// professiorsystem.cpp : 定义控制台应用程序的入口点。

//

#include "stdafx.h"

#include "iostream"

using namespace std;

//存放推理规则的结构体

typedef struct{

int codition[5];

int name;

}Rule;

//初始化综合数据库

char \*feature[]={"有毛","有奶","有羽毛","会飞","会下蛋","吃肉","有犬齿",//0,1,2,3,4,5,6

"有爪","眼睛盯前方","有蹄","反刍","黄褐色","有暗斑点","有黑色条纹","长脖","长腿",//7,8,9,10,11,12,13,14,15

"不会飞","会游泳","黑白两色","善飞","哺乳动物","鸟类","肉食类","蹄类",//16,17,18,19,20,21,22,23

"企鹅","信天翁","鸵鸟","斑马","长颈鹿","虎","金钱豹"};//24,25,26,27,28,29,30

//规则库

Rule rule[15]={

{{0,-1},20},//1

{{1,-1},20},//2

{{2,-1},21},//3

{{3,4,-1},21},//4

{{5,-1},22},//5

{{6,7,8,-1},22},//6

{{20,9,-1},23},//7

{{20,10,-1},23},//8

{{20,5,11,12,-1},30},//9

{{20,5,11,13,-1},29},//10

{{23,14,15,12,-1},28},//11

{{23,13,-1},27},//12

{{21,14,15,16,-1},26},//13

{{21,17,16,18,-1},24},//14

{{21,19,-1},25}//15

};

int flag[23]={0};//标记各个特征是否被选择

void menu();

int isAnimal(int a);

void input();

int inference();

//菜单

void menu(){

for(int i=0;i<=30;i++){

if(i%4==0&&i!=0)

cout<<endl;

printf("%-3d.%-15s",i,feature[i]);

}

}

//判断是否是动物

int isAnimal(int a){

if(a>=24&&a<=30)

return 1;

else

return 0;

}

//输入函数

void input()

{

int ti=0;

for(int i=0;i<24;i++)

{

flag[i]=0;

}

cout<<"\n输入选择，-1结束：";

while(ti!=-1)

{

cin>>ti;

if(ti>=0&&ti<=23)

flag[ti]=1;

else if(ti!=-1)

{

cout<<"请输入0-24之间的数字"<<endl;

cin.clear();

cin.sync();

}

}

}

//正向推理

int inference()

{

int ti;

int i,j;

int tres;

cout<<endl;

for(i=0;i<15;i++)

{

j=0;

ti=rule[i].codition[j];

while(ti!=-1)

{

if(flag[ti]==0)//如果这个条件没有被选择直接跳出循环

break;

j++;

ti=rule[i].codition[j];

}

if(ti==-1)//如果满足规则库

{

tres=rule[i].name;//标记推理的结果

flag[tres]=1;//把推理出的结果作为条件加入规则库

printf("运用了规则%d：",i);

j=0;

while(rule[i].codition[j]!=-1){//

cout<<feature[rule[i].codition[j]]<<" ";

j++;

}

cout<<"====>"<<feature[tres]<<endl;

if(isAnimal(tres)){//判断是否得出解，若是，结束。若不是，继续执行循环体

return 1;

}

}

}

if(i==15)

printf("没有这种动物");

return -1;

}

int main()

{

char x;

cin>>x;

while(x!='n')

{

menu();

input();

inference();

cout<<"\n继续？（Y/N）"<<endl;

cin>>x;

system("cls");

}

return 0;

}