

> Basics of programming - level 2.

classmate

Date _____

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▶ pattern continues.

Full pyramid.

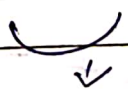
① rows = n = 5	r ₀ →	- - - - *
	r ₁ →	- - * *
② r ₀ → 4 SP, 1 *	r ₂ →	- * * *
r ₁ → 3 SP, 2 *	r ₃ →	- * * * *
r ₂ → 2 SP, 3 *	r ₄ →	* * * * *
r ₃ → 1 SP, 4 *		
r ₄ → 0 SP, 5 *		

row + 1 (Formula)
(For stars)

for Spaces = n - row - 1

Inverted full pyramid.

① rows = n = 4		
	r ₀ →	* * * *
② r ₀ → 0 Space, 4 *	r ₁ →	- * * *
r ₁ → 1 Space, 3 *	r ₂ →	- - * *
r ₂ → 2 " , 2 *	r ₃ →	- - - *
r ₃ → 3 " , 1 *		



row.
(for space)

n - row
(for stars)

Diamond pattern.

① just put the logic of both pyramid and Inverted pyramid.

and divide the (by two) input for not printing double of the size.

Hollow pyramid.

- Same concept of pyramid

- But, here we have to modify borders definitions.

- - - *

- - * - *

- * - - - *

* - - - - *

Hollow inverted pyramid.

- Same concept of inverted pyramid and change border conditions.

* - ~~First~~ - - *

- * - - - *

- - * - - *

- - - * *

- - - - *

HowHollow diag diamond

- just put the code of hollow pyramid and invertible pyramid hollow.

Flipped solid diamond.

firstly I have to solve first part \rightarrow

r_0	*	*	*	*	-	*	*	*	*
r_1	*	*	*	-	-	-	*	*	*
r_2	*	*	-	-	-	-	-	*	*
r_3	*	-	-	-	-	-	-	-	*
so ..	*	-	-	-	-	-	-	-	*
num = 8	*	*	-	-	-	-	-	*	*
$n = \frac{\text{num}}{2} = 4$	*	*	*	-	-	-	-	*	*
	*	*	*	*	-	-	-	*	*

steps

- ① print 1st inverted pyramid (stars)
- ② print full pyramid (spaces)
- ③ print 2nd inverted pyramid (stars)

formula for step ①

$n = 4$

$r_0 \rightarrow 4 *$

$r_1 \rightarrow 3 *$

$r_2 \rightarrow 2 *$

$r_3 \rightarrow 1 *$

formula = $n - \text{row}$

Formula for step ②.

$$n = 4$$

$r_0 \rightarrow 1$ spaces
 $r_1 \rightarrow 3$ spaces.
 $r_2 \rightarrow 5$ spaces.
 $r_3 \rightarrow 7$ spaces.

$$\text{Formula} = 2 * \text{row} + 1.$$

Formula for step ③.

— Same formula of step 1

Now for down side.

① 1st pyramid \rightarrow apply reverse logic.

② Inverted full pyramid.

$$n = 4$$

$r_0 \rightarrow 7$
 $r_1 \rightarrow 5$
 $r_2 \rightarrow 3$
 $r_3 \rightarrow 1$

$$\text{Formula} = 2 * n - 2 * r - 1.$$

$$(2n - 2r - 1)$$

② 2nd pyramid \rightarrow Apply same logic of 1st step.

fancy pattern.

① rows = 4 = n

② $r_0 \rightarrow 1$ char
 $r_1 \rightarrow 3$ char
 $r_2 \rightarrow 5$ char
 $r_3 \rightarrow 7$ char

	c_0	c_1	c_2	c_3	c_4	c_5	c_6
$r_0 \rightarrow$	1	↓	↓	↓	↓	↓	↓
$r_1 \rightarrow$	2	*	2	↓	↓	↓	↓
$r_2 \rightarrow$	3	*	3	*	3	↓	↓
$r_3 \rightarrow$	4	*	4	*	4	*	4

$2 \times \text{row} + 1$
 (formulae for col)

③ if column \rightarrow odd
 then print stars

OR

① rows = 4 = n

② column = row + 1

③ print stars with numbers
 and add a condition
 if last column then
 print spaces otherwise
 print stars.

Hollow inverted pyramid.

- Already done in previous class.

Character pattern-

Step ①	$r_0 \rightarrow$	A
row - 5	$r_1 \rightarrow$	A B A
② print this	$r_2 \rightarrow$	A B C B A
pyramid firstly	$r_3 \rightarrow$	A B C D C B A
	$r_4 \rightarrow$	A B C D E D C B A

for printing characters

$\rightarrow 1 + 'A' - 1$

changed in characters.

Then again Reverse.

from character -1 to A

My way

① row = 5									
		c_0	c_1	c_2	c_3	c_4	c_5	c_6	c_7
② $r_0 \rightarrow 1$ char	$r_0 \rightarrow$	A							
$r_1 \rightarrow 3$ char	$r_1 \rightarrow$	A	B	A					
$r_2 = 5$ char	$r_2 \rightarrow$	A	B	C	B	A			
$r_3 = 7$ char	$r_3 \rightarrow$	A	B	C	D	C	B	A	
$r_4 = 9$ char	$r_4 \rightarrow$	A	B	C	D	E	D	C	B

$\hookrightarrow 2 * row + 1$

here for reversing we add a condition.
with a extra variable.

① initialize the variable with 1st term.

② then add condition

if $col > row$

print variable

delete variable