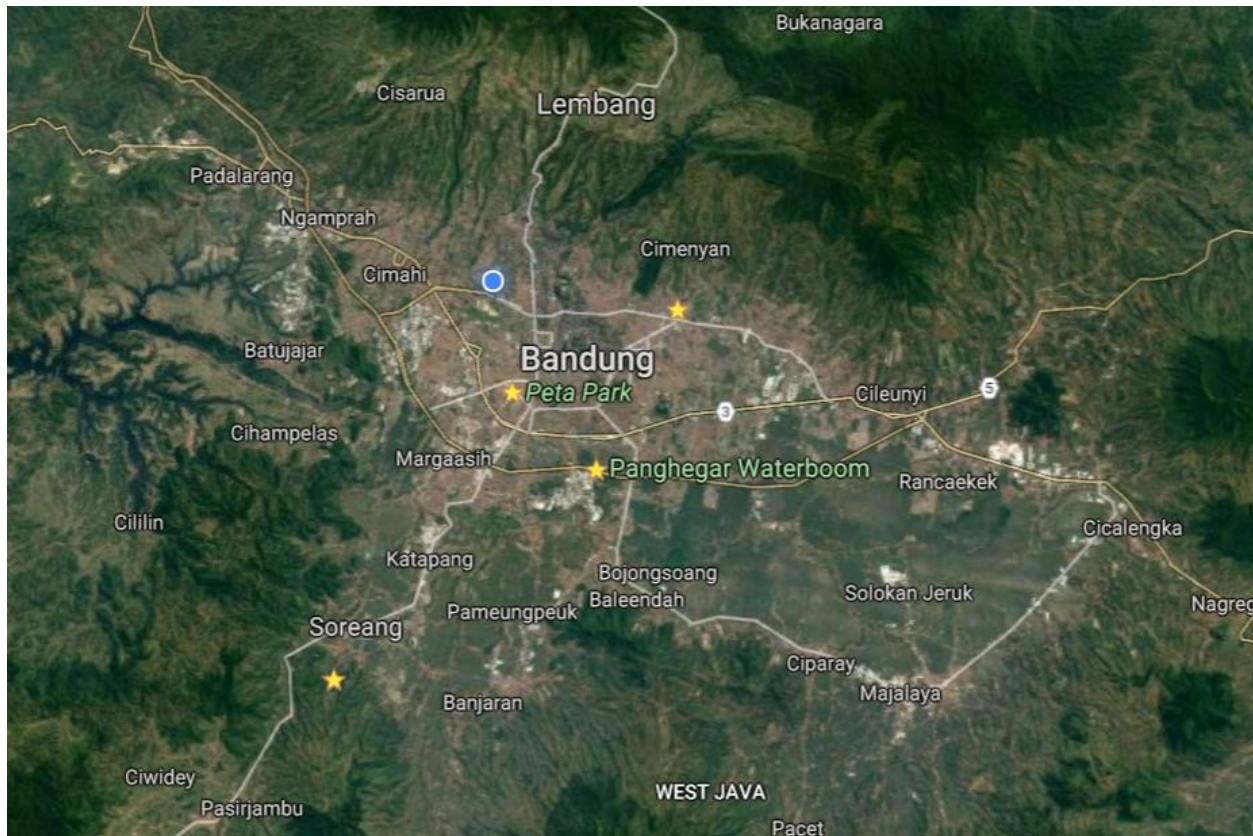# Protecting Bandung Kingdom

(Time limit 1 second)

Once upon a time in the year 1000 BC, stands a kingdom named the kingdom of Bandung whose inhabitants live safely and peacefully.

But in recent times there has been a very worrying development in the world of martial arts, where there have been many disputes among the kingdoms in West Java land which is triggered by ethnic, religious, racial, and interreligious issues (SARA). After thinking hard, then the king of Bandung who named the noble king Ridwan Kamil take strategic decisions that are supported by his expertise as a skilled architect graduated from Institut Teknologi Bandung (ITB).

King Ridwan Kamil decided to build a barrier around the kingdom of Bandung in the form of a series of volcanoes Chained Mountain Inner Infrastructure protection Wall (CMIIW) so that attacks from the surrounding kingdoms can be broken easily. The kingdom of Bandung has a large area with various strategic places that need to be protected. Due to the limited funds of the Royal Revenue and Expenditure Budget (RREB/APBK), and avoiding the demands of embezzlement of funds from the Royal Corruption Eradication Commission (RCEC/KPKK), the CMIIW development site should be carefully calculated where the CMIIW stretch is made to a minimum.

CMIIW built should be able to protect all strategic places in the kingdom of Bandung which includes Alun-alun, Royal Hall, Pasar Baru, Gedebage Market, Caringin Market, IP Mall, PVJ Mall, Paskal 23 Mall, Trans Studio Mall, Dusun Bambu Lembang , Floating Market Lembang, White Crater Ciwidey, Situ Cileunca Ciwidey, Parahyangan New City Padalarang, Immanuel Hospital, ITB College, and Keputren Maranatha.

The good news is that all strategic places have been successfully surveyed and recorded by a team consisting of PKK mothers who like shopping and traveling whose chairman is the queen Atalia Kamil. The priority of CMIIW development will start from the most vulnerable locations, which is from the westernmost position to the south counter-clockwise.

Input

n
x y
…

where:

- the number of strategic location data to be protected: 5 <= n <= 10000
- coordinate positions of strategic places: 0 <= x, y <= 1000
- all data is in integer

Output

The series of locations where the Chained Mountain Inner Infrastructure protection Wall (CMIIW) must be built, with the format: #<location number>: <coordinate> …

Sample input	Output for sample input
8	#1: 1 1
1 1	#2: 9 2
8 5	#3: 8 8
3 9	#4: 3 9
4 7	#5: 1 6
9 2	
6 3	
1 6	
8 8	