Big Tree: Encryption Algorithm, Random Generation,Application in Disease Tracing Tree and Optimized Hardware Architectures for Large Graph Processing

1. API connection

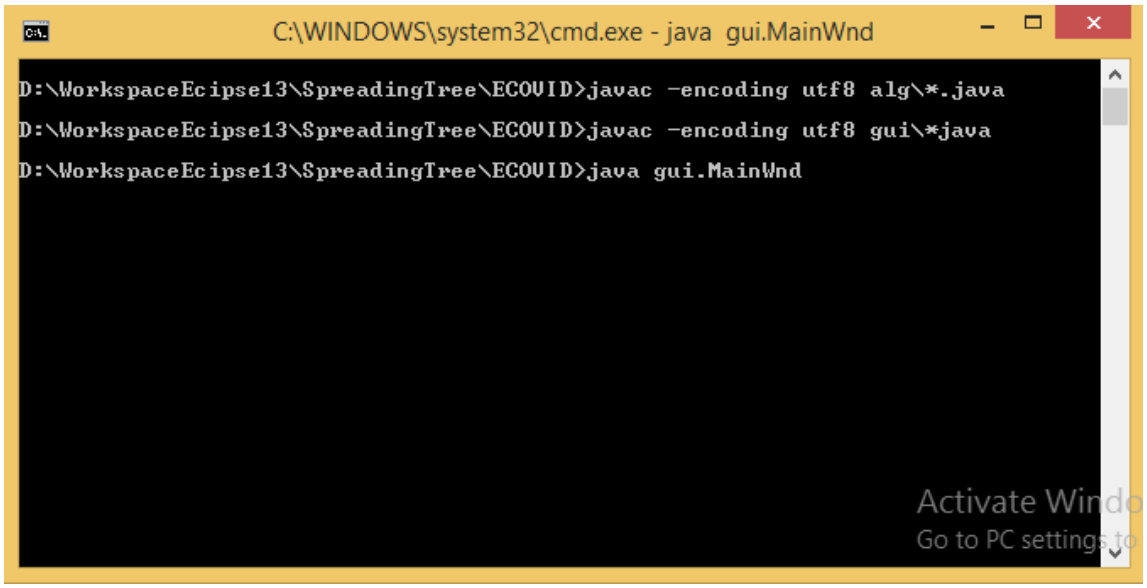
+ Input is a name of data file: ecovid.dat
+ Output is a tree list.

2. Compile the program:

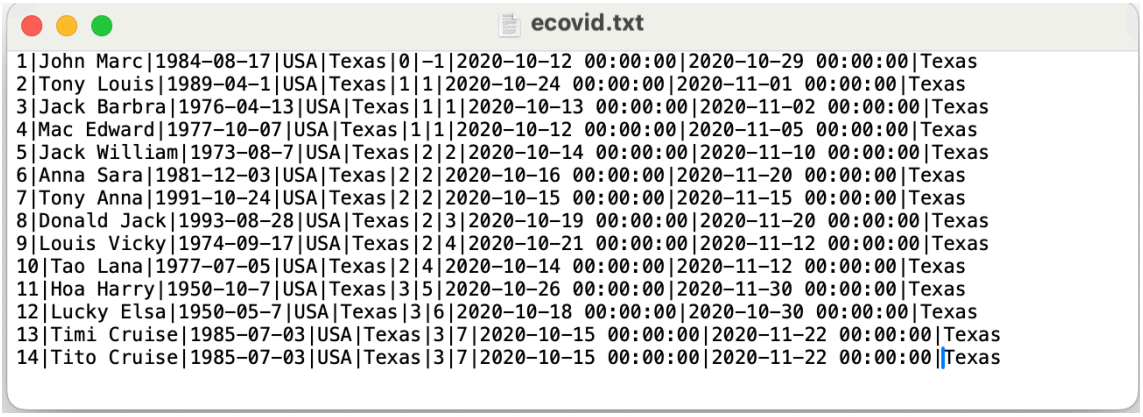
javac -encoding utf8 alg*.java
javac –encoding utf8 gui*.java

3. Run the program

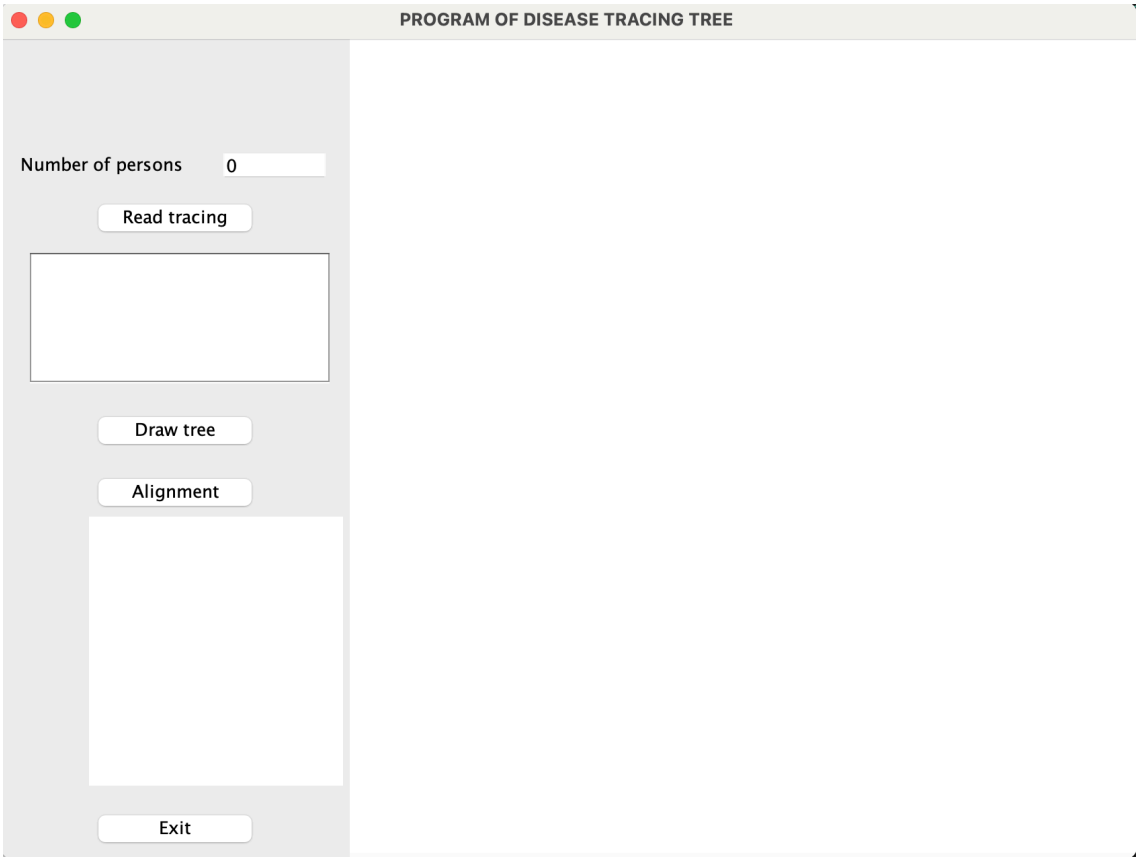
java gui.MainWnd



4. Data in ecovid.dat file

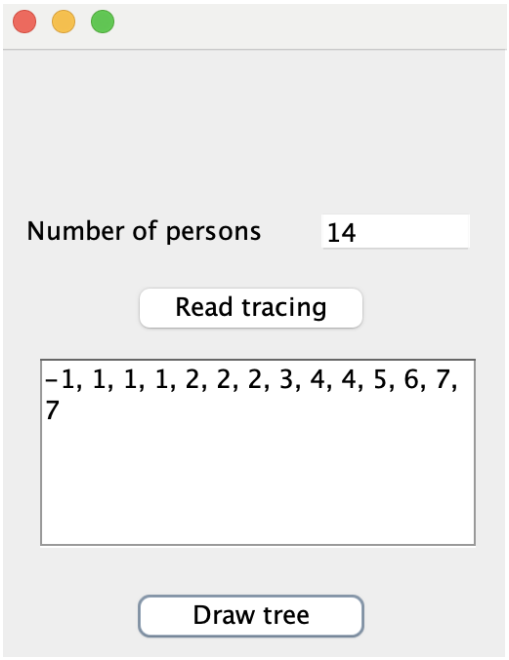


5. Interface of the program



6. Performance

- Step 1: Clicking the button Read tracing, the program will read the data of the ecovid.dat file into the program and display the number of person in the tracing tree as follows. The white box area displays the sequence of natural numbers encoding the tracing tree.



- Step 2: When we press the button Draw tree, the program will display the tree and all levels F0, F1, F2, F3 corresponding to the data. For example, in Fig. 5., the person ID1 (F0) met with three F1s: ID2, ID3 and ID4. Then, the person ID2 came into contact with three F2s: ID5, ID6 and ID7. The person ID7 was the disease source of the ID11 (F3).

- Step 3: The button Aligment to adjust all of the vertices. By clicking on each node of the tree, the program will display the information of that person on the left screen in Fig. 5. For example, when clicking button ID5, the program displays the information including: ID, name, F type (F0, F1...), address, etc. After drawing, you can click, drag and drop to modify the position of the tree's vertices.