宫殿为 3*3 的立方体，共 27 个房间，每个房间与和它相邻的房间相通。

房间具有房间号，房间名，房间坐标等属性，房间号与坐标是十进制与三进制的关系。在下图中有详细解释。

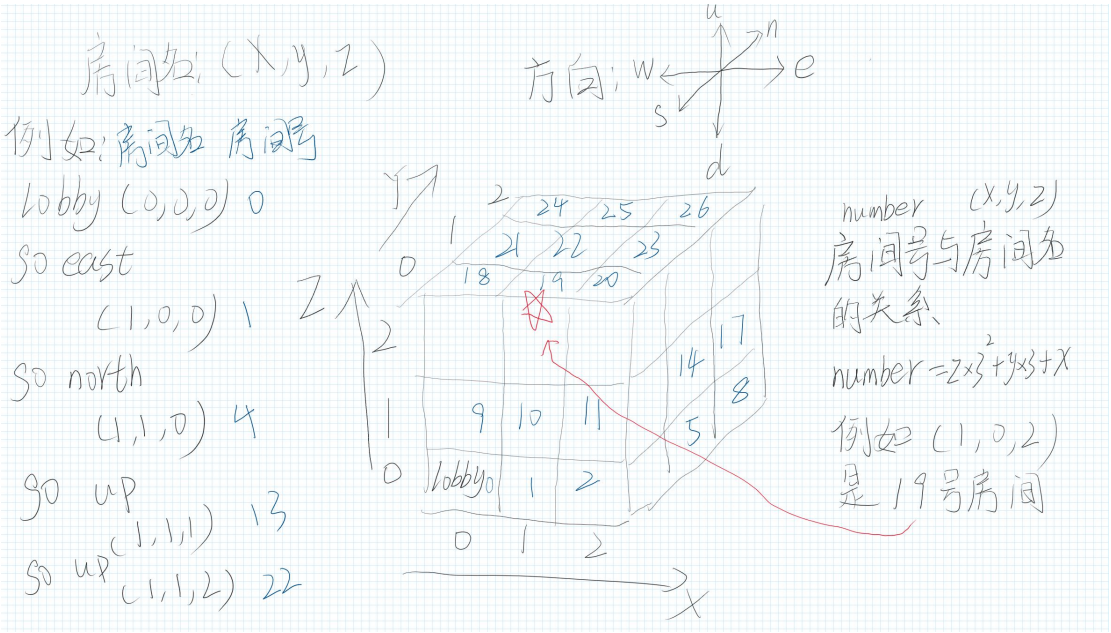
起点房间名为 lobby，房间号为 0，房间坐标为（0，0，0）。

运行程序后会先介绍游戏背景与任务，按下任意键开始游戏。请注意，这不是程序结束的标志，请不要直接关闭终端。

找到公主后，程序也会显示“按任意键继续”，这不是程序结束的标志，请不要直接关闭终端。按任意键后会显示与公主的对话，之后游戏仍将继续，带着公主回到 lobby 才算游戏结束。

在每个房间中，程序会显示房间名（room(x,y,z)的形式或 lobby），出口（包括 east,west,north,south,up,down），与游戏提示。在有怪物或公主的房间会触发剧情。

在其他房间中，你需要根据提示选择一个出口来继续游戏，你只能选择当前房间给出的出口，否则会提示“Invalid order”。以 east 出口为例，程序允许您输入：“go east”，“east”或“e”。



以防程序中的中文注释乱码，这里给出源代码：

```
class room
{
public:
    void setName();//设置房间名字为room(x,y,z)或lobby。
    void setMonster();//放置怪物
    bool getMonster();//判断是否有怪物
    void setPrincess();//放置公主
    void foundPrincess();//带走公主
    bool getPrincess();//判断是否有公主
    void info();//给出信息
    int getLocation();//获取房间号
    void initial(int no);//初始化房间，no为房间号
    //获取房间坐标
    int getx();
    int gety();
    int getz();
protected:
    string name;//房间名
    //房间坐标
    int x=0;
    int y=0;
    int z=0;
    bool monster = 0;//有无怪物
    bool princess = 0;//有无公主
};
class castle
{
public:
    void initial();//初始化宫殿
    vector<room>rooms;//宫殿的全部房间
    int size=27;
};
int main()
{
    //背景与任务介绍
    cout <<"You are now in the lobby of the castle. What you need to do is to find the princess who is prisoned in the castle by a monster, and take her out." << endl;
    cout << "This task is dangerous. If you are caught by the monster, you have no way to survive." << endl;
    cout << "So if you are ready to save the princess, you can press the enter key to continue.Or you can just click the exit button to leave." << endl;
```

```
    system("pause");
    srand(time(0));
    //是否见过公主或怪物
    bool meetMonster = 0;
    bool meetPrincess = 0;
    castle myCastle;
    //初始化
    myCastle.initial();
    //是否进入了宫殿的判断
    bool started = 0;
    //当前位置
    int location = 0;
    //当前房间
    room currentRoom = myCastle.rooms[location];
    //探索宫殿
    while (1)
    {
        //进入过宫殿，还没有找到公主，却再次回到的lobby，你是想要逃跑了吗？
        if (meetPrincess == 0 && currentRoom.getLocation() == 0&&started==1)
        {
            cout << "Hey! You haven't found the princess yet.Do you want to run away? Come
on, let's continue." << endl;
        }
        //找到公主并回到了lobby，可以离开了
        if (meetPrincess ==1 && currentRoom.getLocation() == 0)
        {
            break;
        }



    loop:
        //给出房间信息
        currentRoom.info();
        //房间有怪物，你没了
        if (currentRoom.getMonster())
        {
            meetMonster = 1;
            break;
        }
        //房间有公主，你带走了公主
        if (currentRoom.getPrincess())
        {
```

```
                meetPrincess = 1;
                myCastle.rooms[location].foundPprincess();
                currentRoom.foundPprincess();
            }
            //输入你的下一步
            string order;
            getline(cin,order);
            if ((order == "go east"||order=="east"||order=="e")&&(currentRoom.getx() ==
0||currentRoom.getx()==1))
            {
                //向东走等价于房间号加1
                currentRoom = myCastle.rooms[++location];
            }
            else if ((order == "go west" || order == "west" ||order == "w") && (currentRoom.getx()
== 2 || currentRoom.getx() == 1))
            {
                //向西走等价于房间号减1
                currentRoom = myCastle.rooms[--location];
            }
            else if ((order == "go north" || order == "north" || order == "n") &&
(currentRoom.gety() == 0 || currentRoom.gety() == 1))
            {
                //向北走等价于房间号加3
                location += 3;
                currentRoom = myCastle.rooms[location];
            }
            else if ((order == "go south" || order == "south" || order == "s") &&
(currentRoom.gety() == 2 || currentRoom.gety() == 1))
            {
                //向南走等价于房间号减3
                location -= 3;
                currentRoom = myCastle.rooms[location];
            }
            else if ((order == "go up" || order == "up" || order == "u") && (currentRoom.getz()
== 0 || currentRoom.getz() == 1))
            {
                //上楼等价于房间号加9
                location += 9;
                currentRoom = myCastle.rooms[location];
            }
            else if ((order == "go down" || order == "down" || order == "d") && (currentRoom.getz()
== 2 || currentRoom.getz() == 1))
            {
                //下楼等价于房间号减9
```

```
                location -= 9;
                currentRoom = myCastle.rooms[location];
            }
            else
            {
                //看不懂你的指令
                cout << "Invalid order!" << endl;
                // goto语句防止这种情况发生：你在起点输入了错误指令，而程序却判断成你是从宫殿内回到起点的
                goto loop;
            }
            started = 1;
        }
        //退出循环可能是因为遇见怪物或者救出公主，这里进行判断
        if (meetMonster == 0)
        {
            cout << "Congradulation!You secured the princess successfully!";
        }
        return 0;
    }

    void room::setName()
    {
        if (x == 0 && y == 0&&z==0)
            name = "lobby";
        else
        {
            name = "room(";
            name += x+'0';
            name += ",";
            name += y+'0';
            name += ",";
            name += z+'0';
            name += ")";
        }
    }
    void room::setMonster()
    {
        monster = 1;
    }
    bool room::getMonster()
    {
        return monster;
    }
```

```
void room::setPrincess()
{
    princess = 1;
}
bool room::getPrincess()
{
    return princess;
}
void room::foundPrincess()
{
    princess = 0;
}
void room::initial(int no)
{
    //例如：no=16,则x=1,y=2,z=1,本质上是3进制
    x = no % 3;
    y = no / 3 % 3;
    z = no / 3 / 3 % 3;
    setName();
    //setExit();
}
void room::info()
{
    if (monster)
    {
        cout << "Nope, the monster in this room!"<<endl<<"You fight, and you
died..."<<endl<<"GAME OVER..."<<endl;
        return;
    }
    if (princess)
    {
        cout << "Ohhh,you find that the princess is in this room!" << endl;
        system("pause");
        cout << "Princess: Oh, my hero! You come to secure me! Thank you!" << endl;
        system("pause");
        cout << "Player: My princess, I won't let the monster hurt you anymore! I will take
you out right now. Let's go!" << endl;
        system("pause");
        cout << "Now you need to secure the princess out of this castle!"<<endl;
    }
    else
        cout << "Welcom to the room : " << name << "." << endl;
    cout<< "Here are the exits : ";
    //根据房间坐标判断出口情况
```

```
    switch (x)
    {
    case 0:cout<<"east "; break;
    case 1:cout<<"east west "; break;
    case 2:cout<<"west "; break;
    }
    switch (y)
    {
    case 0:cout << "north "; break;
    case 1:cout << "north south "; break;
    case 2:cout << "south "; break;
    }
    switch (z)
    {
    case 0:cout << "up "; break;
    case 1:cout << "up down "; break;
    case 2:cout << "down "; break;
    }
    cout <<endl<<"You can choose one exit to continue. For example: go east."<< endl;
    cout << "Your choice is :" << endl;
}
int room::getLocation()
{
    //房间号与坐标本质上是十进制与三进制的关系
    return z * 9 + y * 3 + x;
}
int room::getx()
{
    return x;
}
int room::gety()
{
    return y;
}
int room::getz()
{
    return z;
}
void castle::initial()
{
    //随机指定怪物和公主生成的房间
    int monster = rand() % 27;
    while (monster == 0)
        monster = rand() % 27;
```

```
    int princess = rand() % 27;
    while (princess == monster||princess==0)
        princess = rand() % 27;
    for (int i = 0; i < size; i++)
    {
        room newRoom;
        newRoom.initial(i);
        if (i == monster)
            newRoom.setMonster();
        if (i == princess)
            newRoom.setPrincess();
        rooms.push_back(newRoom);
    }
}
```