Discuss the Importance of Isolation of Virus Spread-Through the Program to Simulate

Xia Wei¹,*, Xiaokai Gong¹,a, Guowen Lu²,b

¹Zhoukou Vocational and Technical College, Zhoukou 466000, China
²Foshan Maos Information Technology Co., LTD, Guangdong 528000, China

a846319723@qq.com, b2557095605@qq.com

*Corresponding author: wxehyou@163.com

Keywords: Epidemic Situation, VFP, Preview, Spreading process

Abstract: With the development of science and technology, computer software has an irreplaceable role, it has been applied to modern people's life, work and learning, and so on, and database is the key to the research and development of computer software. The choice of database is closely related to the quality and efficiency of development. During the epidemic, many popular language programs such as Java and python were used on the Internet to simulate the spread of viruses, while this paper started from the research on VFP, which is an outstanding representative of the small and medium-sized database management system, VFP has the function similar to python and PHP [1], which shows that VFP has not retired from the historical stage, so far in the University of non-computer science courses are still offered and sales of this software-related books, it is interested in computer beginners have a very important reference value.

1. Introduction

At this stage, with the accelerated development of computer, the work of all walks of life has been inseparable from the computer, and people's life (online shopping, communication, etc.) has also been inseparable from the computer, and every different computer software has its unique nature and role, even if it seems to have been eliminated, their advantages can not be ignored. Visual FoxPro 9.0 provides functions, speed, ability and flexibility, which you can't see in the common database management system. It is a more characteristic database management system, it will be non-procedural database operation language and procedural high-level language integration, and also provides a variety of visual programming tools, support object-oriented programming methods, do not need other high-level language and development tools, Direct use of Visual FoxPro9.0 database application system development. Therefore, there are still a lot of people and enthusiasts who use VFP to develop practical and concise systems [2][3].

Education according to the development of the need, computer courses almost has been from primary school to university of any school has opened, it has become like politics, sports, as an essential public curriculum. For the students of vocational colleges and the computer professional students, VFP is learning computer professional introduction person a good leader, therefore at present many university for non-computer majors in open still VFP course, for starters, it feel
complex and want to give up than to see other programming database software has a strong appeal. I believe that everyone knows what to do in the past two years, which also fully demonstrates the reasonable superiority of China’s national management. People are also paying close attention. Many small cases have been found using software to simulate the process of virus transmission. Therefore, this paper is the design of the rehearsal process of virus transmission based on VFP.

2. Analyze the epidemic process

14 days is the longest incubation period for novel Coronavirus. The official data collection began on January 24 and ended at 24:00 on February 7. The summary includes the data of a complete incubation period after the lockdown of Wuhan, providing a panoramic perspective on the epidemic prevention during the first incubation period after the lockdown of Wuhan.

Table 1: Data sheet of the epidemic for the first incubation period after the lockdown in Wuhan

| Date        | Confirmed cases the whole nation | Confirmed cases in Hubei Province | Suspected cases the whole nation | Suspected cases in Hubei Province | Newly confirmed cases on the same day the whole nation | Newly confirmed cases in Hubei Province | New Suspected Cases on the same day the whole nation | New Suspected Cases in Hubei Province | Number of close contacts tracked the whole nation | Number of close contacts tracked in Hubei Province | Close contacts under medical observation the whole nation | Close contacts under medical observation in Hubei Province | Cumulative death toll the whole nation | Cumulative death toll in Hubei Province | Cumulative number of cured patients the whole nation | Cumulative number of cured patients in Hubei Province |
|-------------|----------------------------------|-----------------------------------|----------------------------------|-----------------------------------|-------------------------------------------------------|----------------------------------------|-----------------------------------------------------|----------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|----------------|----------------|----------------|----------------|
| January 20th| 291                              | 270                               | 34                               | 77                                | 72                                                   | 27                                     | 1739                                               | 1070                                  | 922                                             | 351                                             | 6                                               | 6                                               | 25                                              | 25                                              |
| 21 January  | 440                              | 376                               | 37                               | 149                               | 105                                                 | 26                                     | 2197                                               | 1181                                  | 1394                                            | 426                                             | 9                                               | 9                                               | 28                                              | 28                                              |
| 22 January  | 571                              | 444                               | 393                               | 131                               | 69                                                  | 257                                    | 5897                                               | 2556                                  | 4928                                            | 1693                                            | 17                                              | 17                                              | 28                                              | 28                                              |
| 23 January  | 850                              | 549                               | 1072                              | 259                               | 105                                                 | 686                                    | 9507                                               | 3653                                  | 8520                                            | 2776                                            | 25                                              | 24                                              | 34                                              | 31                                              |
| 24 January  | 1287                             | 729                               | 1965                              | 444                               | 180                                                 | 1118                                   | 15197                                              | 5682                                  | 13967                                           | 4711                                            | 41                                              | 39                                              | 38                                              | 32                                              |
| 25 January  | 1975                             | 1062                              | 2684                              | 688                               | 323                                                 | 1309                                   | 23431                                              | 7989                                  | 21656                                           | 6964                                            | 56                                              | 52                                              | 49                                              | 42                                              |
| 26 January  | 2744                             | 1423                              | 5794                              | 769                               | 371                                                 | 3866                                   | 32799                                              | 10394                                 | 30465                                           | 9103                                            | 80                                              | 76                                              | 51                                              | 44                                              |
| 27 January  | 4515                             | 2714                              | 6970                              | 1771                               | 1291                                                 | 2077                                   | 47833                                              | 16904                                 | 44132                                           | 15559                                            | 106                                             | 100                                             | 60                                              | 47                                              |
| 28 January  | 5974                             | 3564                              | 9239                              | 1458                               | 846                                                 | 3248                                   | 66537                                              | 22095                                 | 59990                                           | 20366                                            | 132                                             | 125                                             | 103                                             | 80                                              |
| 29 January  | 7711                             | 4586                              | 12167                             | 1737                               | 1032                                                 | 4148                                   | 88693                                              | 28780                                 | 81947                                           | 266532                                           | 170                                             | 162                                             | 124                                             | 90                                              |
| 30 January  | 9692                             | 5806                              | 16228                             | 1982                               | 1220                                                 | 4812                                   | 113579                                             | 35144                                 | 102427                                           | 32340                                            | 213                                             | 204                                             | 171                                             | 116                                             |
| 31 January  | 11791                            | 7153                              | 17988                             | 2102                               | 1347                                                 | 5019                                   | 136997                                             | 41076                                 | 11847                                           | 36683                                                              | 259                                             | 249                                             | 243                                             | 166                                             |
| 1 February  | 14380                            | 9074                              | 19644                             | 2590                               | 1921                                                 | 4662                                   | 33844                                              | 48671                                 | 137594                                           | 45121                                            | 304                                             | 394                                             | 328                                             | 215                                             |
| 2 February  | 17295                            | 11177                             | 21558                             | 2293                              | 2105                                                 | 5173                                   | 189643                                             | 566086                                | 163790                                           | 48171                                            | 361                                             | 350                                             | 475                                             | 295                                             |
| 3 February  | 20438                            | 13522                             | 23214                             | 3235                              | 2346                                                 | 5072                                   | 221015                                             | 68988                                 | 171329                                           | 58544                                            | 425                                             | 414                                             | 632                                             | 396                                             |
| 4 February  | 24324                            | 16678                             | 23260                             | 3887                              | 3156                                                 | 9761                                   | 195725                                             | 81093                                 | 186555                                           | 66764                                            | 490                                             | 479                                             | 892                                             | 620                                             |
| 5 February  | 28018                            | 19665                             | 24702                             | 3694                              | 2987                                                 | 5328                                   | 232813                                             | 90997                                 | 186354                                           | 64127                                            | 563                                             | 549                                             | 1153                                            | 633                                             |
| 6 February  | 31116                            | 22112                             | 26358                             | 3143                              | 2447                                                 | 8822                                   | 22222                                              | 141028                                | 186046                                           | 64067                                            | 636                                             | 618                                             | 1540                                            | 817                                             |
| 7 February  | 34546                            | 24953                             | 27657                             | 3399                              | 2841                                                 | 4214                                   | 20732                                              | 114044                                 | 189660                                           | 67802                                            | 722                                             | 699                                             | 2050                                            | 1115                                            |

3. Analyze the data and structure required for the rehearsal

3.1. Data required

This demonstration process with 1,000 people as examples, involving personal position: X coordinate (.far [I,1]) and Y coordinate (.far [I,2]), personal health condition (.FAR [I,3]), personal movement direction: X direction (.far [I,4]) and Y direction (.far [I,5]), number of individual moving steps (.far [I,6]), development minutes (.fnd), number of remaining people (.fNR), etc.

3.2. Demo window required

A virus transmission demo window (Form1).

3.3. Rehearse ideas

Using a random function, the DOTS move at random, dropping a pathogen at first, spreading through contact, becoming infected and then killing it for a while, until finally all the red dots
disappear, as shown in the four graphs.

Figure 1: 0 Days 4 hours 36 minutes virus transmission remaining condition: 1000

Figure 2: 8 Days 12 hours 42 minutes virus transmission remaining condition: 989

Figure 3: 20 Days 23 hours 42 minutes virus transmission remaining condition: 71

Figure 4: 266 Days 19 hours 58 minutes virus transmission remaining condition: 18

4. Rehearse the specific implementation code of the process

```c
#define Number of presenters 1000

PUBLIC viral transmission

viral transmission=CREATEOBJECT("Form1")
IF TYPE("viral transmission") = "O"
viral transmission.Show()
ENDIF
DEFINE CLASS Form1 AS form

PROCEDURE Activate
    Local lnBC
    Local i
    IF PEMSTATUS(thisform,"faR",5)
RETURN
ENDIF
WITH thisform
  .AddProperty("faR[1]")
  .AddProperty("fnR",Number of presenters)
  .AddProperty("fnD",0)
DIMENSION thisform.faR[Number of presenters,6]
thisform.faR = 0
lnBC = thisform.BackColor
FOR i=1 to Number of presenters
  DO WHILE .T.
    Individual X coordinates = INT(RAND() * thisform.Width)
    Individual Y coordinates = INT(RAND() * thisform.Height)
    IF this.Point(Individual X coordinates, Individual Y coordinates) = lnBC
       EXIT
      
      Personal health = 0xFFFFFF
      this.ForeColor = Personal health
      this.Pset(Individual X coordinates, Individual Y coordinates)
  ENDWHILE
  i = INT(RAND() * Number of presenters) + 1
  Personal health = 255
ENDWITH
ENDPROC
PROCEDURE Unload
  IF TYPE("viral transmission") = "O" AND (ISNULL(viral transmission) OR viral transmission == thisform)
     RELEASE viral transmission
  ENDIF
ENDPROC
PROCEDURE Timer1_Timer
  this.Enabled = .F.
  Local lnBC, lnP, lnPC
  Local i
  WITH thisform
    lnBC = thisform.BackColor
    Development minutes = Development minutes + 23
    .Caption = "viral transmission ";
       +TRANSFORM(INT(Development minutes/24/60)) + "days";
       +TRANSFORM(MOD(INT(Development minutes/60), 24)) + "hours";
       +PADL(MOD(Development minutes, 60), 2, "0") + "minutes";
       +"Remaining:" + TRANSFORM(Number of remaining personnel)
  FOR i = 1 to Number of presenters
    IF Personal health = 0
       LOOP
5. Conclusion and Prospect

This paper previews the process of virus transmission and preventive measures, and shows a simple simulation process based on VFP. The results show that the simulation process has the advantages of high speed and high precision, and can simulate the epidemic process well.

At the same time, due to the diversity and complexity of the epidemic situation, the method presented in this paper does not simulate the complete epidemic prototype, for example, it can provide more useful information and data (existing suspected cases and close contacts who are still under medical observation) on the effectiveness of epidemic control, the most critical indicators for judging the effectiveness of epidemic control (new cases confirmed on the same day), and judgments on the effectiveness and trend of epidemic prevention and control, etc., it cannot be based on any one of the above indicators, but must take into account all the variables. These need to be further expanded, the future will continue to further study.
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