

[Bonus]Froggy The Frog

ZPRAC-16-17-LabExam-2_Session-1

[BONUS] *Froggy The Frog* [Extra 10Marks]

ANNOUNCEMENT: Up to 20% marks will be allotted for good programming practice. These include

- Comments for non trivial code
 - Indentation: Align your code properly
 - Meaningful variable names
-

Froggy the frog has to cross a lake. There are n stones on the lake on which it can jump. Each stone has a number, either 1 or 2 or 3. If Froggy is on a stone with number 1, it can jump from the stone only to a stone with number 2. Similarly, from a stone with number 2 only to a stone with number 3 and from a stone with number 3 only to a stone with number 1. Also, it can jump only in the forward direction. Jumping from i th stone to j th stone requires $(j-i)*(j-i)$ units of hardwork. Can you help Froggy the frog in finding the minimum amount of hardwork it has to do to reach the n th stone starting from the 1st stone. You can assume that it will always be possible to reach the n th stone. Initially Froggy is on the first stone which has the number 1.

INPUT:

n (1 integer, number of stones; $1 \leq n \leq 1000$)

1 3 2 .. (n integers denoting the numbers on the stones, first stone always have number 1)

OUTPUT:

Minimum Hardwork required in reaching to the n th stone

Example -

Input:

7

1 3 2 3 3 1 1

Output:

12

Explanation -

Optimal path is - (stone numbers) -- 1 -> 3 -> 5 -> 7

answer is $(3-1)*(3-1) + (5-3)*(5-3) + (7-5)*(7-5)$

HINT - Try to find out the minimum hardwork required to reach each stone. Does finding minimum hardwork of n^{th} stone depends on minimum hardwork of previous $n-1$ stones?

NOTE - Your solution should be efficient to obtain full marks.