



```

54
55
56 function path(map, start, end){
57     var queue = [start];
58
59     function insert(x, y){
60
61         if(x < 0 || x >= 100 || y < 0 || y >= 100)
62             return ;
63         if(map[y * 100 + x])
64             return ;
65
66         map[y * 100 + x] = 2;
67         queue.push([x, y]);
68     }
69
70     while(queue.length){
71         let [x, y] = queue.shift();
72         console.log(x, y);
73         if(x === end[0] && y === end[1]) {
74             return true;
75         }
76         insert(x - 1, y);
77         insert(x, y - 1);
78         insert(x + 1, y);
79         insert(x, y + 1);
80     }
81 }

```

```
55
56 function sleep(t){
57   return new Promise(function(resolve){
58     setTimeout(resolve, t);
59   });
60 }
61
62
63 async function findPath(map, start, end){
64   let table = Object.create(map);
65   let queue = [start];
66
67   async function insert(x, y, pre){
68     if(x < 0 || x >= 100 || y < 0 || y >= 100)
69       return ;
70     if(table[y * 100 + x])
71       return ;
72
73     await sleep(1);
74     container.children[y * 100 + x].style.backgroundColor = "lightgreen";
75     table[y * 100 + x] = pre;
76     queue.push([x, y]);
77   }
78
79   while(queue.length){
80     let [x, y] = queue.shift();
81     console.log(x, y);
82     if(x === end[0] && y === end[1]) {
83       let path = [];
84
85       while(x !== start[0] || y !== start[1]) {
86         path.push(map[y * 100 + x]);
87         [x, y] = table[y * 100 + x].pre;
88       }
89       path.push(start);
90       return path;
91     }
92     for(let i = 0; i < 4; i++){
93       let nx = x + (i % 2 === 0 ? 1 : -1);
94       let ny = y + (i % 2 === 1 ? 1 : -1);
95       await insert(nx, ny, [x, y]);
96     }
97   }
98   return null;
99 }
```

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```
79 while(queue.length){
80   let [x, y] = queue.shift();
81   console.log(x, y);
82   if(x === end[0] && y === end[1]) {
83     let path = [];
84
85     while(x !== start[0] || y !== start[1]) {
86       path.push(map[y * 100 + x]);
87       [x, y] = table[y * 100 + x].pre;
88     }
89     path.push(start);
90     return path;
91   }
92   for(let i = 0; i < 4; i++){
93     let nx = x + (i % 2 === 0 ? 1 : -1);
94     let ny = y + (i % 2 === 1 ? 1 : -1);
95     await insert(nx, ny, [x, y]);
96   }
97 }
98 return null;
99 }
```

极客大学

path 那么它是一个对象