Problem E
Vehicle Trip

Input File: E.DAT
Program Source File: E.PAS or E.C or E.CPP

A map is represented on a two dimensional grid as a set of points enclosed within a rectangular contour. The contour of the map and the obstacles on the map are marked using the character with the decimal code `219`. The free points on the map are marked by characters corresponding to decimal digits. We note by `digit(p)` the value of the digit which marks the point `p` and by `altitude(p)=10*digit(p)` the altitude of `p` on the map. In addition, there are precisely two distinct towns on the map, marked using the letters `A` and `B`. By convention, `altitude(A)=altitude(B)=0`.The markings of free points, towns and obstacles can appear inside the map contour only and there are no other markings on the map.

A vehicle that goes from `A` to `B` moves vertically, horizontally, and diagonally through the free points on the map. The vehicle has a strictly positive speed during its journey, except for the point `B` where its speed can be `0`. The speed variation, when the vehicle advances from a point `p` to a neighbouring point `q`, is computed with the formula:

```
speed_on(q) = speed_on(p) + altitude(p) – altitude(q)–1
```

Write a program that, for each map read from a text file, computes:

1. The *minimum initial speed* (v_{min}) the vehicle must have, when it departs from `A`, for being able to reach `B`.
2. The *maximum final speed* (v_{max}) the vehicle can have when it reaches `B`, after departing from `A` with the speed v_{min}.

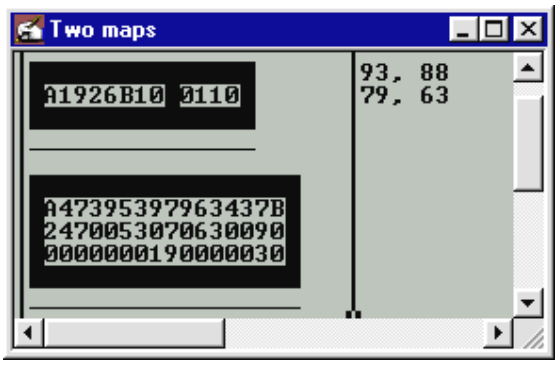

Figure 1. Input and output samples

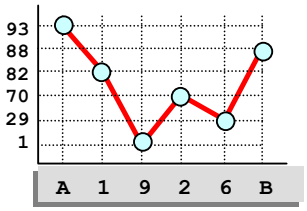

Figure 2. Speed variation

Figure 3. A possible path

A map is read as a sequence of text lines terminated by a line full of underscores. There are at most `30` lines, including the termination line, and at most `80` characters in a line for each map. Input data are correct.

For each map the program prints to the standard output, on a separate line, the pair of values v_{min}, v_{max}. If the vehicle cannot reach `B` the message `No solution` is printed. Figure 1 illustrates samples of program input and output. Figure 2 shows the vehicle speed variation for the first map from figure 1. Figure 3 displays a possible path followed by a vehicle with v_{min}=`79` and v_{max}=`63` on the second map from figure 1.