Video Game 2

You're testing a new video game. In this game, there are N rooms the player can visit and M directed passageways between rooms. The player starts in room 1 and wants to get to room N.

The player starts with K health, and each passageway has some monsters the player must defeat as well as some health packs with which the player can heal; the net change in health the player receives by going through passageway i is C_i. This value may be positive, negative, or zero.

Some shortcuts were taken in the development game: no state is stored about monsters that have been defeated, or which health packs have been used. Thus, if the player uses the same passageway more than once, he/she receives the associated change in health more than once as well.

As a tester, you want to know the maximum amount of health the player can have when he/she arrives in room N. Note that the player can visit room N more than once, and the player's health is allowed to be zero or even negative at any point (it's a very poorly designed game!).

Grading

Correctness & Efficiency: 80%

- Passes 13 test cases: 80%
- Passes 9 to 12 test cases: 60%
- Passes 5 to 8 test cases: 40%
- Passes 1 to 4 test cases: 20%
- Passes 0 test cases: 0%

Code Quality: 20%

Input Format

The first line of each test case contains three space-separated integers N, M, and K, the number of rooms, number of passageways, and starting health of the player, respectively. The following M lines each contain three space-separated integers U_i, V_i, and C_i, denoting the starting room, ending room, and net health change for passageway i respectively.

Constraints

$1 \leq N \leq 10^3$

$1 \leq M \leq 10^3$

$0 \leq K \leq 10^3$

$1 \leq U_i, V_i \leq N$

$-10^3 \leq C_i \leq 10^3$

Output Format

Output a single line. If it is not possible for the player to reach room N, print -1. If it is possible for the player to reach room N with unlimited health (that is, for any positive health H, we can find a path the player can take that gives an ending health $\geq H$), then print "infinity" (without the quotes). Otherwise, print a single integer: the maximum amount of health the player can have at room N.

Sample Input 0

```
2 1 0
2 1 500
```

Sample Output 0

```
-1
```

Sample Input 1

```
2 1 5
1 2 5
```

Sample Output 1

```
10
```

Sample Input 2

```
3 3 0
1 2 5
2 3 5
3 1 -5
```

Sample Output 2

```
infinity
```

Submissions: 12
Max Score: 10
Difficulty: Medium

Rate This Challenge:

More

Current Buffer (saved locally, editable)

C++

```cpp
#include <cmath>
#include <cstdio>
#include <vector>
#include <iostream>
#include <algorithm>
using namespace std;


int main() {
    /* Enter your code here. Read input from STDIN. Print output to STDOUT */
    return 0;
}

```

Line: 1 Col: 1

Upload Code as File Test against custom input Run Code Submit Code