre and certificates = calculate(sum(run time minutes), removefilters(genre [table Name]),removefilters(Certificates[table Name]).

1. Run time % of All genre and certificates to show the percentage of total run time vs total run time of all genre and certificates.

Hint:- Divide([total run time measure], [Total run time all genres and certificates measure]).

**Remove filters from specific columns**

1. Table visual with Oscar nomination filed without summarization.
2. Create a function to get count of films in each nomination category.

Hint:- Countrows(film)

1. Two slicer 1 for run time minutes and 2 release date field.
2. Create a measure to remove nomination filter context Oscar nomination column.

Hint:- calculate(countrows(film),removefilters(Oscarnomination column))

1. Add it in previous table and apply filter by using slicers of release date and run time minutes.
2. New measure to get % of filtered vs grand total numbers.

Hint:- divide([count of films measure],[count films all noms])

1. Show it on previous table.
2. Using calculatetable function remove the filter from nomination column and get the count of row.

Hint:- countrows(calculatetable(film,removefilters(oscarnomination)).

**Remove filter from multiple columns-**

1. Keep oscarnomination and Oscar wins in column matrix with nomination count.
2. Create a measure by removing filters from Oscar nominations and Oscar wins column

Hint:- Count films all noms and wins = countrows(calculatetable(film, removefilters( Oscar wins, nomination)).

We can use All function similarly to remove filters instead of removefilters function.

Replacing and Keeping Filters in Measures

1. The Basic Report using genre and create measure for avg run time.

Hint:- Average(runtimeminutes)

1. Create a measure which shows only Avg run time for science friction films.

Hint:- Avg run time Sci fri = calculate([average run time measure], genre field = “science friction”).

Put it in table with genre and avg run time this will return only the average runtime that is related to science friction films only in all the genre.

1. Compare science friction avg run time with other field.

Hint:- [Avg run time measure] – [avg run time sci fri measure]

1. Put it in table and apply condition formatting as data bar (blue and red for (-)) sort it.
2. Another matrix rows as genre column as certificate original avg run time measure in values --- take a copy of this matrix and replace the original avg run time measure with avg run time sci fri and see the output.
3. Now add one more filter in the previous calculate function like certificate = “PG”

Hint:- Calculate([Avg Run Time Measure], Genre = “Science Friction”, Certificate = “PG”).

1. Put it in the previous matrix and match the output.
2. Show the comparison between avg run time vs sci fri pg measure values.

Hint:- Avg run time vs Sci fi PG = if (Not isblank([Avg Run Time]), [Avg Run Time] – [Avg Run Time Sci Fri PG Measure ]

1. Give a background color using condition formatting background colour as lowest as orange highest as blue empty cells don’t format middle colour white.
2. New Example New Page New table – Genre- Total run time of films measure create.

Hint:- sum(runtimeminutes).

1. Create measure Total run time science friction genre

Hint:- Calculate([Total run time measure], genre = “Science Friction”)

Put it in the previous table it will return avg run time of science friction films everywhere which we don’t want.

1. To keep the existing filter applied by the measure filter context use keepfilter function.

Hint:- Total Run Time Sci Fri = Calculate([Total run time Measure], Keepfilters(genre = ‘Science Fiction”))

It will show value only in front of science friction genre rest blank.

1. If we want to see total run for some genres.

Hint:- Total run Best genre = calculate([Total run time measure], keepfilters(genre in {“Science Friction”,”Fantasy”,”Martial Arts”})

It will return values in front of these three genres, if we remove total run time simple measure from values, it will show genres having values in front of it.

Show it on chart as genre and best genre in values.

1. If we want to exclude some genre from the matrix visual same technique works.

Hint:- Total run time excluding worst genre = calculate( [total run time measure], not (genre in {“Awful”, “horror”, “Romance”})

Put it with genre and excluding worst genre measure will return total run time in front of every genre by excluding run time of ‘awful’, ‘horror’, ‘romance’ films.

1. But we want it should not show any value/same in front of all the genres and the excluding genres should be hidden.

Hint:- calculate( [total run time measure], not (genre in {“Awful”, “horror”, “Romance”}).

1. Use of keepfilter function multiple times in a measure of column calculation.

For example:- In matrix put countries in rows genre in columns and total run time best genre in values, it will filter the best genre list.

1. Want to filters countries which does not word united in previous matrix.

Hint:- calculate([Total run time measure], keepfilters(genre in {“science friction”, “Fantasy”, “martial Arts”}),not containstring (country, “united”))

Replace it in the matrix from best genre run time. It will remove the filter from united countries and repeat the same values for all genre according to the countries.

1. To filter the list without the country having united word.

Hint:- calculate([Total run time measure],keepfilters(genre in {“science friction”, “Fantasy”, “martial Arts”}),keepfilters(not containstring(country, “united\*”)), Place it in previous matrix.

Part 5.4

Removing filters with Allselected

1. Hide Ids from tables.
2. Prepare Page

In matrix – Region, country, genre, title in rows – create a measure and put it in values of matrix

Hint:- sum(run time minutes column)

1. Show the percentage of films run time contribution to the total run time of previous matrix.

Hint:- Total run time no filters = calculate( [total run time measure], All())

Note:- All() function we used to remove all the filters context applied in a measure.

Put it in the values of matrix, will repeat the sum of run time on all the places.

1. To get the percentage

Hint:- Total Run Time % No Filters = Divide( [Total Run Time Measure], [Total run time no filters measures]).

1. Put Oscar nomination and oscar wins fields on slicers at same page. Pull cards and place total run time measure on it. On other card place total run time no filters. To see the slicer effect on created measures.

Filter the films which not nominated now filter the Oscar wins > 0 observe the result.

It will always return same value in total run time no filters card visual. It does effected by filters applied by the slicer.

1. To effected the values by slicers filters create a measure.

Hint:- Total run time remove specific filters = calculate([total run time measure], all(title column))

Now pull it in the previous matrix it return total run time of films modified by the filter context other the film title.

1. Remove filters from genre field as we have removed from title field.

Hint:- Total Run time Remove specific filters = calculate ([ Total run time measure], all(title), all(genre))

Using this method we can change values by applying filters from slicers. Add country and region in with all function.

Hint:- Total Run time Remove specific filters = calculate ([ Total run time measure], all(title), all(genre), all(country),all(region))

1. Create another measure to show the percentage

Hint:- Total run time % visual Total = divide( [Total run time measure], [total run time remove specific filters measure])

1. Remove all the filters applied by the matrix filter context but keep the filters applied externally using slicers or filter pane.

Hint:- Total run time remove visual filters = calculate([total run time], allselected())

If we will use allselected() function with using any value in it, it will remove all the filter context applied in the visual.

Modify the previous % measure by using this measure.

1. Want to remove filters applied by the matrix as well as some filters applied externally by slicers.

Hint:- Total run time Oscars only = calculate([total run time measure], allexcept(film, oscarnominations column, oscarwins column)).

1. Modify the divide measure

Hint:- divide([Total run Time measure], [total run time Oscars only])

Pull this measure in matrix and apply filter using slicers by Oscar nomination and Oscar wins.

Exercise 5.5 Cross filters paid.

Exercise 6.1 Time Intelligence functions.

1. From option – data load current file --- check Auto data time.

When we import any date column power bi automatically creates a separate date calendar through this feature.

1. Show the date hierarchy created on release date field by using that feature.

When we use this feature it will create a continuous date table starting from 1 day of the year containing that column till last date of the year containing that column. To show it.

1. Pull a table on page and put date hierarchy of release date in it.
2. Show the concept of showing real date column as release date.
3. Create a measure.

Hint:- Avg Run Time = average(run time).

Drag the year field years from hierarchy and average run time measure in values.

1. We want to compare avg run of year with previous year.

Hint:- Avg Run Time Previous Year = calculate([Avg Run Time Measure], dateadd(Date column containing continuous date range releasedatecolumn.date,No. of interval -1, interval year)

Add qty, month, in the table visual with both measures previous year and current year and observe the output is shifted by qty and months also.

Check the same thing in matrix by changing the visual in matrix

1. Substract current year avg – previous year avg

Hint:- [avg run time measure] – [avg run time previous year]

1. Exclude blank

Hint:- if(not(isblank([avg run time measure]) || isblank(Avg run time previous year measure ])), [avg run time] – [avg run time previous year measure])

1. Compare avg run time from previous quarter.

Hint:- Avg Run Time Previous Quarter = calculate([Avg Run Time], dateadd( Release Date.date,-1,quarter))

Add it in

1. Compare avg run time from previous quarter

Hint:- Avg run vs Previous Quarter = if(not(isblank([avg run time measure]) || isblank([Avg run time previous quarter measure])), [avg run time measure] – [Avg Run time Previous quarter measure])

1. In previous example we don’t want to show values in front of year as it is not considering the entire year dates and showing wrong numbers.

Hint:- Avg run time previous Quarter = if(isfiltered(release date.quarter), calculate([Avg Run Time], dateadd( Release Date.date,-1,quarter)).

It will remove the total from year level filtered.

1. We don’t want to show total values also as it is not showing correct values by shifting one quarter back.

Hint:- avg run time previous year = if(isfiltered(releasedate.year),calculate([avg run time], dateadd(release date.date,-1,year))

1. Correct way to hide total according to the level of filter applied through the filter context of measure.

Hint:- Avg run time Vs Previous Month = if (isfiltered(release date.month),calculate([Avg run time measure], dateadd(release date.date,-1,month)))

1. Substract the previous created measure value with avg run time value.

Hint:- Avg run time Vs Previous Month =

VAR PrevMth =

if (isfiltered(release date.month),calculate([Avg run time measure], dateadd(release date.date,-1,month)))

VAR VsPrevMth = if(not(isblank([avg run time measure]) || isblank(prevmth)), [avg run time] – [avg run time previous year measure])

RETURN VsPrevmth

1. To go back one entire year without using dateadd function.

Hint:- Avg run time previous year 2 = if (isfiltered(release date.year), calculate([avg run time ], sameperiodlastyear(release date.date))

Note:- SamePeriodLastYear function used to get values previous year.

Exercise 6.2 Comparing Date Ranges

1. Create measure sum of run time

Hint:- = sum (run time column)

1. Put Year field from release date hierarchy key and sum of run time measure in a table.
2. Sum of run time previous year.

Hint:- calculate( [sum run time measure], sameperiodlastyear(releasedate.date))

1. Do the same thing using dateadd function

Hint:- calculate( [sum run time measure], dateadd(releasedate.date,-1,year))

1. Do the same things using previous year.

Hint:- Sum Run time Prev Year 3 = calculate ([sum run time measure], previousyear(releasedate.date)

Note:- these functions used as its names shows

Previous Quarter

Previous Day

Previous Year

Previous Month

Same Serious exist For Next

Syntax :- PreviousYear (Continuous date series,[yearenddate])

1. To show the difference between dateadd, sameperiodlastyear, PreviousYear function add the qty, month along with years in matrix and add all three measures in it, then drill down it.

Previous year function returns sum of run time of entire previous year irrespective of filter context.

1. Percentage % from current year vs Previous year

Hint:- sum run time % of prev year total = divide([sum run time], [sum run time entire prev year])

1. Sameperiodlastyear function also go back by 1 year modified by filter context as giving values for qty months.
2. To get total of entire year or quarter moving more than 1 year ahead or back use parallelperiod function.

Syntax:- PARALLELPERIOD(Dates Continuous Range, NumberOfIntervals, Interval).

Hint:- Sum run time entrie prev Year 2 = calculate([sum run time], parallelperiod(release date.date,-1,Month/Querter/Year))

Note:- we can’t leverage day parameter using parallelperiod function.

--- for this year we can use 0 in number of interval parameter.

1. To get the sum of any specific date range use datesbetween.

Syntax:- DatesBetween(Continuous Date Range, StartDate, EndDate)

Hint:- Sum Run Time During Strike = calculate([sum run time measure], datesbetween(Release Date.Date,datevalue(”5 Nov 2007”),Date(2008,2,12)))

It will return same values everywhere irrespective of filter context.

1. Check the values is correct or not by using the filter pane apply filter for dates used in datesbetween function.
2. To get the rolling sum of last 6 months run time.

Syntax :- firstdate(Continuous Date Range)

Hint:- First Date of Interval = firstdate(Release Date. Date)

Last Date of Interval = LastDateOfInterval(Release Date. Date)

Place it in a table containing year and month.

1. To move the first Date 6 month back from first Date.

Hint:- First Date of Interval = FirstDate(DateAdd(Release Date. Date,-5,Month))

1. Avg Run Time 6 Mth Moving = calculate(average(run time column), Datesbetween( release date.date, first Date of interval, Last Date of Interval)).
2. Do same things using datesinperiod

Syntax:- DatesinPeriod(Dates continuous Range, StartDate, NumberOfIntervals, Interval)

Hint:- Avg run Time 6 Mth Mvg 2 = calculate(average(run time), datesinperiod(release date.date, lastdate(release date.date),-6,Month))

14 and 15 measure are same but difference only with the total. In 15 total is rolling of last 6 month but in 14 it will show the average of entire column.

1. Put it in line and column chart.

Exercise 6.3 Calculating Running Total or To-Date Values.

1. Prepare Page--- take the matrix with year, qtr, month along with sum of rum time measure.
2. Get last date of interval

Hint:- Lastdate(release date.date)

1. Get first Date of entire model.

Hint:- First Date of Model = firstdate(all(release date.date))

It will return the first date of model everywhere.

1. Get running total modified by the Year, Month, qtr.

Hint:- Sum Run Time Running Total = Calculate([Sum Run Time Measure], DatesBetween(release Date.Date,[First Date of Model], [last date of model]))

1. Reset the values when we reach at the start of every year use function startofyear.

Syntax :- StartofYear(continuous date range)

Hint:- First Date of Year = StartofYear(release date.date)

Hint:- Sum Run time Year To date = calculate( [sum run time], datesbetween(release date. Date, first date of year measure, last date of interval measure))

Put it in matrix of year, qtr, month matrix visual.

1. To get the percentage of year to date value of total of the year.

Hint:- Last Date of Year = EndOfYear(release date.date)

Hint:- Sum Run time Year total = calculate( [sum run time], datesbetween(release date. Date, first date of year measure, last date of Year Measure))

Hint:- sun run time year to date % of year total = divide( [sum run time year to date measure], [sum run time year total measure]).

1. Reset the total at the beginning of each qtr.

Hint: Sum run time Qtr to date = calculate([sum run time],datesbetween(release date.date, start of quarter( release date. Date), [last date of interval measure]).

It will reset the value at the beginning of each quarter.

1. To get the total run of each quarter irrespective of month filter context

Hint: Sum run time Qtr total = calculate([sum run time],datesbetween(release date.date, start of quarter( release date. Date),endofquarter(release date.date)).

1. Divide the sum run time qtr to date vs sum run time qtr total

Hint:- sum run time qtr to date % of qtr total = Divide ([sum run time qtr to date],[sum run time qtr total])

1. Get the sum of run start of the year to the current date interval.

Hint:- Sum Run time Year To Date 2 = calculate([sum run time measure], datesytd(release date.date))

It will reset the value each year.

1. To understand datesytd function and get the same result as previous

Hint:- Sum run Time Year to Date 3 = calculate([Sum Run Time Measure], filter(All(release date. Date), and(release date . date <= max(release date. Date), year(release date.date) = year(max(release date.date)))))

1. To get the same result using totalytd.

Hint:- Sum run time Year to date 4 = totalytd([sum run time], release date.date)

1. To choose the start date of year as 1 Apr.

Sum Run Time Year To date April = calculate([Sum Run Time], Datebetween(release date.date,startofyear(release date.date,”03/31”),[Last date of Interval]))

It will reset the values in April.

1. Do the same thing using datesYTD function.

Hint:- Sum Run Time Year to Date April 2 = calculate( [sum run Time measure], datesytd(release date. Date, “03/31”))

1. Do the same thing using TotalYTD function.

Hint:- Sum Run Time Year To Date April 3 = TotalYTD([sum run Time], Release date.date,Oscar wins >=1, “03/31”)

Or

Hint:- Sum Run Time Year To Date April 3 = TotalYTD([sum run Time], Release date.date, “03/31”)

Exercise 6.4 Opening and Closing Balance Calculations

1. Create measure sum of open price and close price using sum function and put share price date in matrix along with open and close measure.
2. While expending the matrix as date qty month day we need to show open price for jan in front of jan = price on the 1st date of month.

Hint:- first date of interval = firstdate(share price date.date)

Hint:- last date of interval = lastdate(share price date.date)

Hint:- Open price on first date of Interval = calculate( [sum open price measure], firstdate(share price date.date).

Similarly do for close price .

Hint:- close price on last date of interval = calculate( [sum open price measure], lastdate(share price date.date).

Add them in matrix and see output by comparing the open and close price monthly year quarterly and daily.

1. Get share price growth value by substracting.

Hint:- = [close price on last date of interval]- [open price on first date of interval]

To show percentage.

Hint:- share price growth % = divide([share price growth value], [Open price on first date of interval])

1. Show it growth value on line chart and do drill down concept.
2. Open price on first date of qtr

Hint:- Open price on first date of qtr = calculate( [sum open price measure], startofquarter(share price date.date).

It will return qtr open price sum on every date belows to that quarter

1. close price on last date of Year

close price on last date of Year = calculate( [sum open price measure], endofyear(share price date.date).

1. close price on last date of year same thing using another method.

Hint:- Close Price on last Date of Year = closingBalanceYear([Sum Close Price],share price date.date)

Result will be similar as previously (6) created measure.

1. Open Price on first Date of Month

Hint:- Open Price on first Date of Month = openingBalance([Sum open Price],share price date.date)

It returns values by comparing 1st date of month from last date of previous month, qtr, year it does not consider day as it’s not considering the previous day value as opening balance.

1. Add a new page and add a date column in matrix where gaps are there in original date table.

Add it in matrix

1. Create following measures.

Hint:- sum Gizmos = sum(StockLevel{Gizmos})

Add it to the previous matrix and drill down it by year, qtr, month, day.

To get the closing qty of each month in front of qtr, month, year level create following measures.

Hint:- Gizmos Qty on last date of interval = calculate ( [Sum Gizmos], last date (stock taking date.date).

Add it in matrix you will get the closing values of year, qtr, month in place of total.

1. Show any example of Endofmonth function.
2. Closing balance month function.

Hint:- Gizmos Qty on last Date of mth = closingbalancemonth([Sum Gizmos], Stock taking date. Date)

1. Startofmonth function.

Hint:- gizmos qty on last date of mth = closingbalancemonth([sum gizmos], stock taking date. Date)

1. Gizmos qty on last date of pre mth = openingbalancemonth([sum gizmos], stock taking date.date).
2. Lastdate function returns the last date of that particular month, qty, year not the last date of column or filter context.

Hint:- widgets qty on last date of interval = calculate([sum widgets], lastdate(stock taking date. Date)).

It will return blank values in front of months where there is no values on the last date of previous month.

1. LastNonBlank function used to get the last date of column according to the filter context (year, month, quarter) which has some value.

Hint:- widgets qty last stock take = lastnonblank(stock taking date.date,[sum widgets]).

Hint :- widgets qty last stock take = calculate([sum widget],lastnonblank(stock taking date.date,[sum widgets])).

1. Firstnonblank function example.

Hint:- Widget Qty first Stock Take = calculate ( [sum widgets], firstnonblank(stock taking date.date, [sum widgets])).

1. Lastnonblanvalue and firstnonblankvalue function Example. It does not require calculate function around this and provide the same result as we are getting using calculate along with lastnonblank and first non blank

Hint:- widget qty last stock take 2 = lastnonblankvalue(stock taking date.date,[sum widgets]).

Hint:- widget qty first stock take 2 = firstnonblankvalue(stock taking date.date,[sum widgets])

1. To calculate the first stock take value of entire data model.

Hint:- widgets qty first stock take ever = calculate ( [sum widgets], firstnonblank( all(stock taking date.date), [sum widgets])).

It will return same value everywhere irrespect of filter context.

1. Another measure.

Hint:- Widgets qty first stock take year = calculate([sum widgets], firstnonblan(deatesinperiod( stock taking date.date,start of year(stock taking date.date),1,year),[sumwidgets]))

It will return the sum of widgets for entire year wise.

Exercise 7.1 Creating Basic Calendar Table.

1. Every Date column automatically created hierarchy by using auto date time feature.
2. We cannot customize the auto date time table created by the power bi to make it customize we need to create our own date time calendar table.
3. Global for future workbooks and current to active workbooks.
4. To create a new table follow below steps:-

New table ---

ReleaseCalendar = calendarauto()

It will consider the entire data model and find first and last date from it and provides a date range. Unnecessary providing wide ranges of dates.

1. Other way to create a date table.

Hint:- ReleaseCalendar = calendar (date(2020,1,1),date(2016,12,31))

We can use variables for start and end date for this expression.

Hint:- VAR StartDate = date(year(min(release date)),1,1)

VAR EndDate = date(year(max(release date)),12,31)

Pass these parameters in calendar function.

1. Add column for year

Hint:- YearNumber = year(date)

Another way to add columns while creating a table combine addcolumns function with Calendar function.

Hint:- Addcolumns(calendar(startdate,endate),”YearNumber”,year(date),”QuarterNumber”,quarter(date),”MOnthNumber”,month(date),”datofMonthNumber”,day(date),”DayofweekNumber”,weekday(date,2),”monthName”,Format(date,”mmmm”),”Day ofWeekNumber”,Format(date,”dddd”),”QuarterName”,”Qtr” & quarter(date),”yearandMonthName”, format(date,”yyyy-mmm”),”YearandMonthNumber”,(year(date) \* 100)+month(date))

1. In table tool use feature as marks as date table by selecting date column of table.
2. Now go to every column of calendar table which has a number value and make it as don’t summarize.
3. Sort the month name as month number , dayname as weeknumber, Now sort the monthnames chronologically using sort by feature as sort by yearmonthnumber column.
4. Create a relation between release date and calendar table date column and show run according to the date table date field.
5. Create hierarchy for date table we create from model view.c
6. Create a measure to show the use of calendar table with time intelligence functions

Hint:- Run Time YTD = totalytd(sum(run time),relaseclaendardate)

Exercise 7.2 Creating a Financial Year Calendar

1. Disable the auto date time feature.
2. Create new table.

Hint:- release calendar = calendarauto(3)

It will return 1 apr as 1st date 3 indicate the year ending in month of march.

1. Another way to create a date table.

Hint :- Release Calendar = VAR FYStartMonth = 4 -----use 4,7 or 10

VAR CalStart = Date (2009,4,1)

VAR CalEnd = Date (2017,3,31)

Return Calendar (CalStart, CalEnd)

Hint :- Release Calendar = VAR FYStartMonth = 4 -----use 4,7 or 10

VAR CalStart = Date (2009,FYStartMonth,1)

VAR CalEnd = Date (2017,FYStartMonth,1)-1

Return Calendar (CalStart, CalEnd)

Hint :- Release Calendar = VAR FYStartMonth = 4 -----use 4,7 or 10

VAR StartYear = year(min(release date)) – (month(min(release date)) < fystartmonth

VAR Endyear = year(Max(release date)) + (month(max(release date))> = fystartmonth)

VAR CalStart = Date (startyear,FYStartMonth,1)

VAR CalEnd = Date (endyear,FYStartMonth,1)-1

Return addcolumns(Calendar (CalStart, CalEnd),”year”,year(date),”Quarter”, quarter(date),”month”,month(date),”day”,Day(date),”month Name”, format(date,”mmmm”),”Financial Year”, “FY” & year(date)) – (month(date) < FYStartMonth) & “/” & year(date) – (moth(date)>=fystartmonth),”Financial Month”, mod(month(date) – fystartmonth,12) + 1, “financial Quarter”, “fQ” & roundup(divide(mod(month(date) – fystartmonth,12) + 1,3),0)

1. Mark it as date table using table tools.
2. Sort order steps follow one by one.
3. Select month name and sort by financial month

April will be first march will be last.

1. Create release between release date field and date table date column.
2. Create new hierarchy and add financial year, qtr, month,day
3. Show it by dates and run time.
4. New measure create.

Hint:- Total run time YTD = TOTALYTD(SUM(run time),date table.date column,”03/31”)

Put it in matrix it will reset the run time every year in april.

1. Total run time of previous year

Hint:- total run time previous year = calculate ( sum(run time), previousyear( release calendar .date,”03/31”))

It will return the grand total of previous year on every month qtr or day.

1. Total Run Time current year = calculate(sum(run time), datesbeetween(release calendar date, Startofyear(Release calendar date,”03/31”),ENDOFYEAR(Release Calendar date,”03/31”)))
2. Calculate contribution.

Hint:- Run time % of Year Total = Divide(sum(run time),[Total run Time current Year measure])

Exercise 7.3 Single Calendar Vs Multiple Calendars

1. Auto date time feature disable.
2. If the difference between two separate Date column date range it quite high use two separate date tables.
3. Create new table for film release dates.

Hint:- Release Calendar =

VAR CalStart = Date(year(Min(release Date)),1,1)

VAR CalEnd = Date(Year(Max(release Date)),12,31)

Return Calendar(CalStart, CalEnd)

1. Add some other columns

Hint:- Release Calendar =

VAR CalStart = Date(year(Min(release Date)),1,1)

VAR CalEnd = Date(Year(Max(release Date)),12,31)

Return Addcolumns(Calendar(CalStart, CalEnd), “Year”, Year(Date), “Quarter”, Quarter(Date), “Month”, Month(Date), “Month Name”, Format(Date,”mmmm”))

1. Marks it as date table using table tools.
2. Sort the month name by month number.
3. Create relationships from date table to film table release date.
4. From release table take Year in matrix and from film table film id count.
5. Second calendar table for Director DOB.

Hint:- Release Calendar =

VAR CalStart = Date(year(Min(Director DOB)),1,1)

VAR CalEnd = Date(Year(Max(Director DOB)),12,31)

Return Addcolumns(Calendar(CalStart, CalEnd), “Year”, Year(Date), “Quarter”, Quarter(Date), “Month”, Month(Date), “Month Name”, Format(Date,”mmmm”))

1. Mark it also as date table and sort it by month name using month number.
2. Join the director calendar table with Director DOB.
3. Now take a matrix add year from director calendar table and director ID from director table as count , then add the film id to get the film count.
4. Import sales data in new power bi file.
5. Here we have two date columns(Sale Date & Payment Date) which difference are quite less so we only want to work with single calendar table instead of two separate calendar.
6. Create a new table.

Hint:- Sale Calendar =

Addcolumns(Calendarauto(), “Year”, Year(Date), “Quarter”, Quarter(Date), “Month”, Month(Date), “Month Name”, Format(Date,”mmmm”)

1. Sort month name according to month number
2. Mark it as date table.
3. Create relationship --- sale calendar table with sale table saledate ---
4. In matrix Sale calendar Year--- sale table sale id count.
5. Problem statement (show account of payment made rather than count of transactions made)
6. Creating Multiple relationships. Sale calendar table date from sale table payment date column.
7. Count of transaction according to the payment date
8. Make the payment date relation as active relation.
9. We cannot make relation one date column of calendar table with two different columns of sales table i.e. (Payment date , Sales Date).
10. To fix it make both relationship as inactive or you can make any one of them active but we have to create measures for it.
11. First measure to show the total price by multiplying qty \* price and group it by sales date.

Hint:- Sum Sales Value = calculate(sumx(sale,Price \* Quantity))

Add this measure in a matrix take year, month from sales calendar table and put this measure in values it will return same values for every row.

To resolve it modify the previous measure.

Hint:- Sum Sales Value = calculate(sumx(sale,Price \* Quantity),userelationship(sale calendar date column, sale table sale date column))

Userelationship function take two columns having existing relationship in the data model

Syntax :- userelationship (column1, column2)

1. Create another measure for payment values.

Hint:- Sum Payment Value = calculate(sumx(sale,Price \* Quantity),userelationship(sale calendar date column, sale table payment date column))

Add it along with sale value measure in same matrix.

1. Create a measure which shows the sum of sales made in given interval that not yet have been paid for.

Hint:- Sum of unpaid sale value = calculate(sumx(sale, price \* quantity), userelationship (calendar date, sale date), isblank(sale payment date))

Add it in previous matrix

Exercise 7.4 Rolling Average Calculation (Pending will check it late)

1. Create a calendar table and create relationship between film table release date column from calendar table.
2. Add a line chart and show calendar table year and avg box office measure in values.
3. Apply filter using filter pane where year >= 1960.
4. Create a measure.

Hint:- Avg Box office over past 3 Years = calculate ([avg box office measure], datesinperiod( calendar table date column , max(calendar table date column),-3, Year ))

Add it in previous line chart.

1. To check the result is correct or not.

Hint:- Sum Box office over past 3 Years = calculate ([Sum box office measure], datesinperiod( calendar table date column , max(calendar table date column),-3, Year ))

1. Another measure for count.
2. Hint:- count Box office over past 3 Years = calculate (count(boxofficedollars), datesinperiod( calendar table date column , max(calendar table date column),-3, Year ))
3. Measure to divide.

Hint:- Avg box office over past 3 years check = divide ( [sum box office over past 3 years], [count box office over past 3 years])

1. Put it on table visual by copying the previous line chat and add this measure and change it into a matrix.
2. Another measure to check date range.

Hint:- First Date in Period = calculate ( min(calendar date column), dateinperiod ( calendar table date column, max( calendar table date), -3, year))

1. Another measure to show last date.

Hint:- Last Date in Period = max ( calendar date column)

Post these two measures in previous matrix (First Date in period and last date in period).

Sort table visual in descending order.

Now check the dates of rolling 3 years average.

1. Duplicate page 1 from line chart remove original avg box office and add sum of box office measure to show the total box office per year.
2. Create a measure to show Avg of box office yearly over the 3 year period.

Hint:- Avg Yearly box office over past 3 years = divide ( [sum box office over past 3 years], 3)

Put it in the line chart by removing avg box office.

Check the figures. Put it in matrix also.

Year --- avg box office measure, sum of box office measure, Avg Yearly Box office over past 3 years measure.

Exercise 8.1 The Values, HasOneValue and SelectedValue Functions

1. Insert table visual ---Put the director first name from director table and film id from film table as count.
2. Disable the total option.
3. Add a column to concat director full name with text and dob.

Hint:- Born On = Director[fullname] & “ was bor on “ & Director[dob]

1. Now try to concat director name and count of film made by him to frame a sentence using previous table visual.

Hint:- Director films = Director[Full Name]

We can’t use any text values from column without aggregation so above will through an error.

1. Distinct and Values function works similarly but difference I have to check it in google .

Both return a single column table with all unique values of any column.

1. Create a measure using values function.

Hint:- Director films = values(director [full name]) & “ Director “ & countrows (film table) & “ Film(s)”

Add this measure in previous first table director and film count and director films measure.

1. Create a measure to show the name of director who has create one film else show the count of films created by the director.

Hint:- Single film Title = values(film[title])

When I will add this measure to the previous table visual it will return an error because for director we have multiple films here and we can’t show it on the previous table visual.

To rectify it.

Hint:- Single film Title = if( hasonevalue(film[title]),

values(film[title]),

countrows(film table) & “film(s)”

it will return the name of film in front of director name which has created only one film else it will return count of films created by director.

1. Now in the visual open the total option.
2. It will through an error for entire visual.
3. To resolve it make changes in previous Director Films measure.

Hint:- Director Films = if (hasonevalue(director[full name]),

Values(Director[Full Name]),

“Multiple Directors”) & “ Directed “ & countrows(film table) & “ films(s)”

1. Hasonevalue and hasonefilter function change the hasonevalue function In previous measure with hasonefilter function it will return the same return as previous with no difference

Hint:- Director Films = if (hasonefilter(director[full name]),

Values(Director[Full Name]),

“Multiple Directors”) & “ Directed “ & countrows(film table) & “ films(s)”

But if we will change the single film title measure =

Hint:- Single film Title = if( hasonefilter(film[title]),

values(film[title]),

countrows(film table) & “film(s)”

on every place it will return count of film not film name even it has one film created by that director.

The difference between hasonevalue and hasonefilter is based upon how that filter has been applied to the measure it is a direct filter or it is a cross filter.

Hasonefilter function only detect the direct filters on the column (direct filter means filter context applied by the same table column). As we saw in the director films measure example it is a direct filter example.

Hasonevalue function detect the cross filter (cross filter measure filter context applied by the other table column). As we saw in the single film title measure example.

1. The SelectedValue Function is a kind of substitute for if (hasonvalue/hasonefilter(values function as it works on the cross and direct both filters applied to the measure.
2. Modify the previous measures using selectedvalue function in a much easy way to achieve the same result.

Hint:- Director films = selectedvalue(director[full name column],”multiple directors” ) & “ directed “ & countrows(film table) & “ film(s)”

Hint:- Single film title = selectedvalue(film[title], countrows(film) & “ films”)

Syntax:- selectedvalue(column, [alternate result] ) --- by default alternate result is blank

1. Add new page add one slicer add genre field to it --- add a table visual – add fields in it title from film table, release table as release date rather than hierarchy key – run time in minutes field ---from certificate table add certificate field.
2. Insert a cluster column chart on the same page to show certificate wise film id count.
3. Now change the slicer and it will change the title and chart values accordingly. But it now showing for which genre it is showing the values in title so we want to make title dynamic for table and chart.

Hint:- Genre Title = selectedvalue ( genre [genre column] , “multiple genres”).

1. Now assign this measure on the title text using fx button there in just beside the title text option --- choose field value --- choose the name of the measure in below drop down

Do the same thing for chant and table.

1. Some visual does not support the created measures in title for it use a card visual to make the title dynamic
2. Insert a card visual on page and put the genre column directly on the card it will return the selected Genre name or multiple values text on card.
3. Make the current page as duplicate and from chart make out the certificate field and put and put region field from region table --- in table also replace the certificate with region field.
4. Now add a new page and name it as filter page and add slicer and make it as tiles --- and sync the filter page genre slicer with the other two pages slicers using sync slicers feature --- and hide the genre slicer from other two pages by uncheck the tick from sync slicer view option.

It will change the title on all the pages dynamically by choosing it from only one place.

1. Using Drill through feature
2. Make all the slicers visible on all the pages again by using sync slicers check the boxes and un sync it by other pages.
3. On both pages remove the slicer visual on filter page change it as horizontal cluster column chart to show film count by genre.
4. Now I want to drill through using filter page to other pages using drill through feature.
5. Put the genre field column in visualizations pane bottom drill through on other the pages except filter page --- now right click on chart added use drill through – it will give the dynamic genre name in the title .
6. If the drill through feature is used on that page it will give a back button on the left top of the page – we can use this button with ctrl + click
7. If we will enable the drill through option from data drill tab then we no need to left click on bar on the chart on right click it will give the name of the pages where we have added drill through field.
8. We can hide both the pages also so we can only reach on those pages by drill through option.
9. Creating a drill through button. As if someone has no idea to use the drill through we want it should be clearly visible for end user – we want two separate buttons on filter page to perform drill through on each page.
10. Insert a button from insert tab buttons option -- blank button – create it on page resize it as bigger one --- put text from visualization pane --- in format pane – button ---- action make it on ---- type drill through --- destination as first page --- select on bar from chart --- now Ctrl + click on that button --- it will on the page and filter out the data according to the selected genre with dynamic genre name.
11. To make the text of button dynamic like it should show the name of selected genre and to show pick one genre first create a measure.

Hint:- Certificate button text = selectedvalue ( genre [genre], “Pick a single genre first”)

Assign in text using fx feature of title.

1. To modify the text there in the button like “ To see the details of genre name click on the button”.

We can’t concat any text value in selectedvalue function column parameter.

So to achieve it use hasonevalue function.

Hint:- Certificate button text = if ( hasonevlaue ( genre [genre]), “click to see “ & values(Genre [genre]) & “ Films by certificate”, “pick a single genre first”).

* So this is an example why we need to use hasonevalue function instead of selected value.

1. Create a second button by copying the button and change the measure assign on the title field.

Hint:- region button text = if ( hasonevalue(genre [genre]), “ click to see “ & values(genre[genre]) & “ films by region”, “pick a single genre first” )

Assign it to the title fx feature and change the action as destination as second page.

1. The problem with this method is that to drill down on more pages we need more buttons and more measures.
2. To resolve it create a disconnected table.

Using Enter Data ---- create two columns pageLabel and put values Certificate and Region--- Second column Name --- PageName put values same as the name of pages where you want to drill like for certificate pagelabel put value ( Films by Certificate ) rename the page as given name --- For region label page name is Films by Region rename it also----- rename the table page picker.

1. Add a slicer and assign pagelabel field to it. --- unable the single select option for this slicer.
2. Create a measure.

Hint:- Selected Page Name = selectedvalue(pagepicker[pagename])

1. Create a new blank button on same page and unable the action as drill through by choosing destination as field value and measure name selected page name.
2. Now choose a genre from chart and pagelabel from slicer and ctrl + click on the button it will go on the selected page.
3. For button text create a measure.

Hint:- Drill through button text = if ( hasonevalue (genre[genre]), “Click to see “ & Values(Genre[Genre]) & “ films by “ & values(pagepicker[pagelabel]), “pick a single genre first”)

Now on text property using fx feature assign this measure.

1. Add new page and rename it as Films by Studio--- copy the chart replace the certificate by studio and from table also replace the certificate by studio.
2. Add the page name and page label in the page picker table using power query.

It will work automatically when we use ctrl + click.

Exercise 8.2 ConcatenateX Function.

1. Create a table visual add director full name along with film id count.
2. Disable the total row property.
3. To show all the names of films created by director in front of director name create a measure.

Hint:- Film List = concatenatex(film, film[title],”; “,film[title],ASC)

Unicode(10) for enter as delimiter

Hint:- Film List = concatenatex(film, film[title],”; “,film[release date],desc)

Syntax of Concatenatex(Table, Expression, [Delimiter], [Order by Expression],[Order1]….)

1. Copy the table and change it to stack bar chart it will automatically put the film list in the tooltip to show the names of films while hovering on the bar.
2. I want to add the year in which the film has been released. To do that modify that previous measure.

Hint:- Film list = concatenatex(film, film[title] & “ “ & film[releaseDate],[year] & “)”, unichar(10),film(releasedate),desc)

1. Which films from this list are Oscar winning films put a emoji which indicates the same thing.

Hint:- Film list = concatenatex(film, film[title] & “ “ & film[releaseDate],[year] & “) ” & if(film[Oscar wins] > 0, “x”), unichar(10),film(releasedate),desc)

It will show a “x” symbol after the name of film which has won Oscar ---- to convert this “x” into an emoji symbol press window + . then search for trophy and select the trophy in “”.

We can calculate the Unichar number for any emoji using google and can use it in measure with unichar function. Hexdecimal code should be converted into decimal number for unichar function.

1. We want to show the list of films which has won the Oscar reset should not appear in the list. Create a measure.

Hint:- Film list winners = concatenatex(filter(film table, film[oscarwins] > 0), film[title] & “ “ & film[releaseDate],[year] & “) ” & if(film[Oscar wins] > 0, “x”), unichar(10),film(releasedate),desc)

Put this measure in tooltip it will show two list for separate measures.

Now we can remove if function as we are showing only Oscar winning films in the film table.

1. We want to show top 3 longest run time films.
2. Hint:- Film list = concatenatex(topN(3,film, runtimeminutes field, Desc), film[title] & “ “ & film[releaseDate],[year] & “) ” & if(film[Oscar wins] > 0, unichar(127942)), unichar(10),film(releasedate),desc)

Syntax for Top N function :- TopN(N\_Value, Table, Order by\_ Expression1, Order1, Expression2, Order2…)

1. Rename page 1 by films by director ---- insert a blank page name it as slicers .
2. On slicer page insert a slicer visual and put genre field from genre table--- make it as tiles ---- sync it with the films by director page don’t show it on director page.
3. In title of both the visuals there on the films by director page we want a list of selected genre from slicers page. Create a measure to achieve the same.

Hint:- Genre List = Concatenatex(genre, genre[genre],”, “, Genre[genre], Asc)

1. Put this measure in the title property fx feature and select the measure.
2. Show title through card visual in top of the table and chart off the title for chart and table.
3. Put the measure on the card visual.
4. When no genre is selected it shows the list of all the genres in the card visual. To resolve it modify the previous measure.
5. Hint:- Genre List = if(isfiltered(genre[genre]),Concatenatex(genre, genre[genre],”, “, Genre[genre], Asc), “All Genres”)
6. On the slicers page create another slicer and put region field from region table from country table country field In one slicer --- sync this slicer on films by director and slicer page.
7. To show the country name on the another card visual create a new measure.

Hint:- Country List = if(isfiltered(country[country]), concatenatex(country, country[country],”, “),”All Countries”)

1. When we select only a particular region with all the country names it will return all the countries in the card visual rather than the countries name there in that region.

Note:- isfiltered function detect direct filters applied to the columns you refers.

If we want to detect cross filter from other tables we need to use iscrossfiltered function. It detect direct and indirect both the filters.

To resolve the above issue modify the previous measure.

Hint:- Country List = if(iscrossfiltered(country[country]), concatenatex(country, country[country],”, “),”All Countries”)

1. I want to limit the genre names to show on the card visual if we have selected multiple genre from the slicer.

Hint:- Genre List = VAR MaxNum = 5

Return if(isfiltered(genre[genre]), concatenatex(TopN(MaxNum,genre, genre[genre], asc ), genre[genre], “, “,Genre[Genre], Asc), “All Genre”)

1. To show except 5 how many more genre we have selected. Modify the previous measure.

Hint:- Genre List =

VAR MaxNum = 5

VAR NumSelected = Countrows(Genre)

VAR Suffix = if(NumSelected > MaxNum, “ and “ & (Numselected – MaxNum) & “ More”)

Return if(isfiltered(genre[genre]), concatenatex(TopN(MaxNum,genre, genre[genre], asc ), genre[genre], “, “,Genre[Genre], Asc) & Suffix, “All Genre”)

Exercise 8.3 Disconnected Slicers.

1. Insert a table from genre table, put genre field into the table visual.
2. Create a measure to calculate the average run time.

Hint:- Avg Run Time = Average(film[runtimeminutes]).

Add it in the previous table visual.

1. Create a new table named as genre picker to get all the unique genre list in that table.

Hint:- Genre Picker = values(Genre[Genre])

1. New table shouldn’t be connected with any table in the data model.
2. Add genre column from genre picker table to the slicer.
3. To get the average run time of selected genre only create a measure.

Hint:- Avg Run Time Selected Genre = selectedvalue(‘Genre Picker’[Genre]).

Put this measure in the previous table visual so when we will select any genre name from the slicer it will return that name in front of every genre there in the table.

To get the average run time of selected genre.

Hint:- Avg Run Time Selected Genre = calculate([Avg Run Time], genre[Genre] = selectedvalue(‘Genre Picker’[Genre])).

1. Create measure to compare the avg run of selected genre to the avg run of all other genres.

Hint:- Avg Run Time Variance From Selected = [Avg Run Time Measure] – [Avg Run Time Selected Genre Measure].

1. To get the % difference from selected value average run time with other genres.

Hint:- Avg Run Time % of Selected = Divide([Avg Run Time Measure],[Avg Run Time Selected Genre Measure])

1. Format the results ---- Avg Run Time % of selected update it as percentage format.
2. Average run time variance from selected measure use + symbol with positive number and – with negative numbers.

Hint:- tabs --- measure --- format ---+0.00;-0.00

Remove Avg Run time from every measure name.

Change the font colour using condition formatting of % measure create a measure.

Hint:- Font Colour = if([Avg Run Time variance from selected] < 0, “#e66c37” ,”#118DFF”).

Using conditional formatting from variance measure choose font colour – field value – measure name (font Colour).

1. When we have not selected any genre from slicer it returns the difference from the total average run time. To resolve this.

Hint:- if(isfiltered(Genre picker table[Genre field]), Calculate( [Avg Run Time measure], Genre[Genre] = selectedvalue(‘Genre picker’[Genre])),calculate ([Avg Run Time ], removefilters(genre[Genre])))

1. If we select more than one genre from slicer it will return blank in selected Genre measure.

Because selectedvalue function returns value when one value is selected from the column it is referring.

To resolve it modify the Avg Run Time Selected Genre Measure.

Hint:- Avg Run Time Selected Genre = if( isfiltered(‘Genre Picker’[Genre]), Calculate([Avg Run Time], Genre[Genre] in Valued (Genre Picker [Genre]), Calculate([Avg Run Time], Removefilters(Genre[Genre]))).

1. Use can limit our slicer to select only one genre using format option of slicer visual single select put it as on.
2. Now we can make our measure much simple by modifying it.

Hint:- Avg Run Time Selected Genre = calculate ( [Avg Run Time], Genre[Genre] = selectedvalue(Genre Picker[Genre]))

1. In this case we have lost the ability to compare overall avg run time without filter from each genre to bring it back add a option in slicer to select all the genre same time by modifying the genre picker table.

Hint:- Genre Picker = Union(Values(Genre[Genre Field]),{“All”} )

To convert a string value in a table for union function.

1. {“All”}
2. Row(Name of column, Expression…) --- Row(“Genre”,”All”)
3. Now we will got “all” in the middle of the slicers we want to bring it on first place of slicer.

To achieve it modify the previous table measure.

Hint:- Genre Picker :- Union(Value(Genre[Genre field]),ROW(“Genre”,”(All)”)

As ( as sort before the alphabets so it will show All on the first place of slicer.

1. While selecting “all” option from the slicer it will not reflect the avg comparison from each genre. To make it responsive modify the previous avg run time selected genre measure.

Hint:- Avg run time selected Genre = if (selectedvalue (genre picker [Genre]) = “(All)”, calculate ( [Avg run time measure], removefilters(Gernre[Genre]), calculate( [Avg Run Time] , Genre [Genre] = selectedvalue(‘Genre Picker’[Genre]))

1. Create a new measure for dynamic table title.

Hint:- Table title = “Average Run Time Vs. ” & selectedvalue (‘Genre picker’[Genre]) & “ Movies”

Unable the title for the table and use fx to assign title of the table visual.

1. Include the avg run of selected genre in the title. Modify the previous measure.

Hint:- Table title = “Average Run Time Vs. ” & selectedvalue (‘Genre picker’[Genre]) & “ Movies (” & [Avg Run time selected Genre] & “)”

To format the number use format

Hint:- Table title = “Average Run Time Vs. ” & selectedvalue (‘Genre picker’[Genre]) & “ Movies (” & format([Avg Run time selected Genre],”0.00”) & “)”

1. When we are selecting “all” option from the slicer it returns (All) in the title we don’t want to show () with all word in title to do that modify the previous measure.

Hint:- Table title = “Average Run Time Vs. ” & substitute(substitute(selectedvalue (‘Genre picker’[Genre]), “(“,””),”)”,””) & “ Movies (” & format([Avg Run time selected Genre],”0.00”) & “)”

1. Duplicate this page and keep Genre and variance from selected measure then convert it into bar chart. Sort genre alphabetically.
2. Put condition formatting for the column by using format pane search for column fx field value font colour measure.

Exercise 8.4 Disconnected Slicers and Conditional Formatting.

1. From file table put the title and oscarwins in the table visual and oscarwins use don’t summarize option for Oscar wins field.
2. Insert slicer visual and put a Oscar wins field in it and change the formatting of slicers as vertical list.
3. I don’t want to filter the data there in the table according to the value I am selecting in the slicer as if select 0 so the 0 values there in the table should be formatted in any manner.

To do it --- create a separate table containing list of values we want in slicer.

New table ---- Oscar picker = values(Oscar wins column)

New table created in the field pane.

No relation from the data model.

Take values in slicer from slicer picker table.

1. Now I want to create a measure to so I select any value from the slicer that font colure should be changed in table visual.

Hint:- Oscar Wins Colour = selectedvalue( film(oscarwins column) = selectedvalue(Oscar picker (oscarwins column)

Place it in table it will return true false according to the selected value from slicer.

To give the color on true values

Hint:- Oscar Wins Colour = if( selectedvalue( film(oscarwins column) = selectedvalue(Oscar picker (oscarwins column), “Orange”, “Black”)

Now apply the conditional formatting to the table Oscar wins field using visualization pane fx feature.

1. Dealing with no selection.

When we have not select any value from the slicer it will still colour the row having 0 in it.

To resolve it. We will use alternative result parameter of selected value function.

Hint:- Oscar Wins Colour = if( selectedvalue( film(oscarwins column) = selectedvalue(Oscar picker (oscarwins column, -1 ), “Orange”, “Black”)

1. Want if I want to highlight more than one column from the table by selecting more than one items from the slicer

Hint:- Oscar Wins Colour = if( selectedvalue( film(oscarwins column) in values(Oscar picker (oscarwins column), “Orange”, “Black”)

1. Now if I have nothing selected in the slicer it means everything is selected so it will colour out all the values in the table. To resolve it modify the previous measure.

Hint:- Oscar Wins Colour = if( isfiltered(Oscar picker [Oscar wins column]), if( selectedvalue( film(oscarwins column) in values(Oscar picker (oscarwins column), “Orange”, “Black”),”Black”)

1. Using a Slicer Bar – modify the slicer as between style using format pane.

Now put it as 3 to 5 so all the values there in between the 3 to 5 will be highlighted in table.

1. add genre field in the table along with title and Oscar wins field.
2. Now I want to colour out the genre in the table according to the slicers value of genre I have selected in another slicers to do it create a separate table for genre.

New Table --- Genre Picker = values(Genre[genre column]).

Data model no relation from another table.

Add it on slicer visual

To make it functional create a new measure.

Hint:- Genre Colour = if ( isfiltered(genre picker[genre] , if ( selectedvalue(genre[genre column) = selectedvalue(genrepicker [genre]), “orange”, “blank”),”blank”)

Apply this measure on the conditional formatting of genre column in the column using conditional formatting field value feature.

1. Disconnected Date Slicer – in previous table add the release date field as release date -----

To colour the values according to the date range follow the below steps:-

New table ---- Date Picker = Values (Film[Release date Column)]) ---- no relation from data model --- insert a new slicer --- make it as between slider type --- put the date picker date field in it.

To make it responsive create a new measure.

Hint:- Date Colour = if( isfiltered( date picker [release date column]), if (selectedvalue(film[releasedate]) in values(date picker [Releasedate]), “orange”, “Black”),”black”)

Apply the condition formatting using table release date field --- conditional formatting --- field value assign that measure to it.

Change the slicer as Year month and day combination drop down one after the other using hierarchy of date picker table.

Isfiltered function detect the direct filters applied to the column but when I am putting the year month day from the date hierarchy it is another table in the date picker table created by the power bi so we cannot colour the data now using year and month field to make it work we need to use iscrossfiltered function instead of isfiltered function in date colour measure.

Hint:- Date Colour = if( iscrossfiltered( date picker [release date column]), if (selectedvalue(film[releasedate]) in values(date picker [Releasedate]), “orange”, “Black”),”black”)

1. Choosing colour from a slicer. ---- import a excel workbook to choose the dynamic colours having 3 columns as colour ID, Column Name to be displayed to the end user, Actual colour name for measure.

No connection from any table in the data model.

Insert a slicer put colour name field from colour table --- make it as tile ---

1. Now modify the existing measure so it will colour the value according to the selected colour from the slicer.
2. Hint:- Date Colour = if( iscrossfiltered( date picker [release date column]), if (selectedvalue(film[releasedate]) in values(date picker [Releasedate]), selectedvalue(colours[colour],”Black”), “Black”),”black”)
3. Change it for all the previous measure like Genre colour measure, Oscar wins colour measure.
4. I can’t change the tile colour of slicer according to the colour name it is containing we do not have any option in format pane to apply conditional formatting on the slicer tile colour.
5. We can use some other visual to colour the tile according to the colour name it is containing ---- change the slicer as treemap visual – now keep colour Name field in category and count of colour name field in values --- now go to format pane --- colors section--- conditional formatting fx button --- field value ---- colour table colour field.
6. Now choose the tile it will colour the values according to the selected tile of tree map.

Exercise – 8.5 Field Parameters

1. Insert a matrix --- genre field from genre table in rows --- certificate table certificate in column ---run time in minute field in value as sum.
2. Selecting a measure from slicer ----- Use Enter Data --- Column Name Chosen Function --- values as Total, Average, Maxnum --- rename table as function picker.
3. Create a measure so we can select the function name from the function picker table and that aggregation should be applied to the visual.

Hint:- create three separate measure for sum, average, and max of run time

Create another measure with the help of switch.

Hint:- result = switch ( selectedvalue(function picker [chosen function]), “Total”, [Sum Run time measure], “Average”,[Avg Run time measure], “Maxnum”,[Max Run time measure])

Add a slicer --- with chosen function field ---- replace the sum run time field with result measure.

1. Set it as single selection only in the slicers pane.
2. Most streamline way to achieve the same thing

Take another page --- put the same genre and certificate field in the matrix --- go to modelling tab in the ribbon --- new parameter --- select field option in it --- name it as value field ---- drop all three sum, max, avg measure in the add and reorder fields option --- check the box as add a slicer to the same page from the bottom --- now look for the table value field drop the value field from value field table in values of matrix.

We can select more then one item from slicer.

1. Changing labels in slicer as it is showing the name of original measure name ---- go to value field parameter table – change the names in formula bar.
2. Changing the name of original measure doesn’t influence the values of value field parameter table --- to check it --- change the name of max measure as biggest run time minutes --- now it will automatically change the name of max measure in value field table calculations.
3. Create a measure to get count of rows there in the field table ---- add this measure in our slicer to do that add it in value field table --- coyp the last line paste it just below the last line and change the label name, sort order and measure name in the table expression.
4. Create a new field parameter for field groups like Genre.

Go to modelling --- fields --- fields --- name it as row field --- put fields in Add and reorder fields (director full name, genre, studio)--- check add slicer on this page

1. Now select the matrix and remove the genre field from it and look for row field table and put the row field in rows of matrix now change the slicer as genre, studio and can select both at same time
2. To add something in the slicer process is same as previous as copying the last row and change the name and field name.
3. Now create another field parameter for column group (certificate field of matrix).

Modelling --- new parameter – fields --- name it as column field --- put column fields like (certificate and region) --- check add slicers on the page --- replace column field table field with certificate field in the matrix.

Exercise 9.1 Ranking Values with the RankX Function.

1. Create a column in film table to rank our film according to the run time.

Hint:- Hint Run Time 1 = rank.eq(film[run time minutes column],film[run time minutes])

Syntax:- Rank.eq(value, columnname, [order])

Sort the run time column largest to smallest.

It will give the rank 1 to largest run time film.

1. Do the same thing using rankx function

Hint:- Rank Run Time 2 = rankx(Film,film[run time minutes column])

Syntax:- RankX(Table, Expression, [Value],[Order],[Ties])

1. By default it gives the largest run time as 1 rank we can change it using order parameter.

Hint:- Hint Run Time 1 = rank.eq(film[run time minutes column],film[run time minutes],Asc)

Hint:- Rank Run Time 2 = rankx(Film,film[run time minutes column],,Asc)

Choose descending for this example.

1. Dealing with Tied Results ------- means if we get 2 same run time so it will provide same number to both the run time but by default it will skip the next number (this is called skip type of ties] both rank and rank.eq shows same behaviour.

Hint:- Rank Run Time 2 = rankx(Film,film[run time minutes column],,Asc,Dense)

1. Insert a table visual and show title and run time in minutes by don’t summarize it. ---- now put the filter from filter pane as top n filter top 3 run time in minutes.

So we will get lot of values as we have duplicate values for top 3 run time.

Try to achieve the same by changing the calculation from sum to max run time from filter pane.

Now use column we have created for run time rank to get top 3 put the rank field in filter pane and apply filter on rank field greater than equal to 3.

1. Create measure to do the same thing.

Take a table visual --- put genre in row ---- sum run time in values ---- create a new measure to show the rank on sum of run time.

Hint:- Rank Sum Run Time = RANKX(Genre table, [sum run time measure])

Put it in the table visual along with genre and sum of run time, it will return only one on every place.

To make it correct.

Hint:- Rank Sum Run Time = RANKX(all(Genre [genre]), [sum run time measure])

Now it will return correct ranking.

1. To rectify the total of rank measure

Hint:- if ( hasonevalue(genre[genre field]), rankx(all(genre[genre field]),[sum run time measure])).

Same thing we can achieve using isinsope function

Hint:- if ( isinscope(genre[genre field]), rankx(all(genre[genre field]),[sum run time measure])).

1. Add a slicer of genre ---- enable the select all option --- select all in slicer --- now we have comedy genre has 1st rand if we hide the comedy genre from table using slicer that still ranked as 1 only and action is considered as 2.

If we don’t want to consider the hidden genre in rank use allselected function instead of all function in previous measure.

Hint:- if ( isinscope(genre[genre field]), rankx(allselected(genre[genre field]),[sum run time measure])).

1. Returning only top 3 genre --- we can do it using filter pane --- but want to do it using measure.

Hint:- Top 3 genres sum run time = if ([rank sum run time measure] <=, [sum run time measure])

Add another table --- insert genre field --- insert Top 3 genres sum run time measure --- it will also response to our slicer also hide the comedy and check the output ---- it will also respond to other filter using slicer like Oscar wins put it on slicer and check for Oscar win > 1

1. We want to return run time rank instead of run time in the previous measure.

Hint:- Top 3 Genres Sum Run time Rank = if([rank sum run time measure] <= 3, [rank sum run time measure])

Add it in visual and change the filters using slicers.

1. Returning the top 3 results per group --- add a matrix --- insert certificate in row and genre in rows bucket and top 3 genre sum run time rank measure in values as well as top 3 genres sum run time in values.

So it is working correctly with the different level of grouping.

1. There is one problem with the total run time showing with certificate it is showing the sum of run time of all the movies belonging to that certificate regardless of genre.

To make it correct.

Choose new measure ---

Hint:- sum run time selected genres = sumx(allselected(genre[genre]),[sum run time measure])

Add it into the matrix values section ---- it will return list of genre considered in that total of certificate.

Modify the previous measure again.

Hint:- sum run time selected genres = sumx(allselected(genre[genre]),

If([rank sum run time measure ] <= 3,

[sum run time measure]))

Check the result once. Modify the measure again.

Hint:- sum run time selected genres = if(isinscope(genre[genre]), [top 3 genres sum run time measure],

sumx(allselected(genre[genre]),

If([rank sum run time measure ] <= 3,

[sum run time measure]))

)

1. Now we want to show the rank according to certificate also in the same matrix.

Hint:- rank certificate or genre = if(isinscope (genre[genre]), [top 3 genres sum run time rank measure], if(isinscope(certificate[certificate]),rankx(allselected(certificate[certificate]), [sum run time ])))

Insert this measure in the matrix.

1. Now rank the certificate according to the top 3 genres

Hint:- rank certificate or top 3 genre = if(isinscope (genre[genre]), [top 3 genres sum run time rank measure], if(isinscope(certificate[certificate]),rankx(allselected(certificate[certificate]), [sum run time select genre measure ])))

Add it in matrix – slicer on Oscar wins --- to see Oscar wining films--- observe the difference.

1. Now it is showing the list of all the genres don’t having any certificate assign to it.

To resolve it.

Hint:- top 3 genres sum run time rank = if( not( isblank([sum run time])) && [rank sum run time] <= 3, [rank sum run time])

Exercise 9.2 ranking values with rank function.

1. Add a table visual --- add genre and sum of run time.
2. Ranking on each of the genre according to the sum of run time.

Hint:- RankX Genre sum Run Time = RankX(allselected(genre[genre]), [sum run time measure]).

Add it in the table visual.

1. Remove the value there in total row rank measure. Modify previous measure.

Hint:- RankX Genre sum Run Time = if ( isinscope(genre[genre]), RankX(allselected(genre[genre]), [sum run time measure])).

1. We can achieve same result using rank function.

Hint:- Rank Genru Sum Run Time = rank(skip,allselected(genre[genre]),orderby([sum run time measure],desc))

Put in the same table visual will get the same result as rankx function but the advantage is not to see total value.

1. Add a new table director and a measure sum Oscar wins.

Hint:- Sum Oscar Wins = Sum(film[Oscar wins])

Now sort the table values in descending order

1. I want to rank directors according to the Oscar wins

Hint:- Rank Director Oscars = rank ( skip, allselected(director[director]),orderby([sum Oscar wins],desc))

Put it in the table.

1. In dense we don’t skip the numbers if two same rank numbers are there in the result. It is skipping the numbers in skip option.
2. Create a measure to show sum of Oscar wins and add it to the table visual.

Hint:- sum(Oscar wins).

1. Ranking on multiple values --- rank the director according to the Oscar nomination. Modify the previous measure.

Hint:- Rank Director Oscars = rank ( skip, allselected(director[director]),orderby([sum Oscar wins],desc, [sum Oscar noms], desc))

Now it will rank the director according to the both criteria like Oscar wins and nominations.

1. To make it more accurate combine the avg budget measure also.

Hint:- Avg Budget = Average(film[budget dollars])

Modify the previous measure name and calculation

Hint:- Rank Director Oscars budgets = rank ( skip, allselected(director[director]),orderby([sum Oscar wins],desc, [sum Oscar noms], desc,[avg budget], asc))

1. Add a page --- insert a matrix visual --- certificate and genre in rows --- sum of run time measure in values --- drill down it to see all the values.

Insert rank genre sum run time measure in the same matrix values.

1. Rank function consider blank values also like if the run time is blank for any genre while categorizing it in certificates and values. To ignore blank values modify previous measure.

Hint:- Rank Genru Sum Run Time = rank(skip,allselected(genre[genre]),orderby([sum run time measure],desc),first)

Hint:- Rank Genru Sum Run Time = rank(skip,allselected(genre[genre]),orderby([sum run time measure],desc blank first/last))

Hint:- Rank Genru Sum Run Time = if not (isblank([sum run time ])),

rank(skip,allselected(genre[genre]),orderby([sum run time measure],desc blank first/last)))

1. Rank certificate as well as genre create a new measure

Hint:- rank certificate sum run time = if ( not (isblank([sum run time])), rank(skip, allselected(certificate[certificate]), orderby([sum run time measure], Desc)))

Put this measure in the same matrix

Copy this matrix and change the order as first genre and then certificate and observe the result in both the matrix.

1. Rank genre then certificate

Hint:- rank Genre then Certificate = if(isinscope(genre[genre]),[rank genre sum run time],[rank certificate sum run time measure])

Now remove all measure from first matrix except sum run time and rank genre then certificate.

1. Changing the hierarchy --- in second matrix put the same measure

Pending after 20 minutes