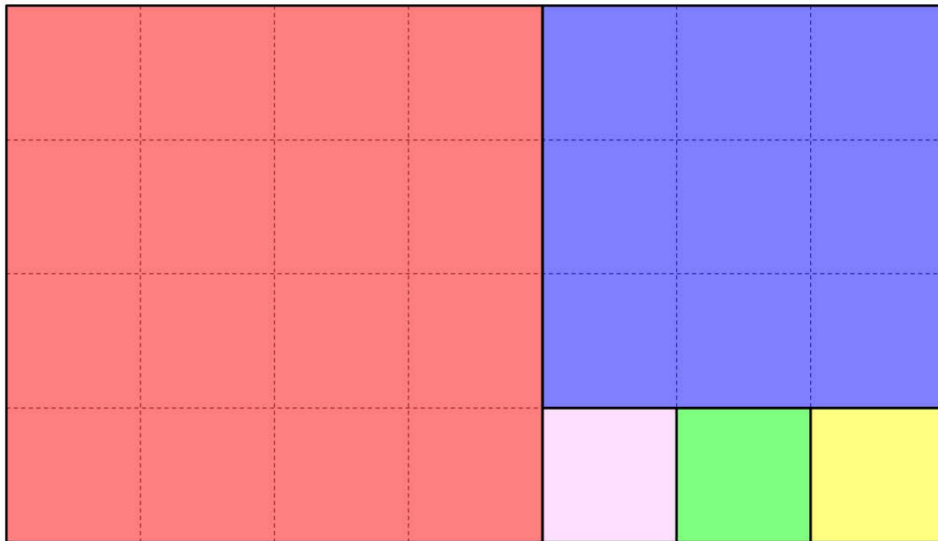# Dox Taurus Cows

Tilist n wakud: 1 seconde   **Tilist n tkatut: 256 MB**

Tabḥirt n Jeddi Porcellesi nezmer ad-tt-nẓer am usrem $N \times M$, ideg yal amekkuẓ deg-s Ahiktaṛ n lqaɛa. Ijerriden ttruḥun seg 0 ɣer $N - 1$ deg usawen ɣer ukessar, u ijerriḍen iybedden seg 0 ɣer $M - 1$ seg ljiha taẓelmaḍt ɣer tayeffust.

Jeddi Porcellesi yebɣa ad yebnu ṣṣur akka : ma tella ljiha s asrem yerna machi d amekkuẓ, ad yebnu ṣṣur akken ad tili ljiha deg usawen aẓelmaḍ d amekkuẓ i ymeqqren akken ma yezmer. Asmi ara ad yfakk, akk ljihat d imekkuẓen, am deg tugnat-agi.

Tugnat 1: Amedya n tebḥirt iwakken $N = 4$ akked $M = 7$.

Yerna, tibḥirt n Jeddi Porcellesi zedɣen deg-s kra n tisita isem-nsent : **Dox Taurus**. Tisita-agi, iyettwasnen s yisem n **tsita kwantum**, zemrent ad d-banent w ad nnerfaɛent akken bɣant. (Ayen i t-en-yettaǧǧan ad ruḥent seg uḥric ɣer uḥric-nniḍen.)

Jeddi Porcellesi yebɣa ad yetbeɛ anda i ttruḥunt tsita: ad yaru yal ma tban-d neɣ tennerfaɛ yal tfunast deg tebḥirt.

Akken ad yexdem lxedma-s, yebɣa ad iẓer Jeddi achal n tsita i yellan deg uḥric i yesɛan uṭṭun ameqqran akk n tsita.

Ccɣel

Q n yisteqsiyen n kraḍ n leṣnaf ttwafken :
- `add (r, c)`: Rnu tafunast deg (r, c)
- `remove (r, c)`: Kkes tafunast seg (r, c)
- `count`: Af-d achal n tsita i yellan deg uḥric i yesɛan uṭṭun ameqqran akk n tsita.
  Σiwen Jeddi Porcellesi !

Anekcum

Anekcum yesɛa $Q + 1$ n yijerriḍen:
- **Ajerriḍ 1**: Uṭṭunen N, M, Q
- **Ajerriḍ** $(1 + i)$ $(1 \leq i \leq Q)$: Asteqsi:

    - `a r c`: Rnu tafunast deg (r, c)

    - `t r c`: Kkes tafunast seg (r, c)

    - `c`: Af-d acḥal n tsita i yellan deg uḥric i yesɛan uṭṭun ameqqran akk n tsita

Tuffɣa

Tuffɣa deg-s C **n ijerriḍen**, anda C d uṭṭun n isteqsiyen `count`:
- **Ajerriḍ** i: tiririt i usteqsi i n ṣṣenf `count`

Tiɣuriwin

- $1 \leq N, M \leq 10^{18}$
- $0 \leq Q \leq 200,000$
- $0 \leq r < N$, $0 \leq c < M$ deg yal asteqsi
- Tibḥirt tefreɣ deg tazwara
- Mi ara ad d-nestqsi ad nekkes tafunast, tafunast-nni tella

Iluɣma imeẓyanen

Alaɣmu	Tineqqiḍin	Tiɣuriwin
1	0	Imedyaten kan
2	11	$N \leq 50$, $M \leq 50$, $Q \leq 500$
3	21	$N \leq 50$, $M \leq 50$, $Q \leq 20,000$
4	20	yella $k \in \mathbb{N}$ akken $N = kM$
5	27	$Q \leq 500$
6	21	-

Imedyaten

Anekcum 1

```
4 7 8
a 2 1
a 1 4
a 0 5
a 3 5
c
t 0 5
a 3 5
c
```

Tuffɣa:

```
2
2
```

Anekcum 2

```
13 9 17
a 10 5
a 11 8
c
a 9 6
c
t 10 5
c
a 11 8
a 11 8
c
t 11 8
t 11 8
c
a 9 0
a 9 4
a 10 1
c
```
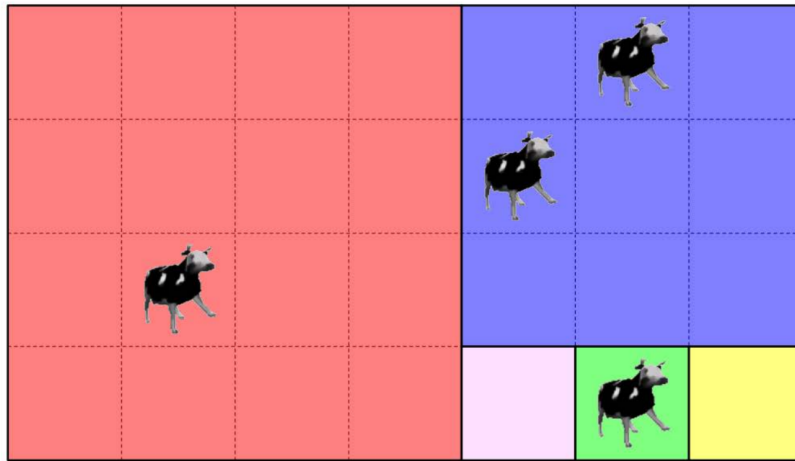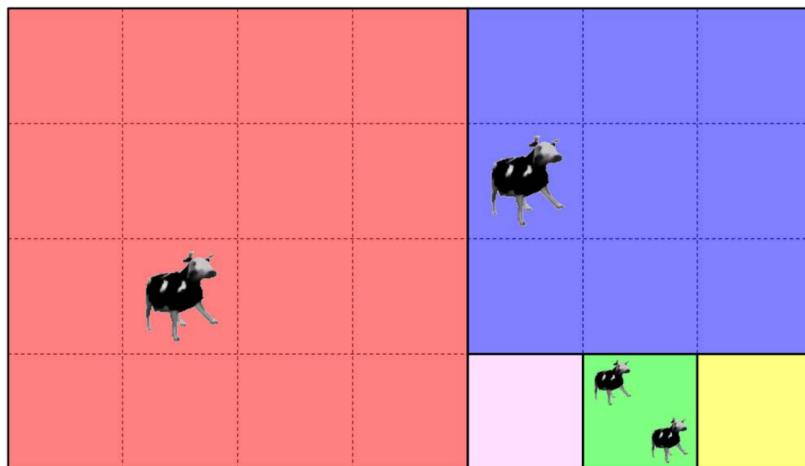
Tuffɣa:

```
1
2
1
3
1
2
```

Asegzi

Deg umedya amenzu:

- Tibḥrt tefreɣ deg tazwara **vide**
- Ma kemmlen isteqsiyen 4 imezwura, tibḥirt tga akk-a :
  - Aḥric usawen ayeffus yes3a 2 **n tsita**.
  - Asteqsi amenzu `count` yettarra-d 2.

- Mi ara fakken isteqsiyen-nniḍen, aḥric s waṭas n tsita yesεa 2 **n tsita**.

Asteqsi wis sin `count` yettarra-d daγen 2.