```
package Animals;

public class Families {

 private int [] children = {1, 3, 8, 5, 4, 9, 7 };
 private int [] fathers =  {2, 4, 3, 6, 7, 2, 10 };

 private int search ( int k, int [] a)
 {
   for ( int i=0; i < a.length ; i++ )
    if  ( a[i] == k )
      return i;
   return -1;
 }

 //check if there is father-son relationship
 public boolean check_pair ( int n1, int n2 )
 {
   int i = search ( n1, children );
   if ( i != -1 && fathers [i] == n2)
    return true;
   else
     {
       int j = search ( n2, children );
       if ( j != -1 && fathers [j] == n1)
          return true;
          }
   return false ;
 }

 //find the ancestor
 public int find_ancestor ( int child )
 {
   int father = -1;
   int child_location;
   do {
        child_location = search ( child, children );
        if ( child_location != -1 )
         {
         father = fathers [ child_location ] ;
         child = father;
         }
        }  while ( child_location >= 0);
   return father;
 }

 }
```

```
// test class Families
package Animals;
import javax.swing.*;

public class Animals {

  public static void main(String args[])
  {
    // create the object
    Families f = new Families ();

    String s;
    // get the number of the first animal
    s = JOptionPane.showInputDialog( "Enter # of first animal:" );
    int first = Integer.parseInt(s);

    // get the number of the second animal
    s = JOptionPane.showInputDialog( "Enter # of second animal:" );
    int second = Integer.parseInt(s);

    // send message to object to check father-son relationship

    boolean check = f.check_pair ( first, second );
    if ( check )
       JOptionPane.showMessageDialog(
       null,"\nThere is a father-son relationship" , "Results",
            JOptionPane.INFORMATION_MESSAGE );
    else
        JOptionPane.showMessageDialog(
       null,"\nNO father-son relationship!" , "Results",
            JOptionPane.INFORMATION_MESSAGE );

    // get the child number
    s = JOptionPane.showInputDialog( "Enter child:" );
    int child = Integer.parseInt(s);

    // send message to object to find the ancestor

    int ancestor = f.find_ancestor (  child );
    if ( ancestor != -1 )
     JOptionPane.showMessageDialog(
       null,"\nThe ancestor of " + child +" is " + ancestor ,
            "Results",
            JOptionPane.INFORMATION_MESSAGE );
    else
      JOptionPane.showMessageDialog(
       null,"\nNo ancestor to " + child ,
            "Results",
            JOptionPane.INFORMATION_MESSAGE );

      System.exit( 0 );   // terminate the program
    }
}
```