

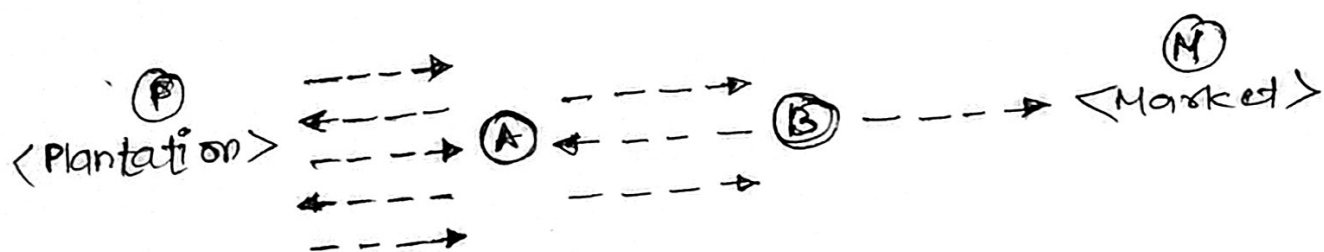
AIM: Camel and Banana Puzzle.

PROBLEM FORMULATION:

A person has 3000 bananas and a camel. The person wants to transport maximum number of bananas to a destination which is 1000 miles away, using only the camel as a mode of transportation. The camel cannot carry more than 1000 bananas at a time and eats a banana every mile it travels.

What is the maximum number of bananas that can be transferred to the destination using only camel?

PROBLEM SOLVING:



- one kilometer on section PA costs 5 bananas.
- one kilometer on section AB costs 3 bananas.
- one kilometer on section BM costs 1 bananas.

To save bananas, we make sure that the length of PA is less than the length AB and that the length of AB is less than the length of BM.

$$\text{length of PA} : 3000 - 5 \times (\text{PA}) = 2000$$
$$(\text{PA}) = 200 \text{ km}$$

$$\text{length of AB} : 2000 - 3 \times (\text{AB}) = 1000$$
$$(\text{AB}) = 333 \frac{1}{3} \text{ km}$$

$$\text{length of BM} = 1000 - 200 - 333 \frac{1}{3}$$
$$= 466 \frac{2}{3} \text{ km.}$$

ALGORITHM:

- for bananas $0 \rightarrow c$; the cost of moving 1 km = 1 banana.
 $C_B(BH)$

- for bananas $c+1 \rightarrow 2c$; the cost = 3 bananas.
 $C_B(AB)$

- for bananas $2c+1 \rightarrow 3c$; the cost = 5 bananas
 $C_B(PA)$

→ calculate the total number of kms the camel can reach

→ for i in range $(1, n/c+1)$

$$\text{travel} += \frac{c}{2^i - 1}$$

→ bananas carried to other side
= travel - 1000

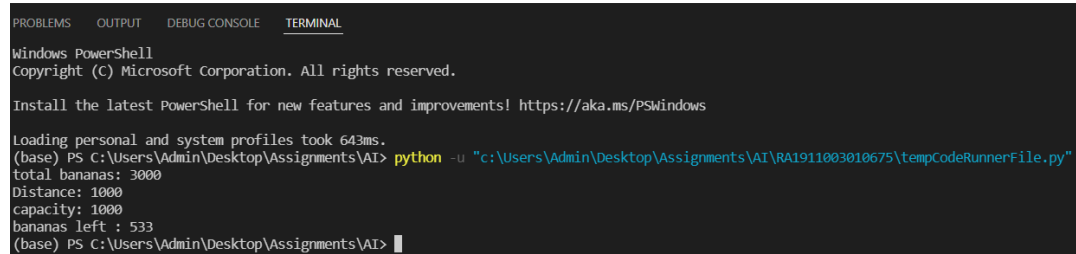
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Program :

```
n=int(input('total bananas: '))
distance=int(input('Distance: '))
c=int(input('capacity: '))
t = int(n/c)
travel = 0
for i in range(1,t+1):
    travel = travel + (c/((2*i) - 1))

start = int(travel - 1000)
print('bananas left :',start)
```

Output:



The screenshot shows a Windows PowerShell terminal window with the following text:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

Loading personal and system profiles took 643ms.
(base) PS C:\Users\Admin\Desktop\Assignments\AI> python -u "c:\Users\Admin\Desktop\Assignments\AI\RA1911003010675\tempCodeRunnerFile.py"
total bananas: 3000
Distance: 1000
capacity: 1000
bananas left : 533
(base) PS C:\Users\Admin\Desktop\Assignments\AI> █
```