

# Bones's Battery

Bones is investigating what electric shuttle is appropriate for his mom's school district vehicle. Each school has a charging station. It is important that a trip from one school to any other be completed with no more than  $K$  rechargings. The car is initially at zero battery and must always be recharged at the start of each trip; this counts as one of the  $K$  rechargings. There is at most one road between each pair of schools, and there is at least one path of roads connecting each pair of schools. Given the layout of these roads and  $K$ , compute the necessary range required of the electric shuttle.

## Input

Input begins with a line with one integer  $T$  ( $1 \leq T \leq 50$ ) denoting the number of test cases. Each test case begins with a line containing three integers  $N$ ,  $K$ , and  $M$  ( $2 \leq N \leq 100$ ,  $1 \leq K \leq 100$ ), where  $N$  denotes the number of schools,  $K$  denotes the maximum number of rechargings permitted per trip, and  $M$  denotes the number of roads. Next follow  $M$  lines each with three integers  $u_i$ ,  $v_i$ , and  $d_i$  ( $0 \leq u_i, v_i < N$ ,  $u_i \neq v_i$ ,  $1 \leq d_i \leq 10^9$ ) indicating that road  $i$  connects schools  $u_i$  and  $v_i$  (0-indexed) bidirectionally with distance  $d_i$ .

## Output

For each test case, output one line containing the minimum range required.

| Sample Input | Sample Output |
|--------------|---------------|
| 2            | 300           |
| 4 2 4        | 688           |
| 0 1 100      |               |
| 1 2 200      |               |
| 2 3 300      |               |
| 3 0 400      |               |
| 10 2 15      |               |
| 0 1 113      |               |
| 1 2 314      |               |
| 2 3 271      |               |
| 3 4 141      |               |
| 4 0 173      |               |
| 5 7 235      |               |
| 7 9 979      |               |
| 9 6 402      |               |
| 6 8 431      |               |
| 8 5 462      |               |
| 0 5 411      |               |
| 1 6 855      |               |
| 2 7 921      |               |
| 3 8 355      |               |
| 4 9 113      |               |