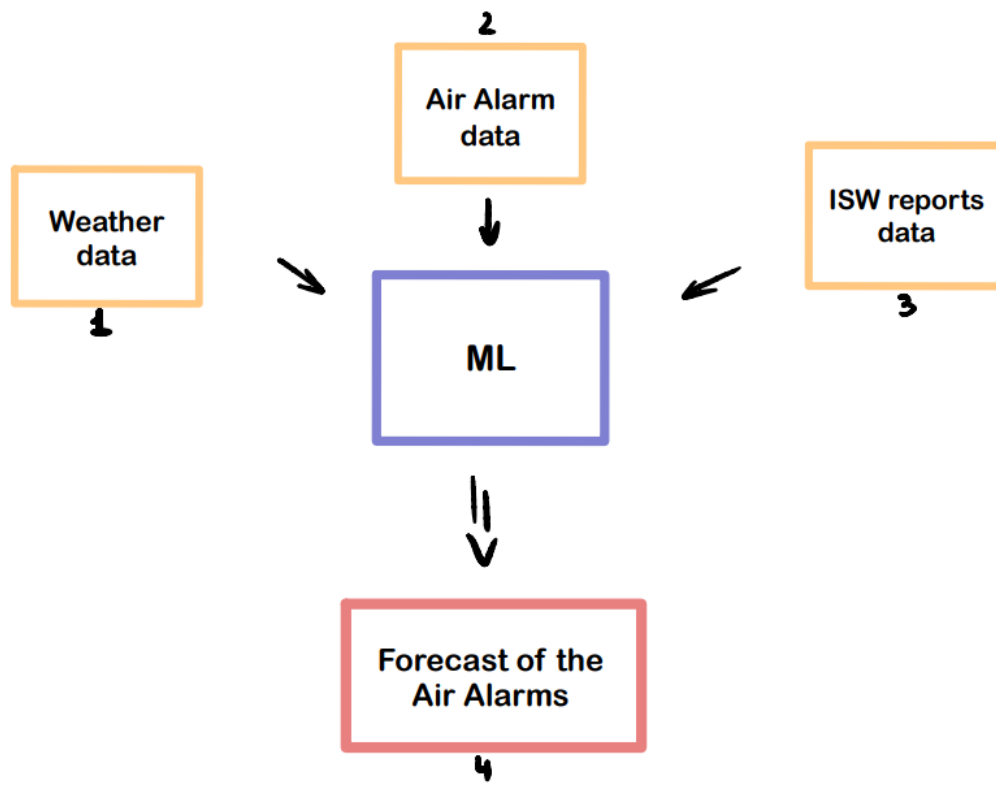


Report. Homework 2

A SYSTEM DIAGRAM



NOTE: all the data gathered from the period 2022-02-24 - 2023-01-25

1. Weather data gathered from the given period
2. Data on the air alarms from the past period
3. Data from the ISW website
4. Output of the module with prediction of the air alarm on hourly basis

ML - machine learning model which from the given preprocessed data executes the forecasting model

Part 2:

1. To get all the data for the time period 2022-02-24 - 2023-01-25
2. Preprocess all ISW reports data
 - create a pandas DataFrame to store the data
 - get rid of unnecessary information such as authors' names, links etc.
 - prepare functions
 - tokenize the data
 - filter stop words
 - stemming and lemmatizing
 - use TF-IDF to split the text into vector of words and calculate the inverse data frequency

Team 6:

Koval Svyatoslav

Kotliarenko Anastasiia

Semenets Daryna

Link on github: https://github.com/kovalsviat/naukma_coursework_team6

Screens

Weather API

The screenshot shows the 'Account details' page of the Visual Crossing Weather API. The page is divided into two main sections: 'Your details' and 'Your subscription'.

Your details

- Email:** kovalsvi... (masked) with a 'Change password' link.
- Key:** V8... (masked) with 'Copy' and 'Change' links.
- Usage:** 'Your recent usage' with a 'Details' link.
- Name & Address:** (masked) with a 'Change' link.
- Tax Info:** 'No tax ID specified' with a 'Change' link.

Your subscription

- Free:** 'Adding a payment method will convert this to the metered plan'. It shows a renewal date of 'Apr 13, 2023' and buttons for 'Cancel' and 'Change'.

Next invoice

Weather

```
df_weather.head()
```

| | city_latitude | city_longitude | city_resolvedAddress | city_address | city_timezone | city_tzoffset | day_datetime | day_datetimeEpoch | day_tempmax | day_tempm |
|---|---------------|----------------|----------------------|------------------|---------------|---------------|--------------|-------------------|-------------|-----------|
| 0 | 49.4407 | 32.0637 | Черкаси, Україна | Cherkasy,Ukraine | Europe/Kiev | 2.0 | 2022-02-24 | 1645653600 | 4.9 | -0 |
| 1 | 49.4407 | 32.0637 | Черкаси, Україна | Cherkasy,Ukraine | Europe/Kiev | 2.0 | 2022-02-24 | 1645653600 | 4.9 | -0 |
| 2 | 49.4407 | 32.0637 | Черкаси, Україна | Cherkasy,Ukraine | Europe/Kiev | 2.0 | 2022-02-24 | 1645653600 | 4.9 | -0 |
| 3 | 49.4407 | 32.0637 | Черкаси, Україна | Cherkasy,Ukraine | Europe/Kiev | 2.0 | 2022-02-24 | 1645653600 | 4.9 | -0 |
| 4 | 49.4407 | 32.0637 | Черкаси, Україна | Cherkasy,Ukraine | Europe/Kiev | 2.0 | 2022-02-24 | 1645653600 | 4.9 | -0 |

5 rows × 11 columns

Alarms

```
df_alarms.head()
```

| | id | region_id | region_title | region_city | all_region | start | end | clean_end | intersection_alarm_id |
|---|----|-----------|--------------|-------------|------------|---------------------|---------------------|---------------------|-----------------------|
| 0 | 2 | 3 | Вінниччина | Вінниця | 0 | 2022-02-25 22:55:42 | 2022-02-25 23:41:53 | 2022-02-25 23:41:53 | NaN |
| 1 | 4 | 12 | Львівщина | Львів | 0 | 2022-02-26 06:26:17 | 2022-02-26 07:15:28 | 2022-02-26 07:15:28 | NaN |
| 2 | 5 | 14 | Одещина | Одеса | 0 | 2022-02-26 07:16:58 | 2022-02-26 07:47:03 | 2022-02-26 07:47:03 | NaN |
| 3 | 6 | 6 | Житомирщина | Житомир | 0 | 2022-02-26 08:05:54 | 2022-02-26 09:36:36 | 2022-02-26 09:36:36 | NaN |
| 4 | 7 | 3 | Вінниччина | Вінниця | 0 | 2022-02-26 08:39:39 | 2022-02-26 10:42:41 | 2022-02-26 10:42:41 | NaN |

```
df_alarms.shape
```

```
(19933, 9)
```

Regions

```
df_regions.head()
```

| | region | center_city_ua | center_city_en | region_alt | region_id |
|---|------------------|----------------|----------------|------------------|-----------|
| 0 | АР Крим | Сімферополь | Simferopol | Крим | 1 |
| 1 | Вінницька | Вінниця | Vinnytsia | Вінниччина | 2 |
| 2 | Волинська | Луцьк | Lutsk | Волинь | 3 |
| 3 | Дніпропетровська | Дніпро | Dnipro | Дніпропетровщина | 4 |
| 4 | Донецька | Донецьк | Donetsk | Донеччина | 5 |

```
df_regions.shape
```

```
(25, 5)
```

ISW 2022-02-24 - 2023-01-25



0 / studiing / hw2 / 0_isw_data

..

april_01_2022__russian_offensive_campaign_assessment_april_1.html

april_02_2022__russian_offensive_campaign_assessment_april_2.html

april_03_2022__russian_offensive_campaign_assessment_april_3.html

april_04_2022__russian_offensive_campaign_assessment_april_4.html

april_05_2022__russian_offensive_campaign_assessment_april_5.html

april_06_2022__russian_offensive_campaign_assessment_april_6.html

april_07_2022__russian_offensive_campaign_assessment_april_7.html

april_08_2022__russian_offensive_campaign_assessment_april_8.html

april_09_2022__russian_offensive_campaign_assessment_april_9.html

april_10_2022__russian_offensive_campaign_assessment_april_10.html