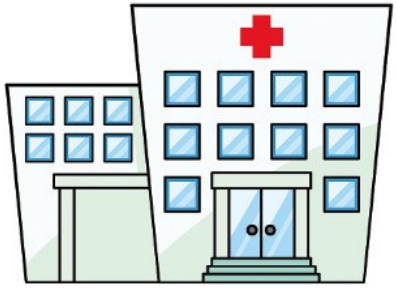
ECE30018 Problem Solving Studio, Fall 2023

P1. Hospital Construction

- Submission due: 7:00 PM, 12 Sep Tue

Problem Description



- There is a city where n buildings stand along a highway for $1 \leq n \leq 10{,}000{,}000$. The i^{th} building stands at point x_i on the highway for $0 \leq x_i < 10{,}000{,}000{,}000$ and there are g_i people staying in the i^{th} building for $1 \leq g_i \leq 10{,}000$.
- There is no hospital along this highway. Thus, the city government is going to construct a hospital for the people staying in the buildings along the highway. A building is within a walking distance from the hospital if the distance between the building and the hospital is less than or equal to k points for $1 \leq k \leq 2{,}000{,}000$.
- The city government wants to locate the hospital at a point along a highway such that as many people as possible are within the walking distance from the hospital.
- Write a program that finds the number of people staying in the walking distance when the hospital is constructed at a such point.

Requirements

- First two numbers given from the input are n and k. After that, n lines are given where i^{th} line has two numbers g_i and x_i.
- Your program should print out one number (i.e., the maximum number of people staying in walking distance from the hospital) within 0.5 second.
- The hospital could be built on the top of a building.

Examples of input data and output

Input

```
4 3
4 7
10 15
2 2
5 1
```

Output

```
11
```