Expt 1:- Toy Problem.
(Camel Banana)

(Problem Formulation)

Theory:- A person has 3000 bananas and a camel. The person wants to transport the maximum no. of bananas to a destination which is 1000 Kms away, using the only camel as a mode of transportation.

* The camel cannot carry more than 1000 bananas at a time and eats a banana every km it travels. We have to find the maximum no. of bananas that can be transferred to the destination.

*** Logic:- (Algorithm)**

~~Source - Dest.~~

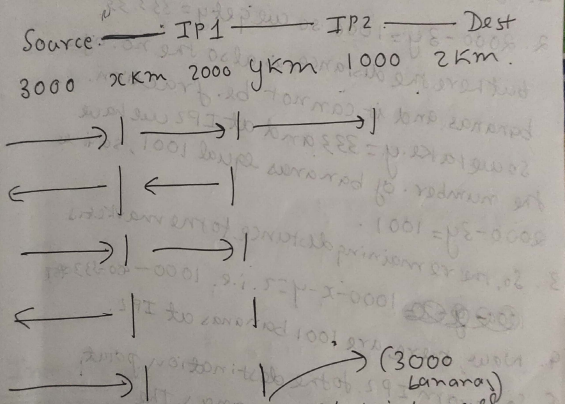
* Take the total bananas, distance and max. load capacity of camel.
* Take a variable base for no. of bananas lost
* take another variable start and take an initial condition where start = total.
* Run a loop for m i to range of total distance and take condition start > 0.
* Take start = start - total_capacity.
* Take condition start == 1. to check if camel does'nt move when it has 1 banana and decrement loss by 1

* Now increment lose by 2 as for moving backward and forward by one mile two bananas will be lost

* In the last trip, decrement lose by 1 as camel will not travel backward and assign (start = total - lose)

* If start == 0 break the loop and print start.

Solution:-



* To go from source to IP1 point camel has to take 5 trips (3 forward and 2 backward)

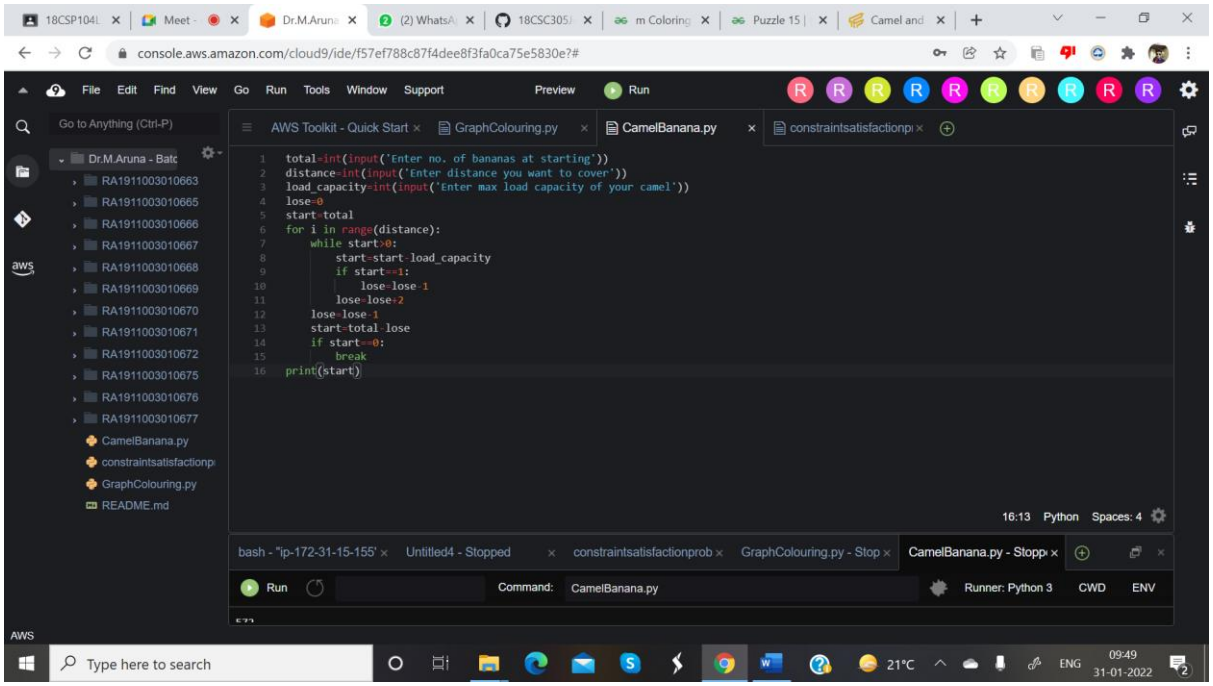
* To go from IP1 to IP2, camel has to take a total of 3 trips (2 forward and 1 backward) → (2000 bananas)

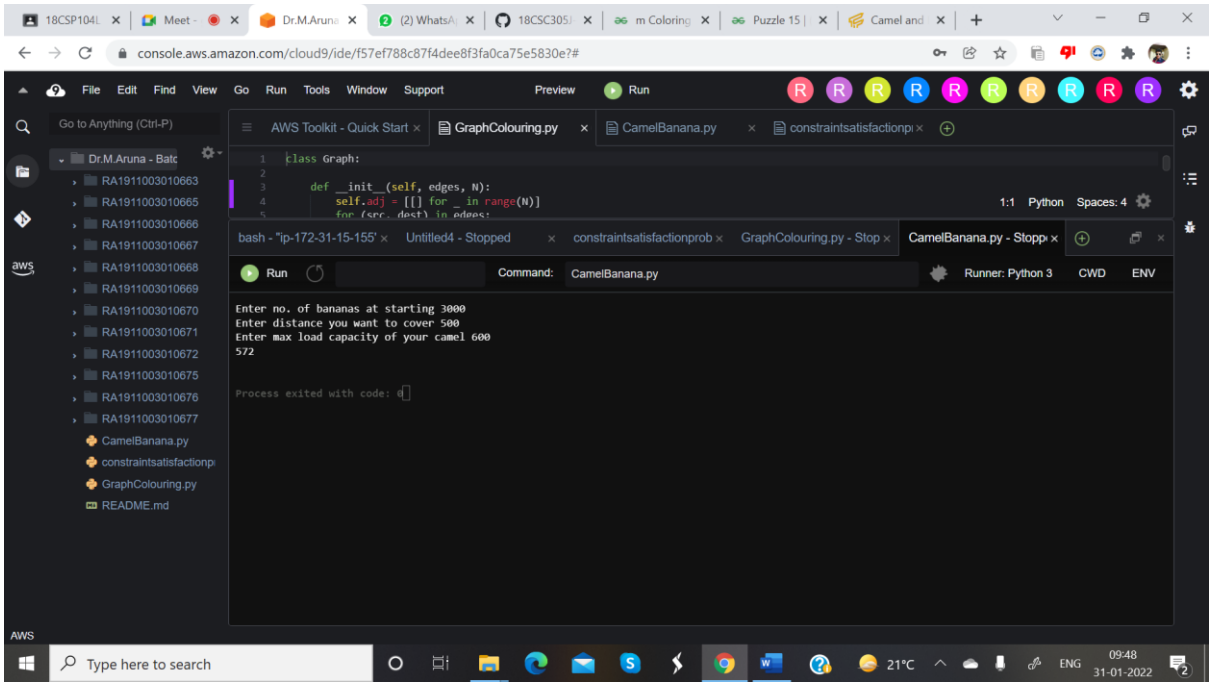
* To IP3 to destination, only 1 forward

* Source to IP1, 5x bananas and camel has 5 trips.
* IP1 to IP2, 3x bananas as x is distance and camel has 3 trips.
* From IP2 to destination it has 2 bananas.

Calculation:-

1. $3000-5x=2000$ so we get $x=200$.
2. $2000-3y=1000$ so we get $y=333.33$. but here the distance is also the no. of bananas and it cannot be fraction. so we take $y=333$ and at IP2 we have the number of bananas equal 1001, so it is $2000-3y=1001$.
3. So, the remaining distance to the market is $1000-x-y=?$ i.e. $1000-200-333=467$.
4. Now, there are 1001 bananas at IP2.
5. So, from IP2 to the destination point camel eats 467 bananas. The remaining bananas are $1001-467=534$.
6. So, the maximum no. of bananas that can be transferred is 534.





Result:-

The Toy Problem was successfully implemented in Python