Problem 2 -

Drugs are generally administered/prescribed by the physicians for a certain period of time or they are administered at regular intervals, but for various reasons patients might stop taking the treatment . Consider following example for better understanding
Let's say you get a throat infection, the physician prescribes you an antibiotic for 10 days, but you stop taking the treatment after 3 days because of some adverse events.
In the above example ideal treatment duration is 10 days but patients stopped taking treatment after 3 days due to adverse events. Patients stopping a treatment is called dropoff.
We want to study dropoff for "Target Drug", the aim is to generate insights on what events lead to patients stopping on "Target Drug".
Assume ideal treatment duration for "Target Drug" is 1 year, come up with analysis showing how drop-off rate is, dropoff rate is defined as number of patients dropping off each month.
Then come up with analysis to generate insights on what events are driving a patient to stop taking "Target Drug".

Code Explanation:

1. Data Filtering:
    - The dataset is filtered to include only the entries related to the "Target Drug" incidents.
2. Drop-off Rates:
    - The code calculates the drop-off rate by grouping the data by month and counting the number of unique patients who dropped off each month.
    - The drop-off rate is expressed as a percentage of patients dropped off each month.
    - If there are no instances of drop-off, a message is displayed.
3. Events Driving Drop-off:
    - The code identifies the events associated with patients who dropped off the "Target Drug" treatment.
    - A sample of the drop-off events is displayed.
    - The code counts the occurrences of each event and displays them along with the corresponding counts.
    - If no specific events are identified, a message is displayed.

RESULT:

Train Data:

- Drop-off Rate: The drop-off rate of 100.00% indicates that all patients in the train dataset stopped taking the "Target Drug" each month. This high drop-off rate suggests a significant discontinuation of the treatment among patients.
- Events driving drop-off: The sample of drop-off events shows that all the incidents are labelled as "TARGET DRUG." This indicates that the primary reason for patients stopping the treatment is directly related to the "Target Drug" itself. The count of 66322 instances further confirms the prevalence of this event driving drop-off.

Test Data:

- No patients have taken the "Target Drug" in the test dataset. This implies that there are no instances of the "Target Drug" treatment among the patients in the test dataset.