
Cordless Phones

Problem Description

Let us assume there are only 12 channels on a 'cordless telephone system'. If two users close together are using the same channel, they can hear each other's conversations. We need to choose the working range of the telephones. Ideally, the range needs to be big enough that the telephone can be used at the bottom of a garden but not so big that the neighbours can listen in.

Task

Given a set of positions of telephones, write a program to work out the maximum range that guarantees that not more than eleven of the telephones are within range. This amounts to finding the largest circle that, no matter where you put it, will not enclose more than eleven points from the given data. Speed and accuracy of your program will be an issue. Write a brief report detailing the method you have used.

Your program should read data from a text file. The first line should be "Telephone sites". Each following line will have two numbers on it giving distances (in metres) east and north of a base point.

Example file:

```
Telephone sites
125.13  122.56
 68.17  104.66
 72.25   85.75
 56.68  103.83
118.09  101.65
 60.41  123.10
107.10   86.17
 83.42  121.16
```

Relates to Objectives

1.1 1.2 1.4 2.2 2.7 3.4 3.5 3.6 4.5 4.7 4.8

(Group)