Four Equidistant Points on a Grid

Problem Code: **DISTCON**

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The *manhattan distance* between two points $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$ is given by $d(P_1, P_2) = |x_2 - x_1| + |y_2 - y_1|$.

In other words, *manhattan distance* is the minimum number of moves required to reach P_2 from P_1 if, in each move, you are allowed to travel one unit along the X-axis or one unit along the Y-axis.

You are given an integer D. Find four points (P_1, P_2, P_3, P_4) with **integer** coordinates, such that:

- The absolute value of both X and Y coordinates of all points is at most 10^9.
- The manhattan distance between **any pair** of points is D. More formally, $d(P_i, P_j) = D$ for all $1 \leq i < j \leq 4$.

If such set of points do not exist, print `-1`. If there are multiple solutions, you may print any.

Note: It is guaranteed that whenever there exists a solution, there exists one in which all points have coordinates with absolute values not more than 10^9.

Input Format

- The first line contains a single integer, D - as per the problem statement.

Output Format

- If there is no solution, print in a single line the integer `-1`.
- Otherwise print 4 lines. The i^{th} line, should contain two space separated integers, $X_i Y_i$, the coordinates of the point P_i, such that $0 \leq |X_i|, |Y_i| \leq 10^9$.

Constraints

- $1 \leq D \leq 10^5$

Subtasks

Subtask #1 (100 points): original constraints

Sample Input 1

```
2
```

Sample Output 1

```
0 1
1 2
2 3
3 4
```

Submission Ends In

34 Min 51 Sec

My Submissions (/LTIME105D/status/DISTCON,hariprakash_s) All Submissions (/LTIME105D/status/D

Successful Submissions +

Explanation

The following sample output for this testcase is not correct, but is only provided to clarify the output format

The points in the solution are $P_1(0,1), P_2(1,2), P_3(2,3)$ and $P_4(3,4)$.
$d(P_1,P_2) = |0-1| + |1-2| = 2$ but $d(P_1,P_3) = |0-2| + |1-3| = 4$.
As $d(P_1,P_2) \neq d(P_1,P_3)$, the solution is **incorrect.**

A correct solution will satisfy
$d(P_1,P_2) = d(P_1,P_3) = d(P_1,P_4) = d(P_2,P_3) = d(P_2,P_4) = d(P_3,P_4)$.

A correct sample output is not provided so as to not reveal any hints about the solution.

Sample Input 2

```
1
```

Sample Output 2

```
-1
```

Explanation

You may verify that for $D = 1$, there are no set of points P_1, P_2, P_3, P_4 as per the problem statement. This output is **correct.**

Author:	srikkanth_adm (/users/srikkanth_adm)
Date Added:	24-02-2022
Time Limit:	1 secs
Source Limit:	50000 Bytes
Languages:	CPP17, PYTH 3.6, JAVA, C, CPP14, PYTH, PYP3, CS2, ADA, PYPY, TEXT, PAS fpc, NODEJS, RUBY, PHP, GO, HASK, TCL, kotlin, PERL, SCALA, LUA, BASH, JS, rust, LISP sbcl, PAS gpc, BF, CLOJ, R, D, CAML, swift, FORT, ASM, FS, WSPC, LISP clisp, SQL, SCM guile, PERL6, ERL, CLPS, PRLG, SQLQ, ICK, NICE, ICON, COB, SCM chicken, PIKE, SCM qobi, ST, NEM

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