# lab2 文档

# 部署

## 安装**NodeJS**环境

```
node-v18.15.0-linux-x64/include/node/openssl/comp.h
node-v18.15.0-linux-x64/include/node/openssl/pem.h
node-v18.15.0-linux-x64/include/node/openssl/provider.h
node-v18.15.0-linux-x64/include/node/openssl/crmf_asm.h
node-v18.15.0-linux-x64/include/node/openssl/ssl_asm.h
node-v18.15.0-linux-x64/include/node/openssl/esserr.h
node-v18.15.0-linux-x64/include/node/openssl/bn.h
node-v18.15.0-linux-x64/include/node/openssl/ssl2.h
node-v18.15.0-linux-x64/include/node/openssl/httperr.h
node-v18.15.0-linux-x64/include/node/openssl/cryptoerr_legacy.h
node-v18.15.0-linux-x64/include/node/openssl/ess_no-asm.h
node-v18.15.0-linux-x64/include/node/openssl/ocsp_asm.h
node-v18.15.0-linux-x64/include/node/openssl/engineerr.h
node-v18.15.0-linux-x64/include/node/openssl/crmferr.h
node-v18.15.0-linux-x64/include/node/openssl/rc5.h
node-v18.15.0-linux-x64/include/node/openssl/asn1t.h
node-v18.15.0-linux-x64/include/node/openssl/pkcs12_no-asm.h
node-v18.15.0-linux-x64/include/node/openssl/configuration.h
node-v18.15.0-linux-x64/include/node/openssl/pkcs12.h
node-v18.15.0-linux-x64/include/node/openssl/asn1t_no-asm.h
node-v18.15.0-linux-x64/include/node/openssl/pemerr.h
node-v18.15.0-linux-x64/include/node/openssl/x509_asm.h
node-v18.15.0-linux-x64/include/node/openssl/err_no-asm.h
node-v18.15.0-linux-x64/include/node/openssl/crmf.h
node-v18.15.0-linux-x64/include/node/openssl/x509_vfy_no-asm.h
node-v18.15.0-linux-x64/include/node/openssl/x509v3err.h
node-v18.15.0-linux-x64/include/node/openssl/param_build.h
node-v18.15.0-linux-x64/include/node/v8-callbacks.h
node-v18.15.0-linux-x64/README.md
root@VM-4-5-ubuntu:/usr/local# mv node-v18.15.0-linux-.xz node
root@VM-4-5-ubuntu:/usr/local# vim /etc/profile
root@VM-4-5-ubuntu:/usr/local# source /etc/profile
root@VM-4-5-ubuntu:/usr/local# node -v
v12.22.9
root@VM-4-5-ubuntu:/usr/local# npm -v
8.5.1
```

配置项目

```
root@VM-4-5-ubuntu:/home/3D-multi-player-main/nodeapps/blockland# rm -rf packa
ge-lock.json
root@VM-4-5-ubuntu:/home/3D-multi-player-main/nodeapps/blockland# rm -rf packa
ge.json
root@VM-4-5-ubuntu:/home/3D-multi-player-main/nodeapps/blockland# npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.

See `npm help init` for definitive documentation on these fields
and exactly what they do.

Use `npm install <pkg>` afterwards to install a package and
save it as a dependency in the package.json file.

Press ^C at any time to quit.
package name: (blockland)
version: (1.0.0)
description: none
entry point: (app.js)
test command:
git repository:
keywords:
author:
license: (ISC)
```

# 运行

express & socket.io

```
root@VM-4-5-ubuntu:/home/3D-multi-player-main/nodeapps/blockland# npm install
express@4.15.2 --save

added 46 packages, and audited 47 packages in 5s

8 vulnerabilities (2 moderate, 6 high)

To address all issues, run:
  npm audit fix

Run `npm audit` for details.
root@VM-4-5-ubuntu:/home/3D-multi-player-main/nodeapps/blockland# npm install
socket.io@2.2.0 --save
npm WARN deprecated debug@4.1.1: Debug versions >=3.2.0 <3.2.7 || >=4 <4.3.1 h
ave a low-severity ReDos regression when used in a Node.js environment. It is
recommended you upgrade to 3.2.7 or 4.3.1. (https://github.com/visionmedia/deb
ug/issues/797)

added 41 packages, and audited 88 packages in 6s

13 vulnerabilities (5 moderate, 8 high)

To address all issues, run:
  npm audit fix

Run `npm audit` for details.
```

forever

```
root@VM-4-5-ubuntu:/home/3D-multi-player-main/nodeapps/blockland# npm install
forever -g
npm WARN deprecated source-map-url@0.4.1: See https://github.com/lydell/source
-map-url#deprecated
npm WARN deprecated urix@0.1.0: Please see https://github.com/lydell/urix#depr
ecated
npm WARN deprecated resolve-url@0.2.1: https://github.com/lydell/resolve-url#d
eprecated
npm WARN deprecated source-map-resolve@0.5.3: See https://github.com/lydell/so
urce-map-resolve#deprecated
npm WARN deprecated chokidar@2.1.8: Chokidar 2 does not receive security updat
es since 2019. Upgrade to chokidar 3 with 15x fewer dependencies

added 294 packages, and audited 295 packages in 18s

42 packages are looking for funding
  run `npm fund` for details

8 vulnerabilities (4 high, 4 critical)

To address all issues (including breaking changes), run:
  npm audit fix --force

Run `npm audit` for details.
root@VM-4-5-ubuntu:/home/3D-multi-player-main/nodeapps/blockland# forever star
t app.js
warn:    --minUptime not set. Defaulting to: 1000ms
warn:    --spinSleepTime not set. Your script will exit if it does not stay up
 for at least 1000ms
info:    Forever processing file: app.js
```
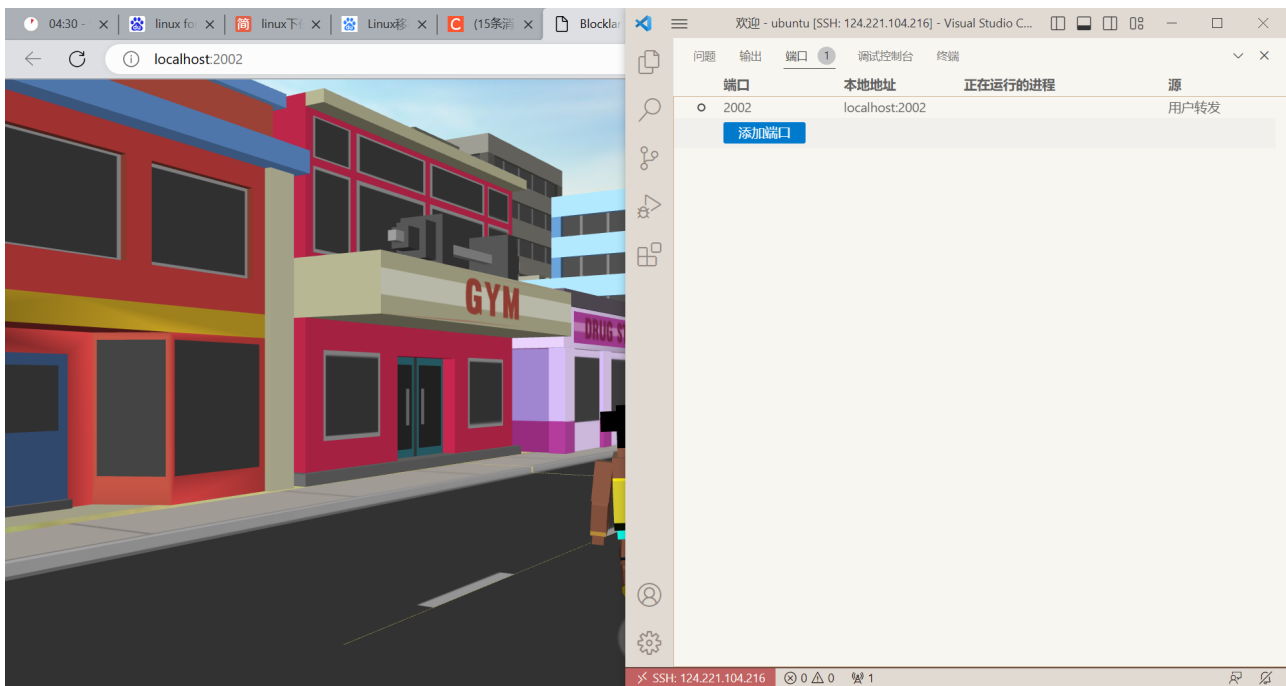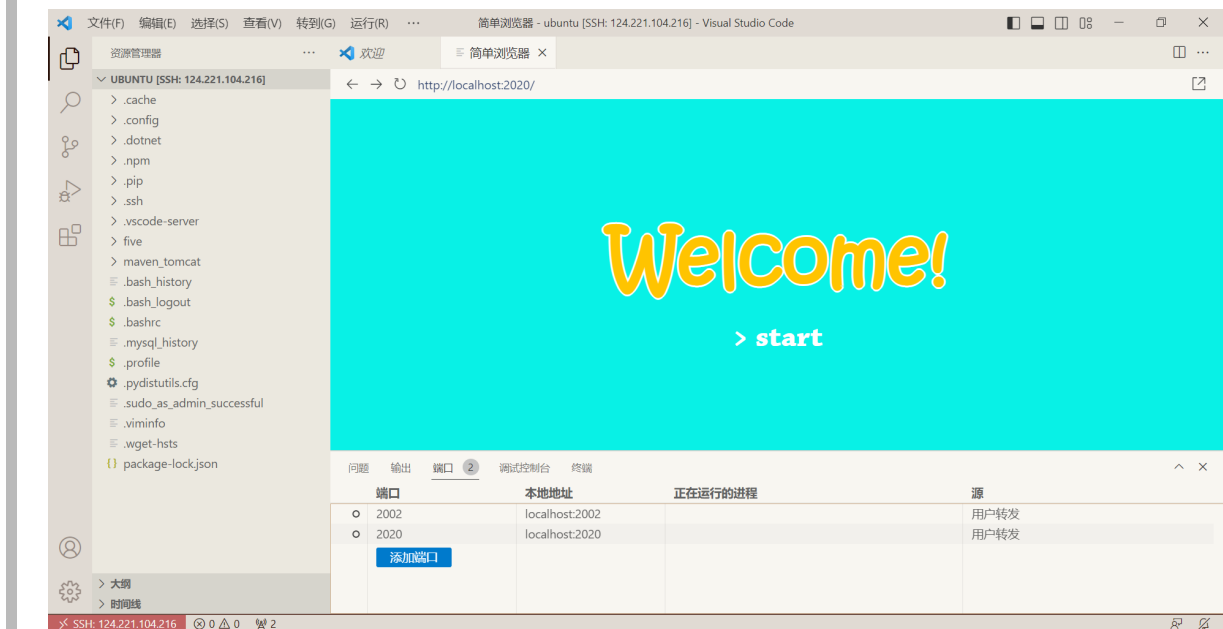
## 结果展示

这里因为2002端口没有向公网开放，所以用VScode转发给localhost显示了。

显示可以正常运行。

# 进阶功能

为后面的PJ做了一些打算，但是只做了一点点改动，下面会说明。

修改过的内容部署在了*2020*端口上！

## 概述

PJ打算做成警察抓小偷的样式，玩家进入后选择角色，然后需要答题才能移动一次（转动、前进或者后退）。

在blockland的v0版本上进行了修改。

目前完成的东西：

- 场景视角修改为俯视
- 人物大小重设
- 去掉了移动手柄，改为前后左右按钮
- 添加了简单（lou）的欢迎界面和角色选择逻辑

## 场景&人物大小

- 将场景设置成了俯视的视角，这是通过改变 `camera.position` 实现的。由于游戏暂时只用到了位于背后的camera，所以只需要改变它的位置就可以了。

  `back.position.set(0, 15000, -7500);`

- 将人物放大成6倍，因为希望可以显示成类似跳格子一样的大小比例。

  呈现出来像这样：

  

- 将人物位置修改了，这样初始位置就都是站在那个井盖上（喂）

## 移动手柄

移动按钮是参照原本的joystick写的，但是相关的逻辑做了重构。

按左键将会向左旋转90°，右键同理。按上键前进一个步长，按下键后退一个步长。这与本来的joystick的最大区别在于，给移动加上了单位，不再像本来一样通过鼠标位置判定移动强度了。由于没有强度，跑动动作也去掉了。

移动按钮写在`panel.js`中：

```javascript
class Panel {
    constructor(options) {
        // const stopButton = document.createElement("div");
        // stopButton.style.cssText = "position:absolute;
bottom:57px; width:40px; height:40px; background:rgba(255, 255,
255, 0.5); border:#444 solid medium; border-radius:50%; left:50%;
transform:translateX(-50%);";
        // document.body.appendChild(stopButton)
        // stopButton.addEventListener('click',ev => {
        //     ev.preventDefault()
        //     if (this.onMove!==undefined)
        //         this.onMove.call(this.game, 0, 0);
        // })

        const leftButton = document.createElement("div");
        leftButton.innerHTML = '<'
        leftButton.style.cssText = "position:absolute;" +
            " bottom:60px;" +
            "font-size:30px;" +
            " background:rgba(126, 126, 126, 0.5);" +
            " border:#444 solid medium;" +
            " right:50%;" +
            " transform:translateX(-30px);";
        document.body.appendChild(leftButton)
        leftButton.addEventListener('click',(ev => {
            ev.preventDefault()
            this.onMove.call(this.game, 0, -Math.PI/2);
        }))

        const rightButton = document.createElement("div");
        rightButton.innerHTML = '>'
        rightButton.style.cssText = "position:absolute;" +
            " bottom:60px;" +
            "font-size:30px;" +
            " background:rgba(126, 126, 126, 0.5);" +
            " border:#444 solid medium;" +
```

```javascript
            " left:50%;"
        + " transform:translateX(30px);";
    document.body.appendChild(rightButton)
    rightButton.addEventListener('click',(ev => {
        ev.preventDefault()
        this.onMove.call(this.game, 0, Math.PI/2);
    }))

    const upButton = document.createElement("div");
    upButton.innerHTML = '>'
    upButton.style.cssText = "position:absolute;" +
        " bottom:100px;" +
        "font-size:30px;" +
        " background:rgba(126, 126, 126, 0.5);" +
        " border:#444 solid medium;" +
        " left:50%;" +
        " transform:translateX(-10px) rotate(-90deg);"
    document.body.appendChild(upButton)
    upButton.addEventListener('click',(ev => {
        ev.preventDefault()
        if (this.onMove!==undefined)
            this.onMove.call(this.game, 1500, 0);
    }))

    const downButton = document.createElement("div");
    downButton.innerHTML = '>'
    downButton.style.cssText = "position:absolute;" +
        " bottom:20px;" +
        "font-size:30px;" +
        " background:rgba(126, 126, 126, 0.5);" +
        " border:#444 solid medium;" +
        " left:50%;" +
        " transform:translateX(-10px) rotate(90deg);"
    document.body.appendChild(downButton)
    downButton.addEventListener('click',(ev => {
        ev.preventDefault()
        if (this.onMove!==undefined)
            this.onMove.call(this.game, -1500, 0);
    }))
    this.onMove = options.onMove;
    this.game = options.game;
```

```
        }

    }
```

除此之外，game中移动的判定逻辑也修改了：

```javascript
// 改为专门负责手柄控制。
playerControl(forward, turn) {
    turn = -turn;
    this.player.move = {forward, turn};
}
```

```javascript
movePlayer() {
    const pos = this.player.object.position.clone();
    const turnStep = Math.PI / 4 * 0.01;
    const moveStep = 10;
    // configs and ...
    if (Math.abs(this.player.move.forward) > moveStep) {
        if (this.player.move.forward > 0 && !blocked) {
            if (this.player.action !== 'Walking') this.action =
'Walking';
            this.player.move.forward -= moveStep;
            this.player.object.translateZ(moveStep);
        } else if (this.player.move.forward < 0 && !blocked) {
            this.player.move.forward += moveStep;
            if (this.player.action !== 'Walking Backwards')
this.action = 'Walking Backwards';
            this.player.object.translateZ(-moveStep);
        }
    } else if (Math.abs(this.player.move.turn) > turnStep) {
        if (this.player.move.turn > 0) {
            this.player.object.rotateY(turnStep);
            this.player.move.turn -= turnStep
        } else if (this.player.move.turn < 0) {
            this.player.object.rotateY(-turnStep);
            this.player.move.turn += turnStep
        }
        if (this.player.action !== 'Turn') this.action = 'Turn';
    } else {
        this.player.move = {turn: 0, forward: 0};
```

```
            if (this.player.action !== "Idle") {
                this.action = 'Idle';
            }
        }
        // colliders and ...
    }


    animate() {
        const game = this;
        const dt = 0.01;
        requestAnimationFrame(function () {
            game.animate();
        });
        if (this.player.mixer !== undefined && this.mode ===
this.modes.ACTIVE) this.player.mixer.update(dt);
        this.movePlayer();
        if (this.player.cameras !== undefined &&
this.player.cameras.active !== undefined) {

 this.camera.position.lerp(this.player.cameras.active.getWorldPosit
ion(new THREE.Vector3()), 0.05);
            const pos = this.player.object.position.clone();
            pos.y += 300;
            this.camera.lookAt(pos);
        }
        if (this.sun !== undefined) {
            this.sun.position.copy(this.camera.position);
            this.sun.position.y += 10;
        }
        this.renderer.render(this.scene, this.camera);
        if (this.stats !== undefined) this.stats.update();

    }
```

欢迎界面

non常简单的一个欢迎界面，通过`document.createElement`实现。虽然简单，但是写了很多CSS和事件监听器，全部都放在了index.html中，开发大型项目的时候或许不能这么组织。