This dataset is related to Dengue disease patient, so I want to represent life cycle as per test sample per day. So basically this module represents the scene of improvement in the patient's body.

In [1]:

```
# importing required model

# for dataFrame
import pandas as pd

# for numerical operation like array, matrix and advance calculation
import numpy as np

# for data visualization perpose
import matplotlib.pyplot as plt
import os
# for ignore unwanted error
import warnings
warnings.filterwarnings("ignore")

#--- Model---
from sklearn.linear_model import LogisticRegression

#--- Result---
from sklearn.metrics import classification_report, confusion_matrix, accuracy_score

#--- train/test data---
from sklearn.model_selection import train_test_split
from random import randrange
from sklearn import svm
from sklearn.metrics import accuracy_score
```

In [2]:

```
# data reading from system csv format
# and convert to DataFrame---df
```

In [3]:

```
data = pd.read_csv(r'D:\\AryanHospitalDengue.csv')
df = pd.DataFrame(data)
df
```

Out[3]:

	index	Timestamp	Name	AGE	Temp	RBC	Hmgbn	Leukocyte	neutrophils	lymphocytes
0	1	03-01-2020	ADARSH	26	104	4.49	12.60	3300	77	15
1	2	04-01-2020	ADARSH	26	103	4.54	12.46	1900	69	27
2	3	05-01-2020	ADARSH	26	104	4.84	12.16	2400	63	30
3	4	06-01-2020	ADARSH	26	100	4.65	12.46	3700	48	45
4	5	07-01-2020	ADARSH	26	98	4.70	13.13	6300	34	58
...	...	...	...	...	...	...	...	...	...	..
619	620	13-09-2021	PEETER	29	100	4.65	13.12	3700	48	45
620	621	14-09-2021	PEETER	29	98	4.17	13.30	6300	34	58
621	622	15-09-2021	PEETER	29	98	4.87	12.80	5100	25	65
622	623	16-09-2021	PEETER	29	98	4.74	13.50	4400	33	56
623	624	17-09-2021	PEETER	29	98	5.10	13.70	6400	54	40

624 rows × 23 columns

In [4]:

```
# data information check
# df.info
```

In [5]:

```
# data information check
# df.info()
```

In [6]:

```
# Data type checking from describe function-- basically only read numerical data
df.describe()
```

Out[6]:

	index	AGE	Temp	RBC	Hmgbn	Leukocyte	neutrophils
count	624.000000	624.000000	624.000000	624.000000	624.000000	624.000000	624.000000
mean	312.500000	35.230769	100.298077	4.610096	13.029615	4187.500000	51.009615
std	180.277564	13.846137	2.566158	0.231534	0.514534	1570.045904	18.090460
min	1.000000	16.000000	98.000000	3.840000	12.160000	1900.000000	24.000000
25%	156.750000	26.000000	98.000000	4.470000	12.600000	3075.000000	33.000000
50%	312.500000	32.000000	99.000000	4.640000	13.120000	4050.000000	51.000000
75%	468.250000	42.000000	103.000000	4.740000	13.500000	5400.000000	66.000000
max	624.000000	66.000000	104.000000	5.280000	13.900000	6400.000000	78.000000

8 rows × 21 columns

In [7]:

```
# data reading of row
df.iloc[:1].values
```

Out[7]:

```
array([[1, '03-01-2020', 'ADARSH', 26, 104, 4.49, 12.6, 3300, 77, 15, 6,
        2, 0, 0.8, 38.4, 85.5, 28.1, 32.8, 0.78, 84, 66, 20.0, 0.0]],
      dtype=object)
```

In [8]:

```
# column name reading
df.columns
```

Out[8]:

```
Index(['index', 'Timestamp', 'Name', 'AGE', 'Temp', 'RBC', 'Hmgbn',
       'Leukocyte', 'neutrophils', 'lymphocytes', 'monocytes', 'eosinophil
s',
       'basophils', 'ESR', 'PCV', 'MCV', 'MCH', 'MCHC', 'Platelet', 'SGO
T',
       'SGPT', 'USG_SCR', 'Serum_Creat'],
      dtype='object')
```

In [9]:

```
# columns creating for sample testing and predicting

df['target1'] = df.apply(lambda row: row.Leukocyte <=4000, axis = 1)
df['target2'] = df.apply(lambda row: row.Platelet >=1.4, axis = 1)
df.head()
```

Out[9]:

	index	Timestamp	Name	AGE	Temp	RBC	Hmgbn	Leukocyte	neutrophils	lymphocytes
0	1	03-01-2020	ADARSH	26	104	4.49	12.60	3300	77	15
1	2	04-01-2020	ADARSH	26	103	4.54	12.46	1900	69	27
2	3	05-01-2020	ADARSH	26	104	4.84	12.16	2400	63	30
3	4	06-01-2020	ADARSH	26	100	4.65	12.46	3700	48	45
4	5	07-01-2020	ADARSH	26	98	4.70	13.13	6300	34	58

5 rows × 25 columns

In [10]:

```
# after columns creating values is filled True & False, so i replace the value from o ar

def target1(value):
    if value <= 4000:
        return 1
    else:
        return 0

def target2(value):
    if value <= 1.4:
        return 1
    else:
        return 0

df['target1'] = df['Leukocyte'].map(target1)
df['target2'] = df['Platelet'].map(target2)
# df1['Detected'] = df1['Temp'].map(Temp)

display(df.head())
```

	index	Timestamp	Name	AGE	Temp	RBC	Hmgbn	Leukocyte	neutrophils	lymphocytes
0	1	03-01-2020	ADARSH	26	104	4.49	12.60	3300	77	15
1	2	04-01-2020	ADARSH	26	103	4.54	12.46	1900	69	27
2	3	05-01-2020	ADARSH	26	104	4.84	12.16	2400	63	30
3	4	06-01-2020	ADARSH	26	100	4.65	12.46	3700	48	45
4	5	07-01-2020	ADARSH	26	98	4.70	13.13	6300	34	58

5 rows × 25 columns

In [11]:

```
# df['Output'] = df.apply(lambda row: row.Leukocyte_stats or row.Pt_stats, axis = 1)
# df1.drop(columns = 'Unnamed: 28', axis=1)
# df1.drop(columns = 'DISCHARE', axis=1)

# columns to columns operations--- logic gate--OR operator apply for dangue test detecte

df['Detected'] = df.target1 | df.target2
df[['Temp','Leukocyte','Platelet','target1','target2','Detected']]
```

Out[11]:

	Temp	Leukocyte	Platelet	target1	target2	Detected
0	104	3300	0.78	1	1	1
1	103	1900	0.53	1	1	1
2	104	2400	0.43	1	1	1
3	100	3700	0.35	1	1	1
4	98	6300	0.28	0	1	1
...	...	...	...	...	...	...
619	100	3700	0.85	1	1	1
620	98	6300	0.38	0	1	1
621	98	5100	0.30	0	1	1
622	98	4400	0.50	0	1	1
623	98	6400	1.48	0	0	0

624 rows × 6 columns

converting the data for visualize Medical Test Report By HEATMAP

if people suffering the Dengue, that time PLATELETS going to down below 1.5 Lac, LEUKOCYTE decreasing the body below 4000k and TEMPRATURE (fever) continue repeating per day after 6 Hrs. These are main when the peoplr infected.

In [12]:

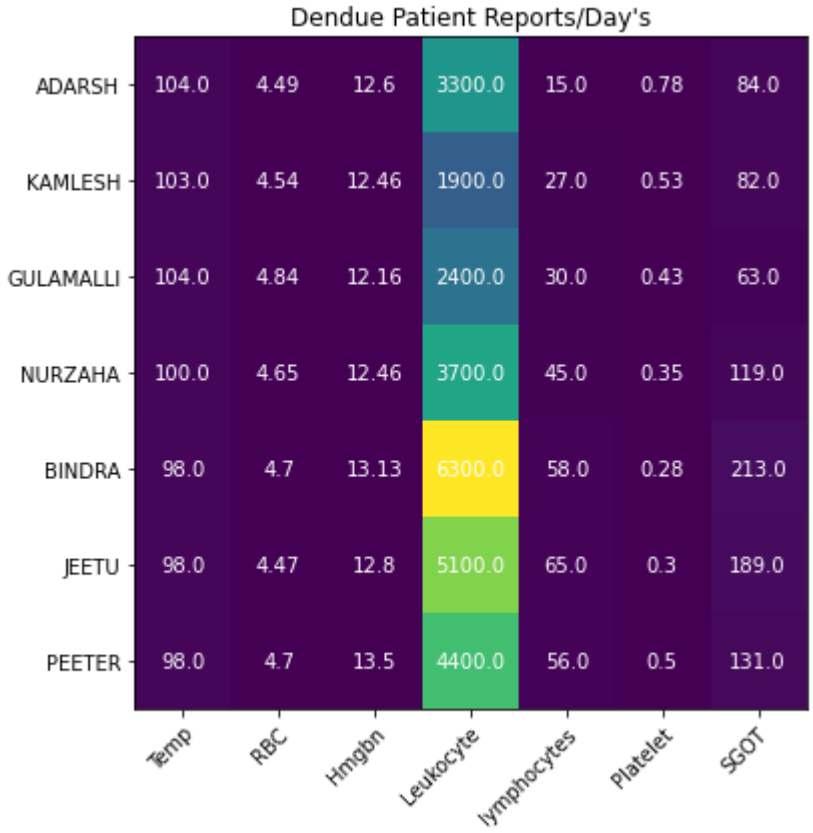
```
report = df[['Temp','RBC','Hmgbn','Leukocyte','lymphocytes','Platelet','SGOT']].head(7)
report
```

Out[12]:

```
array([[ 104,    4,   12, 3300,   15,    0,   84],
       [ 103,    4,   12, 1900,   27,    0,   82],
       [ 104,    4,   12, 2400,   30,    0,   63],
       [ 100,    4,   12, 3700,   45,    0,  119],
       [  98,    4,   13, 6300,   58,    0,  213],
       [  98,    4,   12, 5100,   65,    0,  189],
       [  98,    4,   13, 4400,   56,    0,  131]])
```

In [32]:

```
Test_Name = ['Temp','RBC','Hmgbn','Leukocyte','lymphocytes','Platelet','SGOT']
Paitent_Name = df['Name'].head(50).drop_duplicates().values
report = df[['Temp','RBC','Hmgbn','Leukocyte','lymphocytes','Platelet','SGOT']].head(7)

fig, ax = plt.subplots(figsize=(10, 6))
im = ax.imshow(report)

#Show all ticks and label them with the respective list entries
ax.set_xticks(np.arange(len(Test_Name)), labels=Test_Name)
ax.set_yticks(np.arange(len(Paitent_Name)), labels=Paitent_Name)

# Rotate the tick labels and set their alignment.
plt.setp(ax.get_xticklabels(), rotation=45, ha="right",rotation_mode="anchor")

#Loop over data dimensions and create text annotations.
for i in range(len(Test_Name)):
    for j in range(len(Paitent_Name)):
        text = ax.text(j, i, report[i, j],
                       ha="center", va="center", color="w")

ax.set_title("Dendue Patient Reports/Day's")
fig.tight_layout()
plt.show()
```



In [14]:

```
# Removing the Nul Value if available in my dataset and count the total nul value
print("How many null values in the Diabetes DataSet:",df.isnull().any().sum())
```

```
How many null values in the Diabetes DataSet: 0
```

In [15]:

```
# inside dataframe values iterating in array format
df.columns
```

Out[15]:

```
Index(['index', 'Timestamp', 'Name', 'AGE', 'Temp', 'RBC', 'Hmgbn',
       'Leukocyte', 'neutrophils', 'lymphocytes', 'monocytes', 'eosinophil
s',
       'basophils', 'ESR', 'PCV', 'MCV', 'MCH', 'MCHC', 'Platelet', 'SGO
T',
       'SGPT', 'USG_SCR', 'Serum_Creat', 'target1', 'target2', 'Detecte
d'],
      dtype='object')
```

In [16]:

```
df1=df[['Temp','RBC','Hmgbn','Leukocyte','lymphocytes','Platelet','SGOT','SGPT']].values
df1
df
```

Out[16]:

	index	Timestamp	Name	AGE	Temp	RBC	Hmgbn	Leukocyte	neutrophils	lymphocytes
0	1	03-01-2020	ADARSH	26	104	4.49	12.60	3300	77	15
1	2	04-01-2020	ADARSH	26	103	4.54	12.46	1900	69	27
2	3	05-01-2020	ADARSH	26	104	4.84	12.16	2400	63	30
3	4	06-01-2020	ADARSH	26	100	4.65	12.46	3700	48	45
4	5	07-01-2020	ADARSH	26	98	4.70	13.13	6300	34	58
...	...	...	...	...	...	...	...	...	...	..
619	620	13-09-2021	PEETER	29	100	4.65	13.12	3700	48	45
620	621	14-09-2021	PEETER	29	98	4.17	13.30	6300	34	58
621	622	15-09-2021	PEETER	29	98	4.87	12.80	5100	25	65
622	623	16-09-2021	PEETER	29	98	4.74	13.50	4400	33	56
623	624	17-09-2021	PEETER	29	98	5.10	13.70	6400	54	40

624 rows × 26 columns

In [17]:

```
# Pridicting the value and fixing the area which are required for testing and training t
x=  df1[:,:]
x
```

Out[17]:

```
array([[104.  ,   4.49,  12.6 , ...,   0.78,  84.  ,  66.  ],
       [103.  ,   4.54,  12.46, ...,   0.53,  82.  ,  57.  ],
       [104.  ,   4.84,  12.16, ...,   0.43,  63.  ,  50.  ],
       ...,
       [ 98.  ,   4.87,  12.8 , ...,   0.3 , 189.  ,  90.  ],
       [ 98.  ,   4.74,  13.5 , ...,   0.5 , 131.  ,  75.  ],
       [ 98.  ,   5.1 ,  13.7 , ...,   1.48,  56.  ,  35.  ]])
```

In [18]:

```
# fixing my Target and column location
y = df.iloc[:,-1]
y
```

Out[18]:

```
0      1
1      1
2      1
3      1
4      1
      ..
619    1
620    1
621    1
622    1
623    0
Name: Detected, Length: 624, dtype: int64
```

In [19]:

```
print(x)
```

```
[[104.     4.49  12.6  ...   0.78  84.    66.  ]
 [103.     4.54  12.46 ...   0.53  82.    57.  ]
 [104.     4.84  12.16 ...   0.43  63.    50.  ]
 ...
 [ 98.     4.87  12.8  ...   0.3  189.    90.  ]
 [ 98.     4.74  13.5  ...   0.5  131.    75.  ]
 [ 98.     5.1   13.7  ...   1.48  56.    35.  ]]
```

In [20]:

```
print(y)
```

```
0      1
1      1
2      1
3      1
4      1
      ..
619    1
620    1
621    1
622    1
623    0
Name: Detected, Length: 624, dtype: int64
```

apply the LogisticRegression module and some more related for train and test regarding

In [21]:

```
# apply the train test parameters
x_train,x_test, y_train, y_test = train_test_split(x,y, test_size = 0.2, random_state =
```

In [22]:

```
#randomly check the data
x_train
```

Out[22]:

```
array([[103.  ,   4.49,  12.26, ...,   1.78,  84.  ,  66.  ],
       [104.  ,   4.49,  12.6 , ...,   0.78,  84.  ,  66.  ],
       [104.  ,   4.83,  13.9 , ...,   0.43,  63.  ,  50.  ],
       ...,
       [ 98.  ,   4.88,  13.7 , ...,   2.48,  56.  ,  35.  ],
       [104.  ,   4.49,  12.6 , ...,   0.78,  84.  ,  66.  ],
       [ 98.  ,   4.88,  13.7 , ...,   1.48,  56.  ,  35.  ]])
```

In [23]:

```
#randomly check the data
y_train
```

Out[23]:

```
576    1
312    1
122    1
564    1
409    1
      ..
277    1
9      1
359    0
192    1
559    0
Name: Detected, Length: 499, dtype: int64
```

In [24]:

```
x_test
```

Out[24]:

```
array([[9.800e+01, 4.170e+00, 1.313e+01, 6.300e+03, 5.800e+01, 2.800e-0
1,
        2.130e+02, 8.600e+01],
       [1.000e+02, 4.450e+00, 1.246e+01, 3.700e+03, 4.500e+01, 3.500e-0
1,
        1.190e+02, 5.600e+01],
       [1.030e+02, 4.390e+00, 1.260e+01, 3.300e+03, 1.500e+01, 1.780e+0
0,
        8.400e+01, 6.600e+01],
       [1.030e+02, 4.540e+00, 1.246e+01, 1.900e+03, 2.700e+01, 5.300e-0
1,
        8.200e+01, 5.700e+01],
       [9.800e+01, 4.300e+00, 1.313e+01, 6.300e+03, 5.800e+01, 3.800e-0
1,
        2.130e+02, 8.600e+01],
       [9.800e+01, 4.700e+00, 1.330e+01, 6.300e+03, 5.800e+01, 2.800e-0
1,
        2.130e+02, 8.600e+01],
```

In [25]:

```
y_test
```

Out[25]:

```
356    1
299    1
424    1
313    1
428    1
      ..
465    1
343    0
361    1
75     1
10     1
Name: Detected, Length: 125, dtype: int64
```

In [26]:

```
# model develop

#Algorithm call for Data Fit  -- LogisticRegression
# Data fit model -- fit intercept = True
# Attribute call --- c=1e15
logistic_model = LogisticRegression(fit_intercept = True, C=1e15)

# # result test
logistic_model.fit(x_train,y_train)

# after fited data values predicted
predicted = logistic_model.predict(x_test)
```

In [27]:

```
# predicted value after testing & training
predicted
```

Out[27]:

```
array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 0, 1, 0, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 1, 0, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 1, 0, 1, 1, 1,
       1, 1, 1, 1, 1, 0, 1, 1, 1, 1, 1, 0, 1, 1, 1], dtype=int64)
```

In [28]:

```
#apply confusion matric for better predictin process
print("Confusion Metrix")
matrix = confusion_matrix(y_test,predicted)
print(matrix)
```

```
Confusion Metrix
[[ 12   0]
 [  0 113]]
```

In [29]:

```
# describe the details of Classification_Report

print("\nClassification_Report")
report = classification_report(y_test,predicted)
print(report)
```

```
Classification_Report
              precision    recall  f1-score   support

           0       1.00      1.00      1.00        12
           1       1.00      1.00      1.00       113

    accuracy                           1.00       125
   macro avg       1.00      1.00      1.00       125
weighted avg       1.00      1.00      1.00       125
```

In [30]:

```
# cheking the ACCURACY OF Implemented Machine Learning model
lr_accuracy = accuracy_score(y_test, predicted)
lr_accuracy
print("Logistic Regression Accuracy of Scikit Model: {:.2f}%".format(lr_accuracy*100))
```

```
Logistic Regression Accuracy of Scikit Model: 100.00%
```

After making project I want to check my model so, I puted the randam value from my dataset

In [31]:

```
s = [26,104,4.49,12.60,3300,0.78,84,66]   #-->1   Testing value sample of dangue patient
s1 =[26,98,4.88,13.70,6400,3.48,56,35]   # --> 0  Testing value sample of dangue patient

input_data = s
# changing the input_data to numpy array
input_data_as_numpy_array = np.asarray(input_data)

# reshape the array as we are predicting for one instance
input_data_reshaped = input_data_as_numpy_array.reshape(1,-1)

prediction = logistic_model.predict(input_data_reshaped)
print(prediction)

if (prediction[0] == 0):
  print("You haven't a Dengue...!")
else:
  print('You have a Dengue...!  Please meet your Doctor.')
```

```
[1]
You have a Dengue...!  Please meet your Doctor.
```

In [ ]:

```

```

In [ ]:

```

```

In [ ]:

```

```