ALGO CODES

You are playing a tye of “treasure hunt” game with your friends. Suppose there are n number of boxes available, where only one box contains the treasure and the rest are empty. The boxes are placed in a circular fashion, numbered from 1 to n in clockwise order. That is, moving from i-th box in clockwise manner by one position will end up to the (i + 1)-th box. And because of the circular pattern, moving from n-th box in clockwise manner by one position will end up to the first box. Now the goal of the game is that, each of you will choose a number m, and apply it to the circular arrangement of the boxes by some rules (defined below), and end up to a single box after applying the rules. If that box contains the treasure, then the person wins. We will simulate the rules of the game using computer program and determine which box does one end up with the chosen integer m. The rules of the game are as follows: • Step 1: Start at the first box • Step 2: Count the next m boxes in the clockwise direction including the starting box. The counting may wrap around the circle and repeat some boxes more than once. • Step 3: The last box that is counted, are removed from the arrangement. • Step 4: If there is > 1 box in the circle, go to Step 2 starting with the box immediately clockwise of the last removed box. Otherwise the last remaining box is the final box, which will be opened for the treasure. Given the number of boxes n and an integer m, your task is to implement a recursive algorithm (no marks for non-recursive solution) that determines the box number after the final iteration. The following is an example with 5 boxes (n = 5), and the chosen integer m = 2. The final box number is 3. The sequence of steps are shown in the diagram below. Eliminatingboxes are shown in red in each step.

Examples: (Input) n = 5, m = 2 (Input) n = 6, m = 5 (Output) 3 (Output) 1

ANSWER FOR THIS CODE WE SHOULD RELATE THE NEW INDICES

#include <stdio.h>

int winner(int n,int k)

{

if(n==1) return 0;

else return((winner(n-1,k)+k)%n);

}

int main() {

int n,k,q;

printf("input:");

scanf("%d",&n);

printf("value of k:");

scanf("%d",&k);

q=winner(n,k)+1;

printf("answer is %d",q);

return 0;

}