```
                          ┌─────────┐
                          │  start  │
                          └────┬────┘
                               │
                               ▼
                    ╱──────────────────╲
                   ╱  input a location   ╲
                  ╱ and two integer years ╲
                  ╲   input AVG / MODE    ╱
                   ╲──────────────────╱
                               │
                               ▼
                  ◇─────────────────────◇        no      ╱──────────────╲
                  ◇ if input data available ? ◇ ─────────▶╱   output:     ╲
                  ◇─────────────────────◇              ╱ location year1   ╲
                               │                       ╲ year2 AVG / MODE  ╱
                              yes                       ╲   unknown       ╱
                               │                         ╲──────────────╱
            ┌──────────────────┴──────────────────┐
            ▼                                      ▼
     ◇───────────────◇                    ◇────────────────◇
     ◇ if AVG detected ? ◇                ◇ if MODE detected ? ◇
     ◇───────────────◇                    ◇────────────────◇
            │                                      │
           yes                                    yes
            │                                      │
            ▼                                      ▼
    ┌──────────────┐                      ┌──────────────┐
    │ calculate the │                     │  round every  │
    │    average    │                     │  temperature  │
    │  temperature  │                     └───────┬──────┘
    └──────┬───────┘                              │
           │                                      ▼
           │                              ┌──────────────┐
           │                              │ count each    │
           │                              │ different     │
           │                              │ temperature   │
           │                              └───────┬──────┘
           │                                      │
           │                                      ▼
           │                              ┌──────────────┐
           │                              │ count each    │
           │                              │ different     │
           │                              │ temperature and│
           │                              │ store in a vector│
           │                              └───────┬──────┘
           │                                      │
           │                                      ▼
           │                              ┌──────────────┐
           │                              │ loop through the│
           │                              │     vector,    │
           │                              │ compare each count│
           │                              └───────┬──────┘
           │                                      │
           │                                      ▼
           │                              ┌──────────────┐
           │                              │ return the first│
           │                              │ value stored in │
           │                              │ the vector that │
           │                              │  count most    │
           │                              └───────┬──────┘
           ▼                                      ▼
    ╱──────────────╲                      ╱──────────────╲
   ╱   output:      ╲                    ╱   output:      ╲
  ╱ location year1   ╲                  ╱ location year1   ╲
  ╲ year2 AVG        ╱                  ╲ year2 MODE       ╱
   ╲   unknown      ╱                    ╲   unknown      ╱
    ╲──────────────╱                      ╲──────────────╱
           │                                      │
           └──────────────┐      ┌────────────────┘
                          ▼      ▼
                       ┌─────────┐
                       │   end   │
                       └─────────┘
```

Test case

temps.dat

411000 1973 1 0.54
411000 1973 7 10.46
411000 2000 9 9.58
411048 2015 1 9.58
411048 2015 3 14.82
411048 2016 4 20.51
411048 2016 1 10.29
411048 2016 3 18.40
411048 2016 5 -99.99

queries.dat

411048 AVG 1996 1996
411000 MODE 1970 1980
411048 AVG 2015 2015
411048 MODE 2015 2016

results.dat

411048 1996 1996 AVG unknown
411000 1970 1980 MODE 1
411048 2015 2015 AVG 12.2
411048 2015 2016 MODE 10