现代操作系统应用开发实验报告

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一．参考资料

1. **课程 PPT**

2. **师姐的 demo**

3. **网上各种资料**

二．实验步骤

1. 根据 demo.exe 的描述完善 menuSence.cpp，增加 gold-miner-text.png 和

   menu-start-gold.png:

```
auto title = Sprite::create("gold-miner-text.png");
title->setPosition(Vec2(visibleSize.width / 2, visibleSize.height / 2 + 170));
this->addChild(title, 1);

auto base = Sprite::create("menu-start-gold.png");
base->setPosition(Vec2(visibleSize.width / 2 + 290, visibleSize.height / 2 - 230));
this->addChild(base, 1);
```

   由 demo.exe 的效果可知，点击 start 按钮会显示黄色，仿照 hw8 的代码，

```
auto start = MenuItemImage::create(
                        "start-0.png",
                        "start-1.png",
                        CC_CALLBACK_1(MenuSence::startMenuCallback, this));
//auto start = Sprite::create("start-0.png");
auto menu = Menu::create(start, NULL);
menu->setPosition(Vec2(visibleSize.width / 2 + 300, visibleSize.height / 2 - 190));
this->addChild(menu, 2);
```

   赋予其跳转到 GameSence 页面的属性：

```
void MenuSence::startMenuCallback(Ref* pSender) {
    // Director::getInstance()->getEventDispatcher()->addEventListenerWithSceneGraphPriority(listener, start);
    // Director::getInstance()->replaceScene(GameSence::createScene());
    TransitionScene* reScene = NULL;
    float t = 0.8f;
    auto sc = GameSence::createScene();
    reScene = TransitionProgressRadialCCW::create(t, sc);
    Director::sharedDirector()->replaceScene(reScene);  float t
}
```

跳转的时候会产生百叶窗的效果。

2. 创建 mouseLayer，stoneLayer

```cpp
// add layers
mouseLayer = Layer::create();
stoneLayer = Layer::create();
mouseLayer->setAnchorPoint(ccp(0, 0));
mouseLayer->setPosition(Vec2(0, visibleSize.height / 2));
stoneLayer->setAnchorPoint(ccp(0, 0));
stoneLayer->setPosition(Vec2(0, 0));
this->addChild(mouseLayer, 1);
this->addChild(stoneLayer, 1);
```

3. 从 level-sheet-plist 中获得拿钻石的老鼠，并添加动作：

```cpp
// load mouse resource
SpriteFrameCache::getInstance()->addSpriteFramesWithFile("level-sheet.plist");
char _totalFrame = 8;
char _framName[20];
Animation* mouseAnimation = Animation::create();

for (int i = 0; i < _totalFrame; i++) {
    sprintf(_framName, "gem-mouse-%d.png", i);
    mouseAnimation->addSpriteFrame(SpriteFrameCache::getInstance()->getSpriteFrameByName(_framName));
}
mouseAnimation->setDelayPerUnit(0.1);
AnimationCache::getInstance()->addAnimation(mouseAnimation, "mouseAnimation");
```

4. 在 GameSense 中添加精灵：

```cpp
// add background
Sprite* background = Sprite::create("level-background-0.jpg");
background->setPosition(Vec2(visibleSize.width / 2, visibleSize.height / 2));
this->addChild(background, 0);

// add stone
stone = Sprite::create("stone.png");
stone->setPosition(Vec2(visibleSize.width / 2 + 100, visibleSize.height / 2 + 150));
stoneLayer->addChild(stone, 1);
```

```cpp
MenuItemLabel* button = MenuItemLabel::create(Label::createWithTTF("Shoot", "fonts/Marker Felt.ttf", 32), CC_CALLBACK_1(
button->setPosition(Vec2(visibleSize.width / 2 - 100, -visibleSize.height / 16 + 180));
auto _menu = Menu::create(button, NULL);
this->addChild(_menu, 1);

// add mouse
mouse = Sprite::createWithSpriteFrameName("gem-mouse-0.png");
Animate* mouseAnimation = Animate::create(AnimationCache::getInstance()->getAnimation("mouseAnimation"));
mouse->runAction(RepeatForever::create(mouseAnimation));
mouse->setPosition(Vec2(visibleSize.width / 2 - 100, -visibleSize.height / 4 + 150));
mouseLayer->addChild(mouse, 1);
```

赋予 shoot 一个事件属性 onShootBegan：

```
void GameSence::onShootBegan(Ref* ref) {
    Size visibleSize = Director::getInstance()->getVisibleSize();
    Vec2 origin = Director::getInstance()->getVisibleOrigin();
    CCPoint f_pos = mouse->getPosition();
    CCPoint pos = mouseLayer->convertToWorldSpace(f_pos);
    pos = stoneLayer->convertToNodeSpace(pos);
    auto move = MoveTo::create(0.2f, pos);
    stone->runAction(move);

    // the stone fade out
    CCActionInterval *forwardOut = CCFadeOut::create(2.0f);
    CCActionInterval *backOut = forwardOut->reverse();
    CCAction *actionOut = CCSequence::create(forwardOut, backOut, NULL);
    stone->runAction(forwardOut);

    // Sleep(1000);

    // the mouse left the diamond and return to its house
    Sprite* diamond = Sprite::create("diamond.png");
    diamond->setPosition(f_pos.x, f_pos.y + 330);
    this->addChild(diamond, 3);
    move = MoveTo::create(1.7f, Vec2::ZERO);
    mouse->runAction(move);

    // the stone shoot to the mouse and another stone will turn out at the same position
    stone = Sprite::create("stone.png");
    stone->setPosition(Vec2(visibleSize.width / 2 + 100, visibleSize.height / 2 + 150));
    stoneLayer->addChild(stone, 1);
}
```

射中老鼠后石头会淡出，老鼠留下钻石并回到原点。

5. 对触控屏幕进行监听：

```
//add touch listener
EventListenerTouchOneByOne* listener = EventListenerTouchOneByOne::create();
listener->setSwallowTouches(true);
listener->onTouchBegan = CC_CALLBACK_2(GameSence::onTouchBegan, this);
Director::getInstance()->getEventDispatcher()->addEventListenerWithSceneGraphPriority(listener, this);
```

补充 onTouchBegan 函数：

```
bool GameSence::onTouchBegan(Touch *touch, Event *unused_event) {

    // auto location = touch->getLocation();
    CCPoint c_pos = mouse->getPosition();
    CCPoint n_pos = touch->getLocation();
    c_pos = mouseLayer->convertToNodeSpace(c_pos);
    n_pos = mouseLayer->convertToNodeSpace(n_pos);

    if (c_pos.x < n_pos.x) {
        mouse->setFlipX(true);
    }
    else {
        mouse->setFlipX(false);
    }
    // touch the screen and a cheese turn out
    Sprite* cheese = Sprite::create("cheese.png");
    cheese->setPosition(Vec2(touch->getLocation().x, touch->getLocation().y));
    this->addChild(cheese, 1);

    // the mouse runs to the cheese
    auto move = MoveTo::create(1.7f, n_pos);
    mouse->runAction(move);

    // when the mouse runs to the cheese, then the mouse eats it and the cheese fade out
    CCActionInterval *forwardOut = CCFadeOut::create(2.0f);
    CCActionInterval *backOut = forwardOut->reverse();
    CCAction *actionOut = CCSequence::create(forwardOut, backOut, NULL);
    cheese->runAction(forwardOut);
```
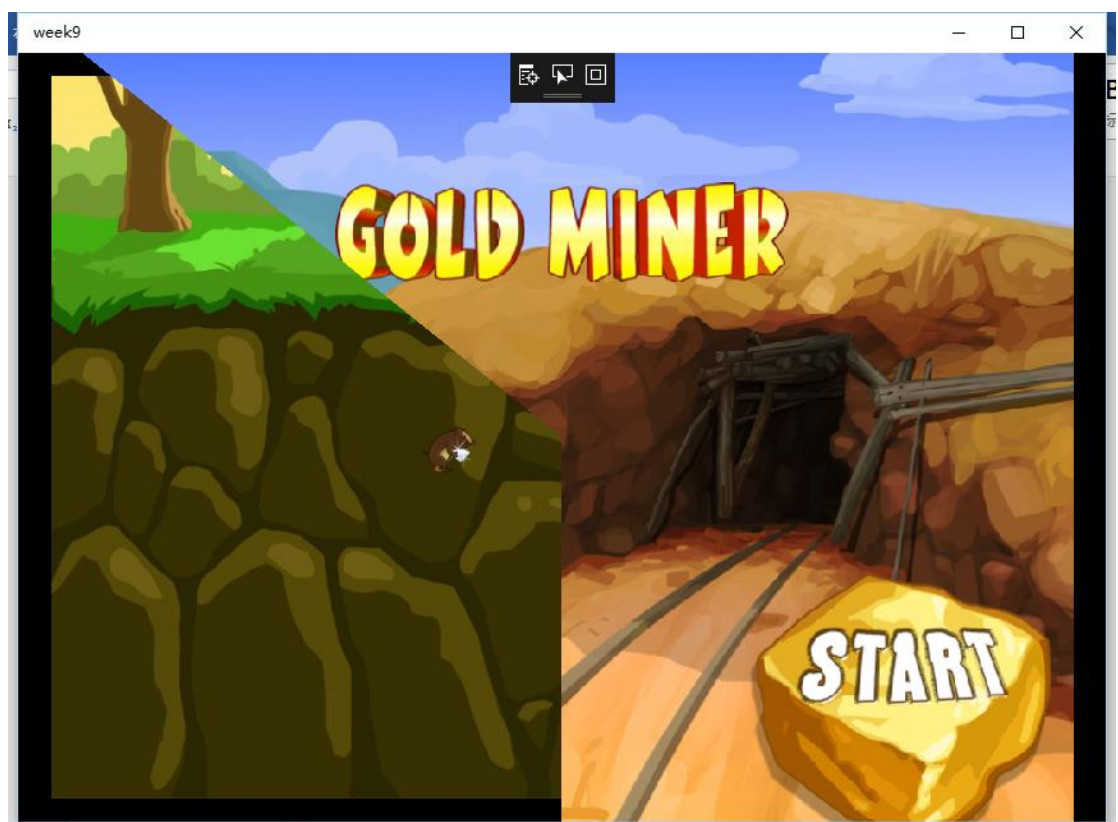
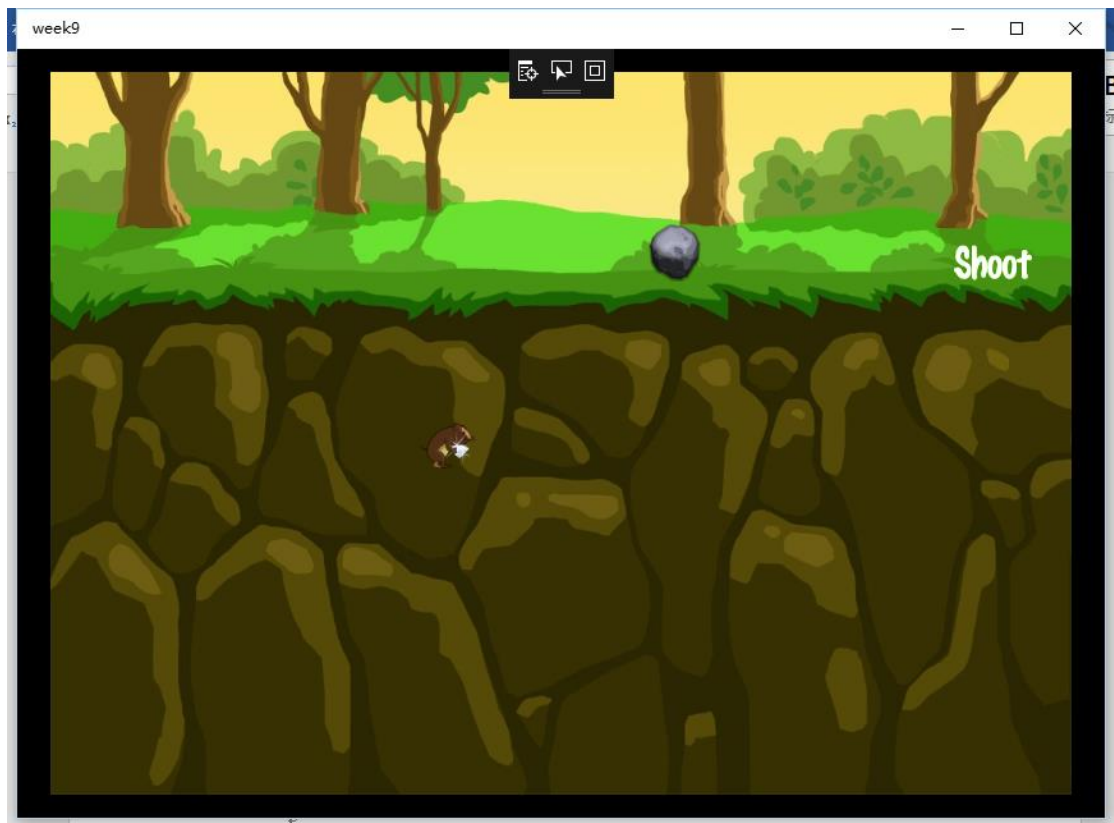触控屏幕出现 cheese，老鼠跑去 cheese 的位置，cheese 淡出。
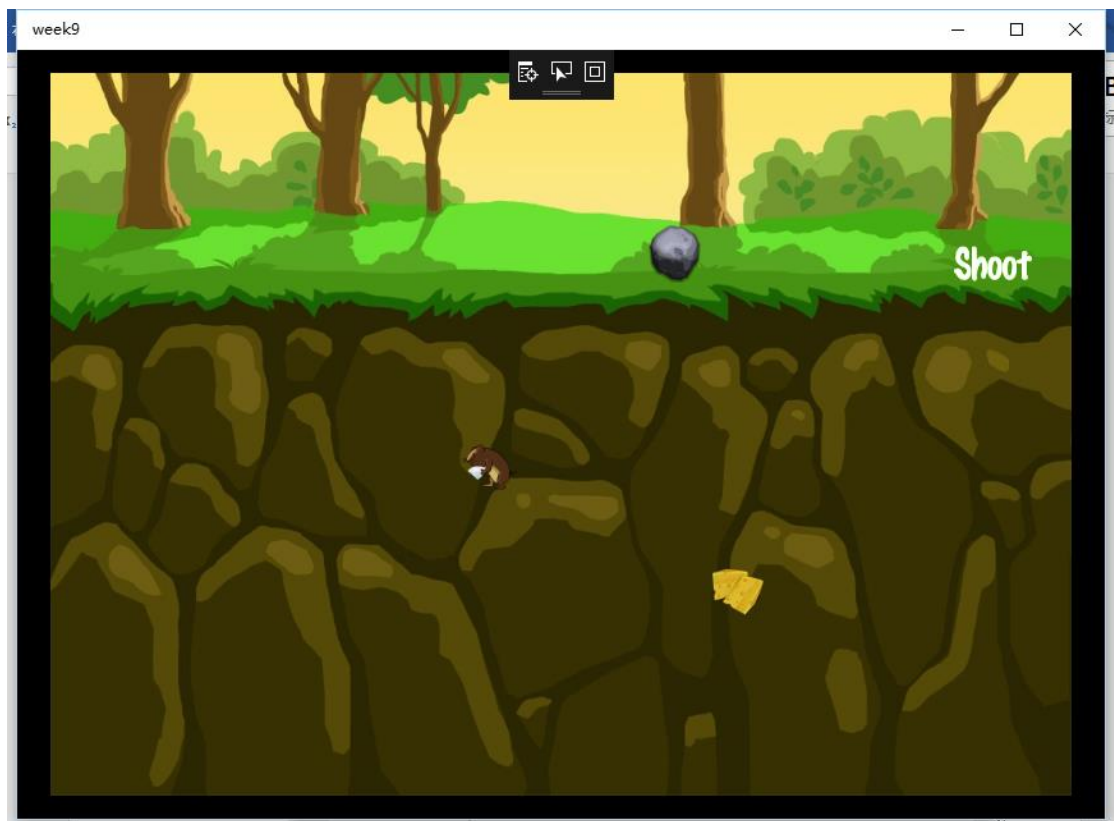
其中移动需要局部坐标和世界坐标进行转换。

三．实验截图

1. 开始界面：

2. 点击 start 按钮，以百叶窗效果进入 GameSence：
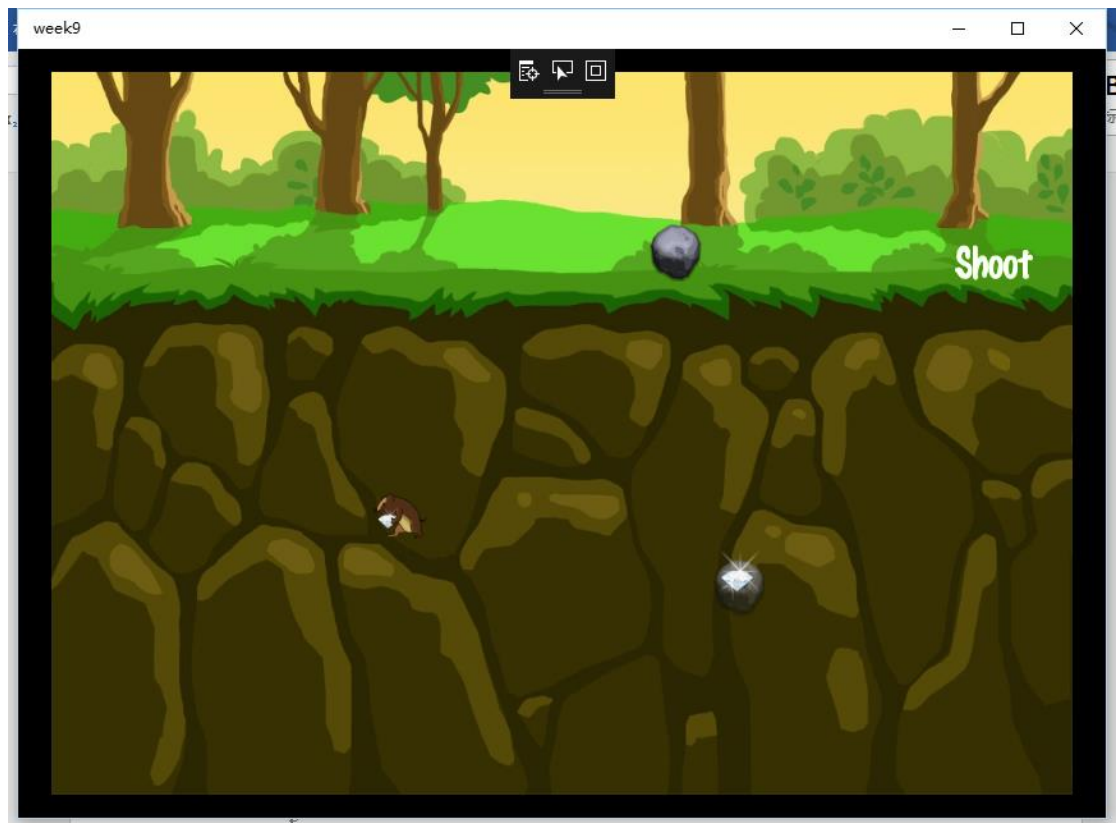

GameSence 页面：

点击屏幕，老鼠去吃 cheese

点击 shoot，石头射向老鼠，留下钻石，老鼠回到原点：

四．实验中遇到的问题

1. **图层顺序问题：** 不同新添加的图层会被覆盖，不能正常显示；

2. **页面跳转问题：** 刚开始使用监听实现了跳转功能，但是没有点击按钮颜色变化

   和百叶窗效果，后来查资料后得到解决。

3. **老鼠的旋转运动问题**

五. 心得体会

Cocos 的难度相对来说比 win10 应用难了不少，由于最近作业很多的原因也没有

很好的研究 cocos studio 怎么使用，以至于使用 vs 打代码时坐标的确定都是通过多次

跑代码来确定的。这点也是略烦。不过，到了真的花了半天的时间把作业完成了之后，

这种收获也是难以言表的，跑起一个小游戏的感觉真的很棒。