Grand Reward

Grand is one of the best companies every month , The manager chooses the best employee and rewards him. this month there are 4 employees do the same effort Sameh , Ameen , Shafeek and Atef but the manager will give reward to one only ,He got a good idea

let's say that the 4 employees will stand in someway like that every employe in one of the four sides
east(Sameh) , north(Ameen) , west(Shafik) and south(Atef)
then , there's a square matrix of width and height N*N among them first element in matrix will start with 1 then next element increase by 1 from left to right and from top
to down until n*n like that

```
          Ameen
          1 2 3
  Sameh  4 5 6  Shafeek
          7 8 9
           Atef
```

then let's rotate the matrix T turns 90 degrees clockwise per turn and the winner is the person who the sum of his side is the greatest

for example let's say that T=4 and N=3 ,

```
  (first rotate)              (second rotate)            (third rotate)             (forth rotate)
       Ameen                       Ameen                      Ameen                      Ameen
       7 4 1                       9 8 7                      3 6 9                      1 2 3
Sameh  8 5 2  Shafeek       Sameh  6 5 4  Shafeek      Sameh  2 5 8  Shafeek      Sameh  4 5 6 Shafeek
       9 6 3                       3 2 1                      1 4 7                      7 8 9
       Atef                        Atef                       Atef                       Atef
```

Atef wins because the sum of his side is 7+8+9=24 and it's the greatest

It's your job now create a program that do this job.

Input

Two integers the size of the matrix N(3≤N≤25) , and the number of turns (1≤T≤10^9).

Output

The final result of the matrix and the employee who will get the reward (Sameh,Ameen,Shafeek,Atef).

Example

Input:
3 4

Output:
Atef
1 2 3
4 5 6
7 8 9

Input:
4 3

Output:
Shafeek
4 8 12 16
3 7 11 15
2 6 10 14
1 5 9 13