

```

boolean isAllowed(int dir)

{
    // Expansion algorithm

    //

    int s0 = (principal->p6.x * principal->p6.y < 0) ? 1 : 0;
    int s1 = (principal->p6.y * principal->p6.z < 0) ? 1 : 0;
    int s2 = (principal->p6.z * principal->p6.x < 0) ? 1 : 0;

    //

    int sx = sgn(principal->p6.x);
    int sy = sgn(principal->p6.y);
    int sz = sgn(principal->p6.z);

    //

    if(principal->p6.x != 0)
    {
        if(principal->p6.y != 0)
        {
            if(principal->p6.z != 0)
            {

                // 3d spiral

                //

                switch(principal->p201 % 3)
                {
                    case 0:
                        if(sx < 0)
                        {
                            if(dir == 1) return true;
                        }
                    else
                }
            }
        }
    }
}

```

```
{  
    if(dir == 0) return true;  
}  
  
break;  
  
case 1:  
  
    if(sy < 0)  
{  
    if(dir == 3) return true;  
}  
  
else  
{  
    if(dir == 2) return true;  
}  
  
break;  
  
case 2:  
  
    if(sz < 0)  
{  
    if(dir == 5) return true;  
}  
  
else  
{  
    if(dir == 4) return true;  
}  
  
break;  
}  
}  
  
else  
{
```

```

// xy plane

//

if(principal->p201 % 2 == s0)

{

    if(sx < 0)

    {

        if(dir == 1) return true;

    }

    else

    {

        if(dir == 0) return true;

    }

}

else

{

    if(sy < 0)

    {

        if(dir == 3) return true;

    }

    else

    {

        if(dir == 2) return true;

    }

}

// 

if(principal->p201 % 3 == 0)

{

    if(dir == 4) return true;
}

```

```
        if(dir == 5) return true;
    }
}

else if(principal->p6.z != 0)
{
    // zx plane
    //
    if(principal->p201 % 2 == s2)
    {
        if(sz < 0)
        {
            if(dir == 5) return true;
        }
        else
        {
            if(dir == 4) return true;
        }
    }
    else
    {
        if(sx < 0)
        {
            if(dir == 1) return true;
        }
        else
        {
            if(dir == 0) return true;
        }
    }
}
```

```
        }

    }

// 

if(principal->p201 % 3 == 2)

{

    if(dir == 2) return true;

    if(dir == 3) return true;

}

}

else

{

    // x axis

    //

    if(sx < 0)

    {

        if(dir == 1) return true;

    }

    else

    {

        if(dir == 0) return true;

    }

    //

    if(principal->p201 % 2 == 0)

    {

        if(sx < 0)

        {

            if(dir == 2) return true;

        }

    }

}
```

```
    else
    {
        if(dir == 3) return true;
    }
    //
    if(sx < 0)
    {
        if(dir == 5) return true;
    }
    else
    {
        if(dir == 4) return true;
    }
}
else
{
    if(sx < 0)
    {
        if(dir == 3) return true;
    }
    else
    {
        if(dir == 2) return true;
    }
    //
    if(sx < 0)
    {
        if(dir == 4) return true;
    }
}
```

```

        }

        else

        {

            if(dir == 5) return true;

        }

    }

}

else if(principal->p6.y != 0)

{

    if(principal->p6.z != 0)

    {

        // yz plane

        //

        if(principal->p201 % 2 == s1)

    {

        if(sy < 0)

        {

            if(dir == 3) return true;

        }

        else

        {

            if(dir == 2) return true;

        }

    }

    else

    {

        if(sz < 0)

```

```
{  
    if(dir == 5) return true;  
}  
  
else  
{  
    if(dir == 4) return true;  
}  
}  
  
//  
  
if(principal->p201 % 3 == 1)  
{  
    if(dir == 0) return true;  
    if(dir == 1) return true;  
}  
}  
  
}  
  
else  
{  
    // y axis  
    //  
    if(sy < 0)  
    {  
        if(dir == 3) return true;  
    }  
    else  
{  
        if(dir == 2) return true;  
    }  
}
```

```
if(principal->p201 % 2 == 0)

{
    if(sy < 0)

    {
        if(dir == 1) return true;

    }

    else

    {

        if(dir == 0) return true;

    }

    //

    if(sy < 0)

    {

        if(dir == 4) return true;

    }

    else

    {

        if(dir == 5) return true;

    }

}

else

{
    if(sy < 0)

    {
        if(dir == 0) return true;
    }

    else
    {

```

```

                if(dir == 1) return true;

            }

        //

        if(sy < 0)

        {

            if(dir == 5) return true;

        }

        else

        {

            if(dir == 4) return true;

        }

    }

}

else if(principal->p6.z != 0)

{

    // z axis

    //

    if(sz < 0)

    {

        if(dir == 5) return true;

    }

    else

    {

        if(dir == 4) return true;

    }

    //

    if(principal->p201 % 2 == 0)

```

```
{  
    if(sz < 0)  
    {  
        if(dir == 0) return true;  
    }  
    else  
    {  
        if(dir == 1) return true;  
    }  
    //  
    if(sz < 0)  
    {  
        if(dir == 3) return true;  
    }  
    else  
    {  
        if(dir == 2) return true;  
    }  
}  
    else  
    {  
        if(sz < 0)  
        {  
            if(dir == 1) return true;  
        }  
        else  
        {  
            if(dir == 0) return true;  
        }  
    }  
}
```

```
        }

        // 

        if(sz < 0)

        {

            if(dir == 2) return true;

        }

        else

        {

            if(dir == 3) return true;

        }

    }

}

else

{

    // Root

    //

    int i;

    for(i = 0; i < 6; i++)

        if(dir == i) return true;

}

return false;
```