```
import pyspark,time,platform,sys,os
from datetime import datetime
from pyspark.sql.session import SparkSession
from pyspark.sql.functions import col,lit,current_timestamp
import pandas as pd
import matplotlib.pyplot as plt
from sqlalchemy import inspect,create_engine
from pandas.io import sql
import warnings,matplotlib
warnings.filterwarnings("ignore")
t0=time.time()
con=create_engine("mysql://root:24082019:jhf@localhost/spark")
os.environ['PYSPARK_PYTHON'] = sys.executable
os.environ['PYSPARK_DRIVER_PYTHON'] = sys.executable
spark=SparkSession.builder.appName("Hi").getOrCreate()

sql.execute("""drop table if exists spark.`HW_4_all`""",con)
sql.execute("""CREATE TABLE if not exists spark.`HW_4_all` (
	`№` INT(10) NULL DEFAULT NULL,
	`Month` DATE NULL DEFAULT NULL,
	`Payment amount` FLOAT NULL DEFAULT NULL,
	`Payment of the principal debt` FLOAT NULL DEFAULT NULL,
	`Payment of interest` FLOAT NULL DEFAULT NULL,
	`Balance of debt` FLOAT NULL DEFAULT NULL,
	`interest` FLOAT NULL DEFAULT NULL,
	`debt` FLOAT NULL DEFAULT NULL
)
COLLATE='utf8mb4_general_ci'
ENGINE=InnoDB""",con)
from pyspark.sql.window import Window
from pyspark.sql.functions import sum as sum1
w = Window.partitionBy(lit(1)).orderBy("№").rowsBetween(Window.unboundedPreceding,
Window.currentRow)
df1 = spark.read.format("com.crealytics.spark.excel")\
	.option("dataAddress", "'sheet_sem'!A1")\
	.option("useHeader", "false")\
	.option("treatEmptyValuesAsNulls", "false")\
	.option("inferSchema", "true").option("addColorColumns", "true")\
	.option("usePlainNumberFormat","true")\
	.option("startColumn", 0)\
	.option("endColumn", 99)\
	.option("timestampFormat", "MM-dd-yyyy HH:mm:ss")\
	.option("maxRowsInMemory", 20)\
	.option("excerptSize", 10)\
	.option("header", "true")\
	.format("excel")\
	.load("/Users/Андрей/Desktop/git_education/HW_ETL/HW_4_task/s4_2_HW.xlsx").limit(1000)\
	.withColumn("interest", sum1(col("Payment of interest")).over(w))\
	.withColumn("debt", sum1(col("Payment of the principal debt")).over(w))

df2 = spark.read.format("com.crealytics.spark.excel")\
	.option("dataAddress", "'sheet_120'!A1:F135")\
	.option("useHeader", "false")\
	.option("treatEmptyValuesAsNulls", "false")\
	.option("inferSchema", "true").option("addColorColumns", "true")\
	.option("usePlainNumberFormat","true")\
	.option("startColumn", 0)\
	.option("endColumn", 99)\
	.option("timestampFormat", "MM-dd-yyyy HH:mm:ss")\
	.option("maxRowsInMemory", 20)\
```

```
        .option("excerptSize", 10)\
        .option("header", "true")\
        .format("excel")\
        .load("/Users/Андрей/Desktop/git_education/HW_ETL/HW_4_task/s4_2_HW.xlsx").limit(1000)\
        .withColumn("interest", sum1(col("Payment of interest")).over(w))\
        .withColumn("debt", sum1(col("Payment of the principal debt")).over(w))


df3 = spark.read.format("com.crealytics.spark.excel")\
        .option("dataAddress", "'sheet_150'!A1:F93")\
        .option("useHeader", "false")\
        .option("treatEmptyValuesAsNulls", "false")\
        .option("inferSchema", "true").option("addColorColumns", "true")\
        .option("usePlainNumberFormat","true")\
        .option("startColumn", 0)\
        .option("endColumn", 99)\
        .option("timestampFormat", "MM-dd-yyyy HH:mm:ss")\
        .option("maxRowsInMemory", 20)\
        .option("excerptSize", 10)\
        .option("header", "true")\
        .format("excel")\
        .load("/Users/Андрей/Desktop/git_education/HW_ETL/HW_4_task/s4_2_HW.xlsx").limit(1000)\
        .withColumn("interest", sum1(col("Payment of interest")).over(w))\
        .withColumn("debt", sum1(col("Payment of the principal debt")).over(w))

df_combined = df1.union(df2).union(df3)

df_combined.write.format("jdbc").option("url","jdbc:mysql://localhost:3306/spark?
user=root&password=24082019:jhf")\
        .option("driver", "com.mysql.cj.jdbc.Driver").option("dbtable", "HW_4_all")\
        .mode("append").save()

df_pandas1 = df1.toPandas()
df_pandas2 = df2.toPandas()
df_pandas3 = df3.toPandas()

# Get current axis
ax = plt.gca()
ax.ticklabel_format(style='plain')

# bar plot
df_pandas1.plot(kind='line', x='№', y='debt', color='green', ax=ax)
df_pandas1.plot(kind='line', x='№', y='interest', color='red', ax=ax)
df_pandas2.plot(kind='line', x='№', y='debt', color='grey', ax=ax) # ежемесячный платеж 120 000
df_pandas2.plot(kind='line', x='№', y='interest', color='orange', ax=ax)  # ежемесячный платеж 120
000
df_pandas3.plot(kind='line', x='№', y='debt', color='purple', ax=ax)  # ежемесячный платеж 150 000
df_pandas3.plot(kind='line', x='№', y='interest', color='yellow', ax=ax)  # ежемесячный платеж 150
000

# set the title
plt.title('Loan Payments Over Tim (All graphics)')
plt.grid ( True )
ax.set(xlabel=None)

# show the plot
plt.show()
spark.stop()
t1=time.time()
print('finished',time.strftime('%H:%M:%S',time.gmtime(round(t1-t0))))
```

Unnamed\spark\hw_4_all\ - HeidiSQL 12.6.0.6765

Файл Редактировать Поиск Запрос Инструменты Переход Помощь

Donate

Фильтр баз данны | Фильтр таблиц

Хост: 127.0.0.1 | База данных: spark | Таблица: hw_4_all | Данные | вариант запроса.sql

- performance_schema
- sakila
- seminar_1
- seminar_2
- seminar_3
- seminar_4
- seminar_5
- seminar_6
- **spark** 5,4 MiB
  - 1 nf 16,0 KiB
  - 2 nf_1 16,0 KiB
  - 2 nf_2 16,0 KiB
  - 3 nf_1 16,0 KiB
  - 3 nf_2 16,0 KiB
  - 3 nf_3 16,0 KiB
  - 3 nf_4 16,0 KiB
  - hw_2_task_3 384,0 KiB
  - **hw_4_all** 64,0 KiB
  - hw_4_task_120 16,0 KiB
  - hw_4_task_150 16,0 KiB
  - hw_4_task_sem 48,0 KiB
  - sem3_01 16,0 KiB
  - sem3_task_0 16,0 KiB
  - task4 16,0 KiB
  - tasketl1a 16,0 KiB
  - tasketl2b 4,5 MiB
  - tasketl4a 16,0 KiB
  - tasketl4b 144,0 KiB

spark.hw_4_all: 586 строк (exact)

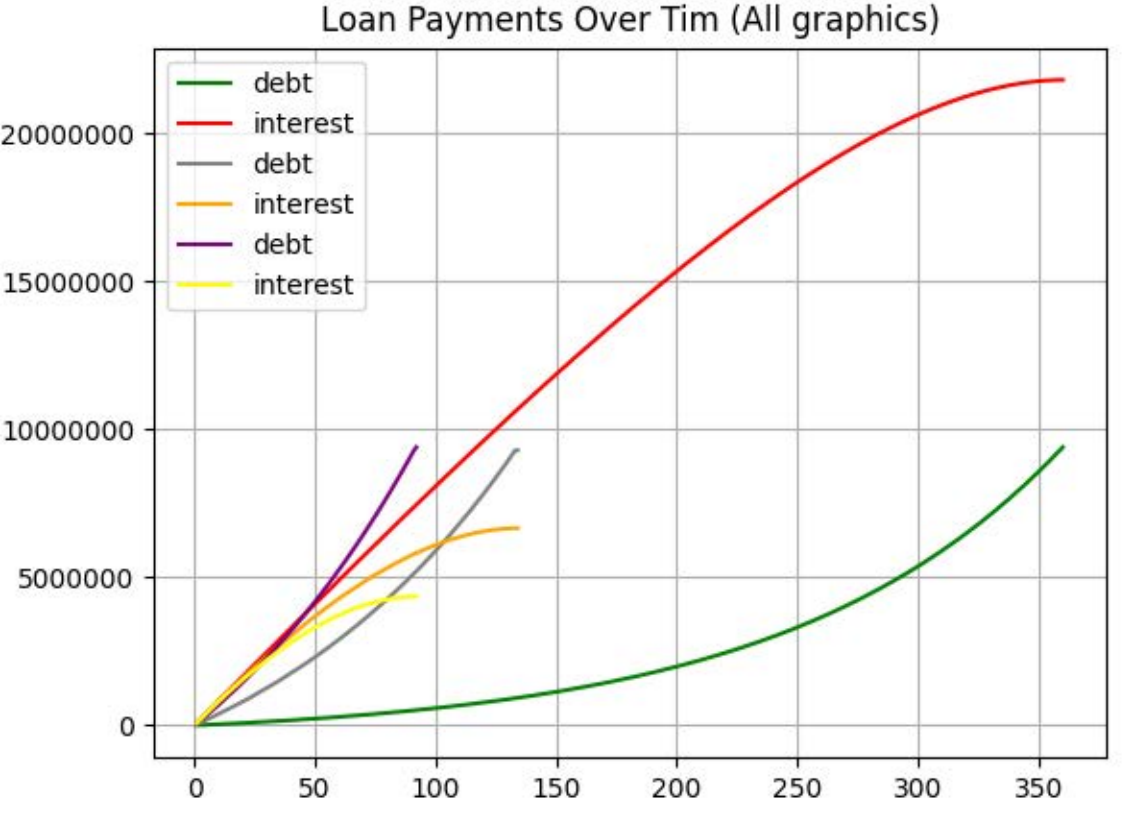
Далее | Показать все | Сортировка | Столбцы (8/8) | Фильтр

#	№	Month	Payment amount	Payment of the principal debt	Payment of interest	Balance of debt	interest	debt
1	1	2024-05-13	150 000	68 327,9	81 672,1	9 331 670	81 672,1	68 327,9
2	1	2024-05-13	120 000	38 327,9	81 672,1	9 361 670	81 672,1	38 327,9
3	2	2024-06-13	150 000	66 218,9	83 781,1	9 265 450	165 453	134 547
4	2	2024-06-13	120 000	35 949,6	84 050,4	9 325 720	165 723	74 277,5
5	3	2024-07-13	120 000	38 973,2	81 026,8	9 286 750	246 749	113 251
6	3	2024-07-13	150 000	69 496,9	80 503,1	9 195 960	245 956	204 044
7	4	2024-08-13	150 000	67 437,4	82 562,6	9 128 520	328 519	271 481
8	4	2024-08-13	120 000	36 622,2	83 377,8	9 250 130	330 127	149 873
9	5	2024-09-13	120 000	36 951	83 049	9 213 180	413 176	186 824
10	5	2024-09-13	150 000	68 042,9	81 957,1	9 060 480	410 476	339 524
11	6	2024-10-13	150 000	71 277,8	78 722,2	8 989 200	489 198	410 802
12	6	2024-10-13	120 000	39 951,1	80 048,9	9 173 220	493 225	226 775
13	7	2024-11-13	150 000	69 293,7	80 706,3	8 919 900	569 905	480 095
14	7	2024-11-13	120 000	37 641,5	82 358,5	9 135 580	575 583	264 417
15	8	2024-12-13	150 000	72 499,2	77 500,8	8 847 400	647 405	552 595
16	8	2024-12-13	120 000	40 625,3	79 374,7	9 094 960	654 958	305 042
17	9	2025-01-13	120 000	38 250,4	81 749,6	9 056 710	736 708	343 292
18	9	2025-01-13	150 000	70 475,5	79 524,5	8 776 930	726 930	623 070
19	10	2025-02-13	150 000	70 983,6	79 016,4	8 705 950	805 946	694 054
20	10	2025-02-13	120 000	38 464,8	81 535,2	9 018 240	818 243	381 757
21	1	2023-11-01	86 689	3 655,71	83 033,3	9 396 340	83 033,3	3 655,71
22	11	2025-03-13	150 000	79 207,5	70 792,5	8 626 740	876 739	773 261
23	11	2025-03-13	120 000	46 668,1	73 331,9	8 971 580	891 575	428 425
24	2	2023-12-01	86 689	3 688	83 001	9 392 660	166 034	7 343,71
25	12	2025-04-13	150 000	72 335,7	77 664,3	8 554 400	954 403	845 597
26	12	2025-04-13	120 000	39 231,2	80 768,8	8 932 340	972 344	467 656
27	3	2024-01-01	86 689	3 720,58	82 968,5	9 388 940	249 003	11 064,3
28	13	2025-05-13	120 000	42 178,5	77 821,5	8 890 160	1 050 170	509 835
29	13	2025-05-13	150 000	75 471,2	74 528,8	8 478 930	1 028 930	921 068

Фильт | Регулярное выражение

```
737 SHOW TRIGGERS FROM `spark`;
738 SELECT *, EVENT_SCHEMA AS `Db`, EVENT_NAME AS `Name` FROM information_schema.`EVENTS` WHERE `EVENT_SCHEMA`='spark';
739 SELECT * FROM `information_schema`.`COLUMNS` WHERE TABLE_SCHEMA='spark' AND TABLE_NAME='hw_4_all' ORDER BY ORDINAL_POSITION;
740 SHOW INDEXES FROM `hw_4_all` FROM `spark`;
741 SELECT * FROM information_schema.REFERENTIAL_CONSTRAINTS WHERE   CONSTRAINT_SCHEMA='spark'   AND TABLE_NAME='hw_4_all'   AND REFERENCED_TABLE_NAME IS NOT NULL;
742 SELECT * FROM information_schema.KEY_COLUMN_USAGE WHERE   TABLE_SCHEMA='spark'   AND TABLE_NAME='hw_4_all'   AND REFERENCED_TABLE_NAME IS NOT NULL;
743 SHOW CREATE TABLE `spark`.`hw_4_all`;
744 SELECT * FROM `spark`.`hw_4_all` LIMIT 1000;
```

r1 : c2 | Подключено: 03:15 h | MySQL 5.7.40 | Время работы: 1 дней, 21:24 | Серверное время: | Ожидание.


Loan Payments Over Tim (All graphics)
debt
interest
debt
interest
debt
interest
20000000
15000000
10000000
5000000
0
0
50
100
150
200
250
300
350