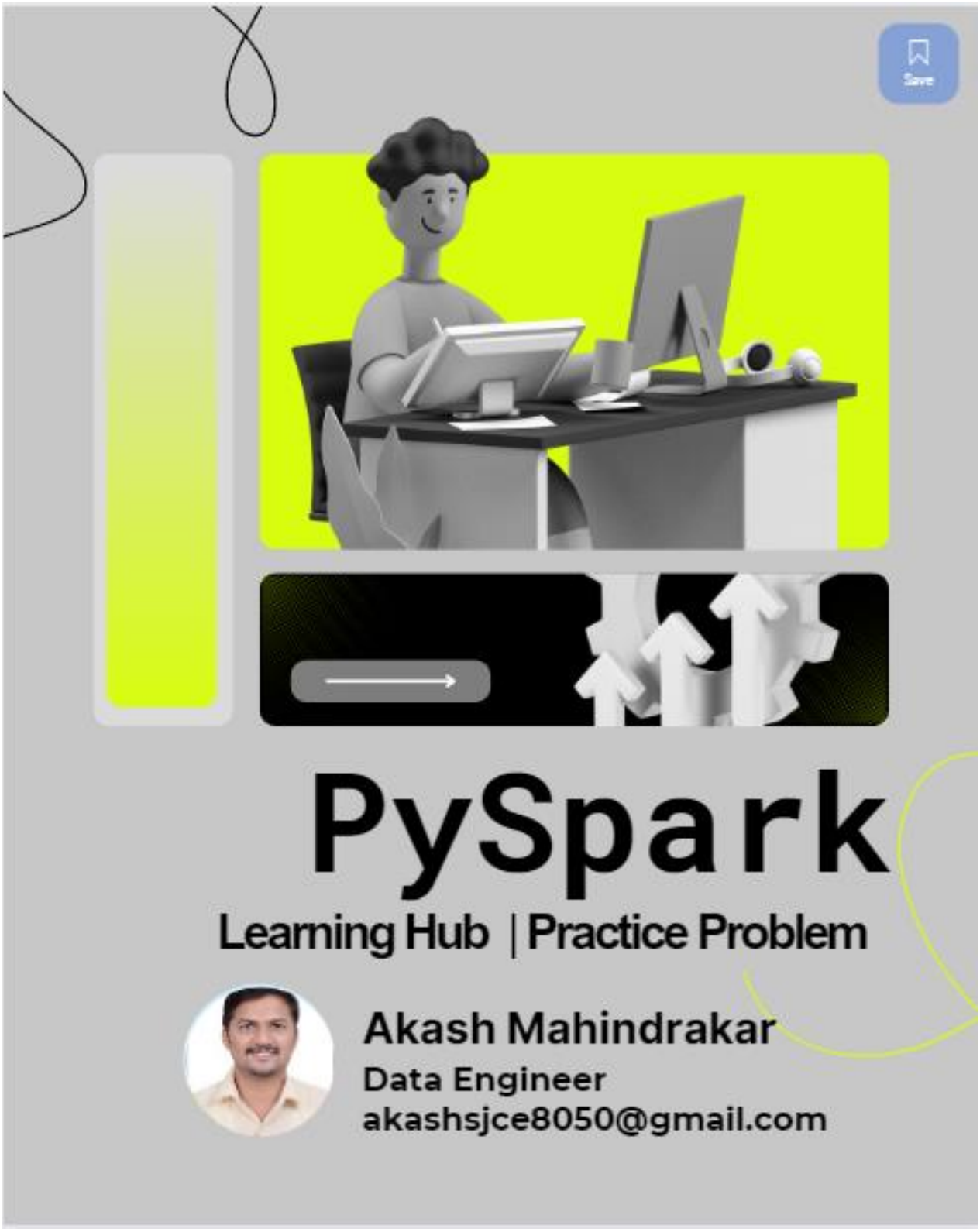
PYSPARK LEARNING HUB : DAY - 14



Step - 1 : Problem Statement

14_Purchasing Activity by Product Type

We have been given purchasing activity DF and we need to find out cumulative purchases of each product over time.

Difficult Level : EASY

DataFrame:

```
# Define schema for the DataFrame
schema = StructType([
        StructField("order_id", IntegerType(), True),
        StructField("product_type", StringType(), True),
        StructField("quantity", IntegerType(), True),
        StructField("order_date", StringType(), True),
])

# Define data
# Define data
data = [
        (213824, 'printer', 20, "2022-06-27 "),
        (212312, 'hair dryer', 5, "2022-06-28 "),
        (132842, 'printer', 18, "2022-06-28 "),
        (284730, 'standing lamp', 8, "2022-07-05 ")
]
```

Step - 2 : Identifying The Input Data And Expected

INPUT

INPUT			
ORDER_ID	PRODUCT_TYPE	QUANTITY	ORDER_DATE
213824	printer	20	2022-06-27 12:00:00
212312	hair dryer	5	2022-06-28 12:00:00
132842	printer	18	2022-06-28 12:00:00
284730	standing lamp	8	2022-07-05 12:00:00

OUTPUT

OUTPUT		
ORDER_DATE	PRODUCT_TYPE	CUM_PURCHASED
2022-06-27 12:00:00	printer	20
2022-06-28 12:00:00	hair dryer	5
2022-06-28 12:00:00	printer	38
2022-07-05 12:00:00	standing lamp	8

Step - 3 : Writing the pyspark code to solve

```
# Creating Spark Session
from pyspark.sql import SparkSession
from pyspark.sql.types import
StructType,StructField,IntegerType,StringType

#creating spark session
spark = SparkSession. \
builder. \
config('spark.shuffle.useOldFetchProtocol', 'true'). \
config('spark.ui.port','0'). \
config("spark.sql.warehouse.dir", "/user/itv008042/warehouse"). \
enableHiveSupport(). \
master('yarn'). \
getOrCreate()

# Define schema for the DataFrame
schema = StructType([
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        StructField("product_type", StringType(), True),
        StructField("quantity", IntegerType(), True),
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        (132842, 'printer', 18, "2022-06-28 "),
        (284730, 'standing lamp', 8, "2022-07-05 ")
]
```

```
order_df=spark.createDataFrame(data,schema)
order_df.show()
```

```
+--------+-------------+--------+-----------+
|order_id| product_type|quantity| order_date|
+--------+-------------+--------+-----------+
|  213824|      printer|      20|2022-06-27 |
|  212312|   hair dryer|       5|2022-06-28 |
|  132842|      printer|      18|2022-06-28 |
|  284730|standing lamp|       8|2022-07-05 |
+--------+-------------+--------+-----------+
```

```
# Define a Window specification based on the 'order_date' column
window_spec =
Window.partitionBy("product_type").orderBy("order_date").rowsBe
tween(Window.unboundedPreceding, 0)

# Add a new column 'cumulative_purchases' representing the
cumulative sum
result_df = order_df.withColumn("cumulative_purchases",
F.sum("quantity").over(window_spec))
result_df.show()
```

```
+--------+-------------+--------+-----------+-------------------+
|order_id| product_type|quantity| order_date|cumulative_purchases|
+--------+-------------+--------+-----------+-------------------+
|  284730|standing lamp|       8|2022-07-05 |                  8|
|  212312|   hair dryer|       5|2022-06-28 |                  5|
|  213824|      printer|      20|2022-06-27 |                 20|
|  132842|      printer|      18|2022-06-28 |                 38|
+--------+-------------+--------+-----------+-------------------+
```

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