TETRIS PROGRAM

Analisis Penjualan Kendaraan Bermotor

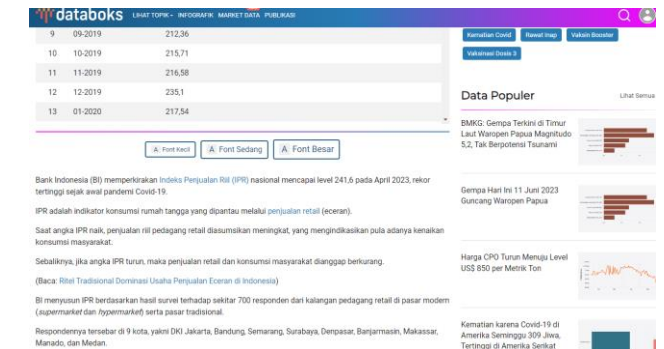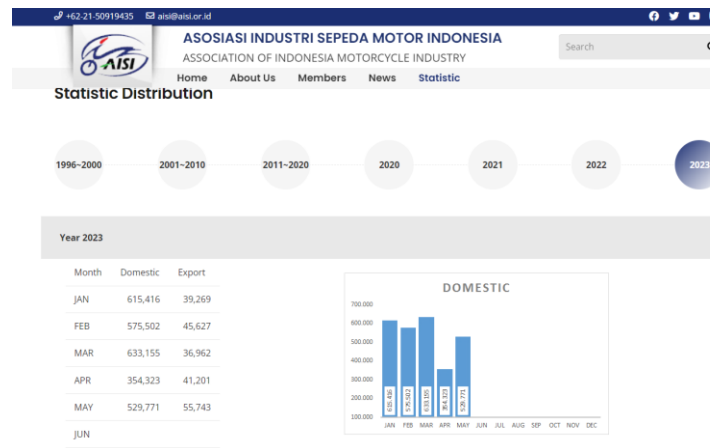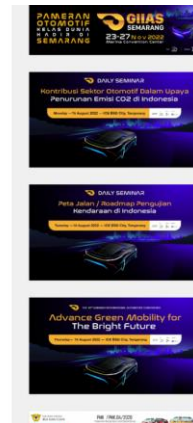Raffi Ainul Afif
raffiainultrueblues21@gmail.com

#StackYourSkill

Step 1 - Data Collection & Data Integration

1. Mengambil data data penjualan mobil di website Gabungan Industri Kendaraan bermotor Indonesia (Gaikindo), data penjualan motor dari Asosiasi Industri Sepeda Motor Indonesia (AISI), dan data Indeks Penjualan Riil (IPR) dari website Databooks
2. Gaikindo dan AISI merupakan asosiasi resmi dari kendaraan mobil dan motor jadi setiap bulan setiap company akan update datanya ke Gaikindo maupun AISI, sedangkan Databooks mendapatkan data IPR dari survei yang telah dilakukan oleh Bank Indonesia (BI)

#StackYourSkill

Step 2 - Data Cleansing

1. Convert data sales car yang tadinya berupa pdf menjadi excel
2. Menghapus Column yang tidak dipakai
3. Rename wrong value and fillna
4. Transformasi data dan menyesuaikan format setiap data

```python
features_drop = ['TANK\nCAPT', 'GVW\n(Kg)','W HEEL & TYRE SIZE', 'W HEEL BASE', 'DIMENSION\nP x L xT','SEATER', 'DRIVE SYS.', 'Unnamed: 16','DOOR','W HEELS','Unnamed: 34'
for col in features_drop :
    car_data = car_data.drop(col, axis = 1)
car_data
```

```python
otorcycle_data= motorcycle_data.melt(id_vars = ['TAHUN'], var_name = 'Bulan', value_name = 'Jumlah')
otorcycle_data['Tanggal'] = pd.to_datetime(motorcycle_data['TAHUN'].astype(str) + '-' + motorcycle_data['Bulan'], format = '%Y-%b')
otorcycle_data = motorcycle_data.drop(['Bulan', 'TAHUN'], axis = 1)
otorcycle_data
```

```python
car_data['MAR'].replace('8-', 8, inplace = True)
features = ['JAN', 'FEB', 'MAR', 'APR', 'MAY', 'JUN', 'JUL','AUG', 'SEP', 'OCT', 'NOV', 'DEC']
for col in features:
    car_data[col].fillna(0, inplace = True)
    car_data[col].astype(int)
car_data
```

```python
sales_top_brand = pd.melt(car_data, id_vars = ['BRAND', 'TYPE MODEL', 'TAHUN', 'CATEGORY', 'CC', 'TRANS', 'FUEL',
        'GEAR RATIO', 'PS / HP', 'SPEED', 'CBU / CKD', 'ORIGIN\nCOUNTRY'],
        value_vars = ['JAN','FEB', 'MAR', 'APR', 'MAY', 'JUN', 'JUL', 'AUG', 'SEP', 'OCT', 'NOV',
        'DEC'],
        var_name = 'Bulan',
        value_name = 'Sales')
sales_top_brand['Tanggal'] = sales_top_brand['Bulan'] + ' ' + sales_top_brand['TAHUN'].astype(str)
sales_top_brand['Tanggal'] = sales_top_brand['TAHUN'].astype(str) + '-' + sales_top_brand['Bulan']
sales_top_brand.drop(['Bulan'],axis =1, inplace = True)

data = sales_top_brand
data= data.replace('HYBRI', 'HYBRID')
data= data.replace('ELECTRI', 'ELECTRIC')
data.rename(columns = {'TYPE MODEL' : 'TYPE_MODEL'}, inplace = True)
```

```python
car_data = car_data.replace('-', np.nan)
car_data = car_data.replace(0, np.nan)
car_data = car_data.replace('4x4', '4X4')
car_data = car_data.replace('PICK UP', 'PICKUP')
car_data = car_data.replace('CRV', 'SUV')
car_data = car_data.replace(['SUV', 'CROSSOVER'], 'SUV/CROSSOVER')
car_data = car_data.replace()
car_data = car_data.replace('AFORDABLE ENERGY SAVING CARS 4X2', 'LCGC')
```

Step 3 - Data Exploration & Data Visualisation

1. Menggunakan Python dan query SQL untuk ekplor data dan mencari insight yang bisa didapatkan

```python
category_sales = car_data.pivot_table(values = 'Total', index = 'CATEGORY', aggfunc = 'sum')
category_sales.sort_values(by = 'Total', ascending = False, inplace = True)
category_sales = category_sales.head(5)
```

```python
top_brand_category = car_data.groupby(['BRAND', 'CATEGORY'])['Total'].sum().reset_index()
top_brand_category = top_brand_category.loc[top_brand_category['BRAND'].isin(['TOYOTA','DAIHATSU','HONDA', 'MITSUBISHI MOTORS'])]
top_brand_category.sort_values(['BRAND', 'Total'], ascending = False, inplace = True)
```

```python
plot_top_brand_category = px.bar(top_brand_category, x = 'BRAND', y = 'Total', color = 'CATEGORY', barmode = 'group')
plot_top_brand_category.update_xaxes(title = 'Sumber data : Whosales Gaikindo')
plot_top_brand_category.show()
```

```python
conn = sqlite3.connect('database_capstone_project')
data.to_sql('data', conn, if_exists = 'replace', index = False)
query_lcgc = '''
        SELECT
          Name,
          BRAND,
          CATEGORY,
          SUM(Sales) AS Total
        From
          data
        WHERE CATEGORY = 'LCGC' AND BRAND IN ('TOYOTA','DAIHATSU','HONDA', 'MITSUBISHI MOTORS')
        GROUP BY Name
        ORDER BY Total DESC
        LIMIT 5
...
```

Step 3 - Insight Analysis

1. Brand mobil tersukses di Indonesia
2. Category mobil paling diminati di Indonesia
3. Mobil paling diminati di Indonesia bedasarkan brand tersukses
4. Perkembangan mobil listrik di Indonesia
5. Analisis penjualan mobil dan motor dengan Indeks Penjualan Rill (IPR)