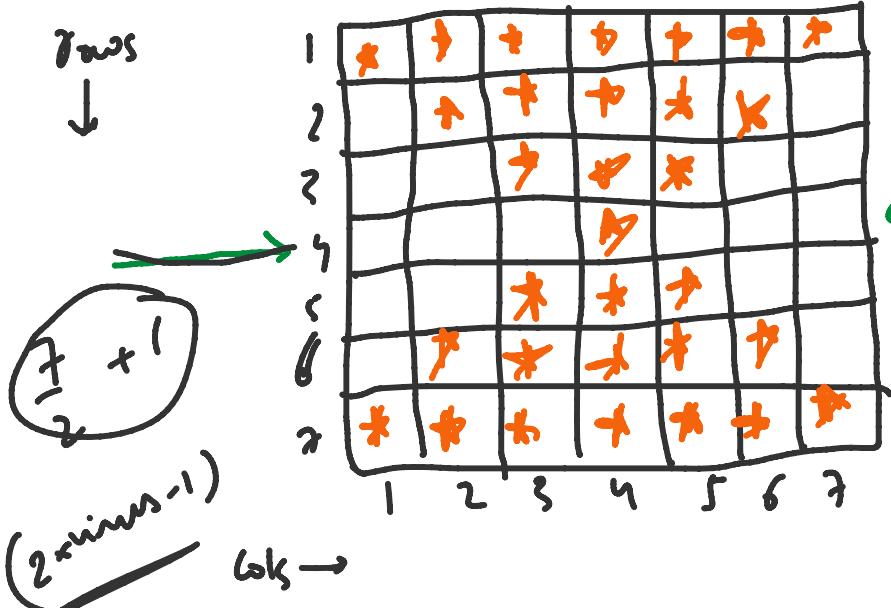


Hourglass Pattern

02 June 2023 19:11

7×7

$$n, \text{ lines} = 7.$$



$$\underline{\text{space}} = (\underline{\text{con.}} - 1)$$

$$\text{stars} = 2 * \underline{\text{lines}} - 1 = 7$$

$$2 * \underline{\text{lines}} - 1 - 2 =$$

$$2 * n = 1$$

$$2 * (4 - 0) - 1 = 7$$

$$2 * n = 2$$

$$2 * (4 - 1) - 1 = 5$$

$$- ?$$

② Identify Task

spaces, stars

lines = 4 (for half pattern)

c.g.n.	space	stars
1	0	7
2	1	5
3	2	3
4	3	1

$$2 * (\underline{\text{lines}} - (\underline{\text{c.g.n.}} - 1))$$

$$2 * (4 - (4 - 1))$$

$$2 * (\underline{\text{lines}} - \underline{\text{c.g.n.}} + 1)$$

$$\text{row}(1, \frac{n}{2} + 1)$$

row 1, 2

$$2 \times n = 3 \\ 2 \times (n-2) - 1 = 3$$

$$2 \times n = 4 \\ 2 \times (n-3) - 1 = 1$$

$$\begin{cases} n = 3 \\ n = 1 \end{cases}$$

$n = 4$

(1, 4)

$$\frac{n+1}{2}$$

1	*	*	*	*	*	*	*
2	*	*	*	*	*	*	*
3	*	*	*	*	*	*	*
4	*	*	*	*	*	*	*
5	*	*	*	*	*	*	*
6	*	*	*	*	*	*	*
7	*	*	*	*	*	*	*

$$\begin{array}{l} \text{row} \quad \text{col} \\ \left[\begin{array}{l} 2 \rightarrow 3 \\ 2 \rightarrow 4 \\ 2 \rightarrow 5 \end{array} \right] \\ \left[\begin{array}{l} 3 \rightarrow [4] \end{array} \right] \end{array}$$

$$n = 3$$

first star. $\leftarrow (n, n+1)$

$$\begin{cases} * \neq 1 \\ n \neq n \\ n \neq \left(\frac{n}{2} + 1\right) \end{cases}$$

Stars are missing when row is b/w $\rightarrow (1, \frac{n}{2} + 1)$ } \rightarrow rows.

Now, lets find out for how many columns.
Stars are missing.

first star $\rightarrow (r, r+1)$

col : L row is r, col is r+1

first col. if row is r , col is $r+1$

last star,

last col.

$$2 \times (\text{lines} - r) + r = 2 \times (5-3) + 3$$

$$2 \times (5-2) + 2$$

$\textcircled{8}$ $2 \times (r-u) + 4$ $\textcircled{6}$	$n=9$ $n=5$	$n=2$ $n=3$	$n=1$
$n+1 = 6$	$[3, 7]$ $[5, 6]$ $[5, 5] \rightarrow \textcircled{1}$	$n-2$ $n-1$	

$$n=6$$

$n=6$	12 13	$\frac{12}{2} + 1$ $\frac{11}{2} + 1$
$1 2 3 4 5 6 7 8 9 10 11$		
$* * * * * * * * * * * *$		
$* - - - - - *$		
$* - - - - *$		
$* - - - *$		
$* - - *$		
$* - *$		
$* -$		

$$\frac{1+r+row}{2} \quad 3 \quad \longleftrightarrow \quad 5 \quad \longleftrightarrow \quad 7 \quad \longleftrightarrow \quad 9$$

$$n=4 \qquad \qquad n=5 \qquad \qquad n=6 \qquad \qquad n=7$$

1 (row) → ↗ ↘ ↗ ↘

last row 1

n.

when $\text{row} \in (1, \frac{n}{2} + 1)$

then star will print for only.
 $\text{col} = \text{row}$.

last stars.

$2x(\text{lines} - \text{row}) + (\cdot r)$

$2x\text{lines} - (\cdot r)$ + $(\cdot r - 1)$

last star
that is printed.

else space.

$2x(\text{lines} - \text{row}) + 1$

$2x(5 - 2) + 1$ ~~+ 1~~

$6 + 1 = 7$

$7 + 1$
star

celsius to F.

→ [Temp in C = $\frac{5}{9}(F - 32)$]

. C = $\frac{9}{5}F + 32$.

$$\text{Temp in } F = \frac{9}{5}C + 32$$

int i-v = 0 ;

int f-v = 300 ;

int step = 20 ;

int ctr = i-v;

int (ctr <= 300)

while (ctr <= 300)

{ int temp-in-C = $\left(\frac{5}{9}\right)(ctr - 32)$;

cout << temp-in-C ;

ctr = ctr + step ;

ctr = ctr + step ;

y

g++ C++ (C++)

when

$\left(\frac{\text{int}}{\text{int}}\right) \rightarrow$

int . X

y
float.

$g \rightarrow \frac{5}{9}(0.55)$

$\left(\frac{5}{9}\right) \rightarrow 0.55..$

0.55 ..

$\rightarrow 0..$

$0 \times (F - 32)$

$0 \times (\underline{1} - \underline{3})$

either 1 or both operands are float.

$\rightarrow \frac{\text{int}}{\text{float}}$,
 $\downarrow \frac{\text{float}}{\text{int}}$

$\frac{\text{float}}{\text{int}}$

$\frac{\text{float}}{\text{float}}$

float

ff
AND

||
logical
OR.

!
logical
NOT.

AND Table .
 If all $1 \rightarrow 1$
else $0.$

0/F	0/F	0/F
1/T	0/F	0/F
1/F	1/T	0/F
1/T	1/T	1/T

first 1, 1, 1 $\rightarrow \text{F}$

OR.
 If any $1 \rightarrow 1.$
 else $0.$

1	L	OR
0/F	0/F	0/F
1/T	0/F	T/L
1/F	T/L	T/L

T/F	0/F	1/F
0/F	T/F	T/F
T	F	F

NOT → convert

false into T/F
& T/F into false

Not	
True	False
False	True

while (ans * ans <= num)
 { ans = ans + ! };

$$\text{ans} = \text{ans} - 1$$

→ Integral.
 inc.

while (ans * ans <= num)
 { ans = ans + 0.1;
 ans = ans - 0.1;
 , not d- .

$$+ 0.01$$

$$- 0.01$$

find sg. upto

↑ decimal places.

$$\sim r_n$$

time -
integ² -
 $inc = 1$.

7.1
outer

8
while
loop.

$i = 0$.
 which ($i \leftarrow$ decimal places)
 $// = float \cdot inc - \lfloor \frac{1}{10} \rfloor \dots$
 $\lfloor \frac{1}{10} \rfloor = 0.1$

$i = 0$
integ.

$i = 1 \rightarrow 1$ decimal
 $i = 2 \rightarrow 2$ decimal

which ($ans \times ans \cdot l = num$)
 $\{ ans = ans + inc \}$

$ans = ans - inc;$
 $- inc = inc / 10;$

1st round \rightarrow opens all doors

2nd round overdrives.

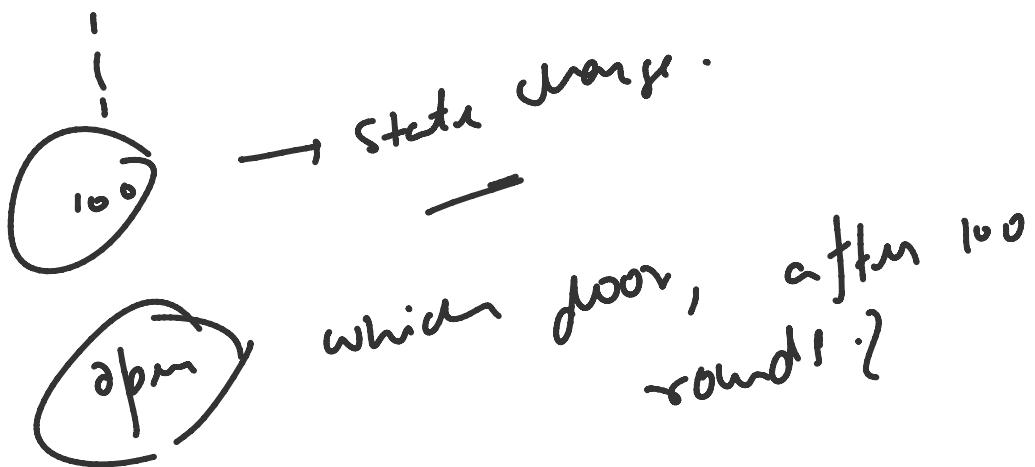
alters the state of door.

if door is open \rightarrow close it
 door \rightarrow open it

2^{nd} $\rightarrow 2, 4, 6, \dots - \overset{100}{\dots}$

3^{rd} $\rightarrow 3, 6, 9, 12, \dots \overset{99}{\dots}$

\vdots


state change
—
which door, after 10^0
rounds?