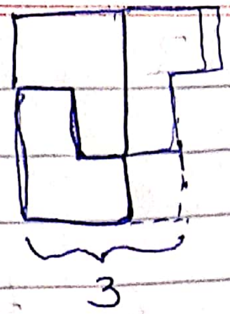
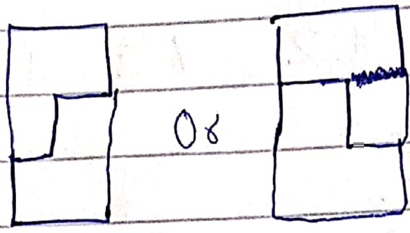
(A) →



It is obvious that even 1 block taken 2 width so odd n cannot be made

Now configurations for width 2 =



i.e. 2

For width n we have $n/2$ such blocks

$2^{n/2}$ ways to fill

(B) → For a + to be formed, only 1 row & 1 column (intersecting) should contain ≥ 2 *.

We can check if any other row or column contains a * when we cross these two off. If so the input won't be a +.

We also check if the row & column contain + have continous *. If not it is not a +.

Finally we check if there is a * at intersection of the + containg row & column & at the four direc^ns

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* * *
 *
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If yes it is a plus.

(c) We make 5 lists acc to which vowel a word ends on containing the word & no. of letters in it.

Then we sort these list & put the words with same no. of vowels & ending at same vowel in pair & then in a seperate list (end eq).

Any other words are kept in another list (useless)

Then we sort useless & pair the words containing same no. of vowels. (eq)

Now we take a pair from end eq and one from eq while eq still has pairs.

If endeq has any pairs left we take two pairs while endeq is not empty.

Total pairs = min(size of endeq, size of eq) + (size of endeq − min)/2

(E) →

$$f_4 = c^2 f_1 f_2 f_3$$

$$f_5 = c^6 f_1 (f_2)^2 (f_3)^2$$

$$f_6 = c^{14} (f_1)^2 (f_2)^3 (f_3)^4$$

$$f_7 = c^{30} (f_1)^4 (f_2)^6 (f_3)^7$$

$$f_8 = c^{60} (f_1)^7 (f_2)^{11} (f_3)^{13}$$

$f_1 = 1 \quad 1 \quad 2 \quad 4 \quad 7 \ldots,$

$f_2 = 1 \quad 2 \quad 3 \quad 6 \quad 11$

$f_3 = 1 \quad 2 \quad 4 \quad 7 \quad 13$

These all are

$$f_n = f_{n-1} + f_{n-2} + f_{n-3}$$

with different f_0, f_1, f_2

So we can find powers of f_1, f_2, f_3 by matrix exponentiation.

Then we can compute & multiply these powers using binary exponentiation.

Let a, b, c be respective powers of f_1, f_2, f_3, power of c comes out to be

$$(a + 2*b + 3*c - n)$$