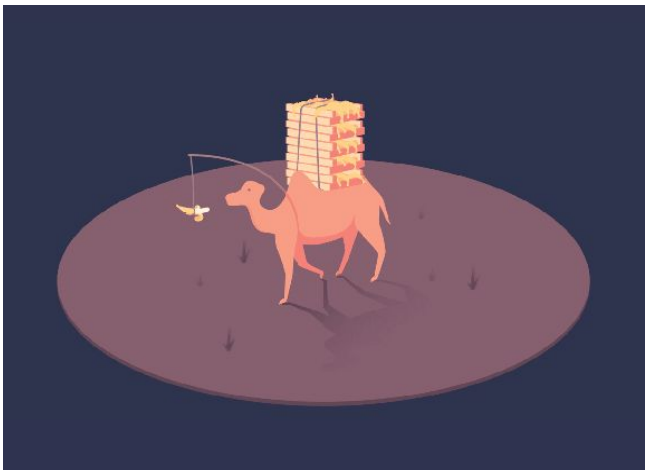
Cotta&Cush

Software Engineering Internship Challenge

QUESTION 1:



One of our clients is a banana plantation owner who has a certain number of bananas, *x*, he wants to sell at the market that is *y* km away. He has *z* camels that can carry 1000 bananas at a time, but each camel eats *k* bananas for every km it travels.

Assume the following constraints:

Number of bananas *x*: *x >= 3000*
Number of camels *z*: *1 <= z <= 10*
Number of bananas a camel eats for each km travelled *k*: *1 <= k <=10*
Distance to market *y* (*in km*): *1000 <= y <= 10000*

Develop a mathematical basis to determine the following:

a. The maximum number of bananas the owner will be able to sell in the market.
b. The maximum number of camels for maximum output when there are multiple camels.

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QUESTION 2:

Develop an application to determine the parameter in Question 1a using the constraints as inputs. The application could be developed using any language/technology of your choice.

We encourage you to adhere to software best design practices like Object Oriented Programming, MVC framework or any other relevant design paradigm.

We discourage adding unnecessary complexity and over-engineering.

Additional Instructions on the expectation of the challenge

- Workflow/Delivery Plan: Well-defined work planning is the bedrock of successful project delivery. We will, therefore, expect you to work using the following work plan:

TASK	DEADLINE
Send us your work schedule	June 19, 2019 11:59pm
Send us the first progress report based on the deliverables defined in the work schedule.	June 22, 2019 6:00pm
Send us the second progress report	June 24, 2019 6:00pm
Submit the final work	June 26, 2019 11:59pm

NB: All times are West African Time (GMT + 1)

- Documentation of Solution to Question 1
    - Your solution should be provided in a methodical fashion.

    - It should reflect the details of the generic solution that your implementation (i.e. solution to Question 2) is based on.
    - It should also have a detailed explanation of any 4 test cases of your choice (ensure the inputs of your test cases are within the given constraints).
- Documentation of the implementation should contain design overview, user manual and documentation.
- All the documentation should be in PDF format.
- The application file and source files should be zipped. You are encouraged to use a dependency/package manager to ease the challenges of dependency resolution.
- All submissions should be sent to **careers@cottacush.com**
- Failure to make any of the submissions implies that you are no longer interested in the role.
- Failure to meet any of the submission deadline will lead to disqualification.
- Failure to adhere strictly to what is required of you as stated in the instructions above will lead to disqualification.

NB: Honesty and hard work are a big part of our culture at Cotta & Cush Limited. We expect applicants to return with submissions that reflect their actual work.

In view of this, we will disqualify any applicant with traces or appearance of foul play.