

C. Bear and Forgotten Tree 3

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

A tree is a connected undirected graph consisting of n vertices and $n - 1$ edges. Vertices are numbered through n .

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Limak is a little polar bear and Radewoosh is his evil enemy. Limak once had a tree but Radewoosh stolen it. Bear is very sad now because he doesn't remember much about the tree — he can tell you only three values n , d and h :

- The tree had exactly n vertices.
- The tree had diameter d . In other words, d was the biggest distance between two vertices.
- Limak also remembers that he once rooted the tree in vertex 1 and after that its height was h . In other words, h was the biggest distance between vertex 1 and some other vertex.

The distance between two vertices of the tree is the number of edges on the simple path between them.

Help Limak to restore his tree. Check whether there exists a tree satisfying the given conditions. Find any such tree and print its edges in any order. It's also possible that Limak made a mistake and there is no suitable tree – in this case print "-1".

Input

The first line contains three integers n , d and h ($2 \leq n \leq 100\,000$, $1 \leq h \leq d \leq n - 1$) — the number of vertices, diameter, and height after rooting in vertex 1, respectively.

Output

If there is no tree matching what Limak remembers, print the only line with "-1" (without the quotes).

Otherwise, describe any tree matching Limak's description. Print $n - 1$ lines, each with two space-separated integers — indices of vertices connected by an edge. If there are many valid trees, print any of them. You can print edges in any order.

Examples

input
5 3 2
output
1 2 1 3 3 4 3 5

input
8 5 2
output
-1

input
8 4 2
output

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4 8
5 7
2 3
8 1
2 1
5 6
1 5
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Note

Below you can see trees printed to the output in the first sample and the third sample.