

## Guhindura Inzira y'Itangwa (Delivery Detour)

Mutanguha akora serivisi yo gutanga ibintu akoresheje robo zigenda ku n'uduce tw'imirongo (city grid). Robo itangirira kuri  $(0,0)$  kandi iba yarahawe urutonde rw'amabwiriza rungana na  $N$ :  $S[0], S[1], \dots, S[N-1]$ . Buri bwiriza rituma robo yimuka intera ya kimwe: iri kuri  $(x, y)$ , ibwiriza  $L$  riyijyana kuri  $(x-1, y)$ ,  $R$  kuri  $(x+1, y)$ ,  $D$  kuri  $(x, y-1)$ , naho  $U$  kuri  $(x, y+1)$ .

Porogaramu ya robo yemera ubwoko bumwe gusa bwo guhindura amabwiriza: gukuraho **igice kimwe gikurikirana** cy'amabwiriza, gishobora no kuba ari ubusa. Mu yandi magambo, hitamo imibare ibiri  $l$  na  $r$  ku buryo  $0 \leq l \leq r \leq N$  hanyuma usimbuze  $S$  na  $S[0], S[1], \dots, S[l-1], S[r], S[r+1], \dots, S[N-1]$ . Robo ihita ikora amabwiriza asigaye ikurikije uko yari ateye mbere (The robot then executes the remaining instructions in their original order). Uruganda rukora robo ruca amafaranga yo gukuraho buri bwiriza, bitewe n'icyerekezo cyabo:  $C_L$  kuri  $L$ ,  $C_R$  kuri  $R$ ,  $C_D$  kuri  $D$ , na  $C_U$  kuri  $U$ .

Mbere gato y'uko robo ihaguruka, Mutanguha amenya ko umukiriya ari ategereje kuri  $(X, Y)$ .

Fasha Mutanguha kubona amafaranga make ashoboka yo gukuraho amabwiriza kugira ngo robo irangirize urugendo kuri  $(X, Y)$ , or cyangwa werekane ko nta gice cy'amabwiriza gishobora gukurwaho kikabigeraho.

## Uburyo bwo Kubishyira mu Bikorwa (Implementation Details)

Ugomba gushyira mu bikorwa procedure ikurikira:

```
int64 minimum_fee(string S, int32 X, int32 Y, int32 CL, int32 CR,
                  int32 CD, int32 CU)
```

- $S$ : Ijambo(string) rifite uburebure bwa  $N$  rigizwe n'inyuguti  $L, R, D, U$ , zigaragaza amabwiriza..
- $X, Y$ : aho umukiriya aherereye.
- $CL, CR, CD, CU$ : amafaranga yo gukuraho ibwiriza rimwe rya  $L, R, D, U$ .
- Iyi procedure ihamagarwa rimwe gusa.
- Iyi procedure igomba gutanga amafaranga make ashoboka kugira ngo robo irangirize kuri  $(X, Y)$ , cyangwa  $-1$  niba bidashoboka.

## Constraints

- $1 \leq N \leq 200\,000$
- $-N \leq X, Y \leq N$
- $0 \leq C_L, C_R, C_D, C_U \leq 10^9$

## Igice cy'igikorwa(Subtasks)

| Subtask | Amanota | Izindi Mbibi                                  |
|---------|---------|-----------------------------------------------|
| 1       | 15      | $N \leq 2\,000$                               |
| 2       | 10      | $C_L = C_R = C_D = C_U = 0$                   |
| 3       | 20      | $S$ igizwe gusa na $R$ na $U$                 |
| 4       | 20      | $S$ igizwe gusa na $L$ na $R$ , kandi $Y = 0$ |
| 5       | 15      | $C_L = C_R = C_D = C_U = 1$                   |
| 6       | 20      | Nta zindi mbibi.                              |

## Ingero

### Urugero rwa 1

Reka turebe kuri call ikurikira:

```
minimum_fee("RUURLLL", -1, 0, 2, 3, 3, 4)
```

Gukurikiza amabwiriza arindwi yose bituma robo igerera kuri  $(-1, 2)$ , ibi bigatuma isimbuka umukiriya uherereye kuri  $(-1, 0)$ .

Niba Mutanguha akuyeho igice  $UU$ , robo ishyira mu bikorwa  $R, R, L, L, L$  maze ikagera aho yerekezaga kuri  $(-1, 0)$ . Amafaranga yo gukuraho ayo mabwiriza ni  $C_U + C_U = 8$ .

Nubwo gukuraho igice kinini  $UURL$  na byo bituma robo igerera kuri  $(-1, 0)$ , amafaranga yacyo ni menshi:  $4 + 4 + 3 + 2 = 13$ . Kubera ko nta bundi buryo bwo gukuraho amabwiriza butanga igisubizo cyiza ku mafaranga ari muni ya 8, `minimum_fee` igomba gutanga 8.

### Urugero rwa 2

Reka turebe kuri call ikurikira:

```
minimum_fee("RR", 0, 1, 1, 1, 1, 1)
```

Nta gice cy'amabwiriza gishobora gukurwaho ngo robo irangirize kuri  $(0,1)$ , kuko robo itajya yimuka mu cyerekezo gihagaritse. Bityo `minimum_fee` igomba gutanga  $-1$ .

## Urugero rwa 3

Reka turebe kuri call ikurikira:

```
minimum_fee("LU", -1, 1, 7, 7, 7, 7)
```

Robo isanzwe irangiriza urugendo kuri  $(-1,1)$ , bityo Mutanguha agomba gukuraho igice kirimo ubusa kandi ntiyishyure amafaranga ayo ari yo yose. Ni yo mpamvu `minimum_fee` igomba gutanga 0.

## Sample Grader

Imiterere y'ibyinjizwa (Input):

```
N X Y
CL CR CD CU
S
```

Imiterere y'ibisubizo (Output):

```
F
```

Aha  $F$  ni igisubizo gisubizwa na `minimum_fee`.