《现代操作系统应用开发》HW10 实验报告

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一、参考资料：

深入理解 cocos2d-x 坐标系：http://www.cnblogs.com/lyout/p/3292702.html

二、实验步骤：

1.在开始页面添加 start 按钮。
Start 按钮是 MenuItemImage 类型的，并有回调函数 StartMenuCallback。

```
auto start_text = MenuItemImage::create("start-0.png", "start-1.png", CC_CALLBACK_1
    (MenuSence::startMenuCallback, this));
start_text->setPosition(Vec2(start->getPositionX(), start->getPositionY()+50));
auto menu = Menu::create(start_text, NULL);
menu->setPosition(Vec2::ZERO);
this->addChild(menu, 2);
```

在回调函数中创建游戏界面，并用 replaceScene 实现跳转。

```
void MenuSence::startMenuCallback(cocos2d::Ref* pSender) {
    auto GameSence = GameSence::createScene();
    Director::getInstance()->replaceScene(GameSence);
}
```

2.在游戏页面添加两个 Layer，并按要求位置放置。
将 ignoreAnchorPointForPosition 设置为 true，将锚点设置为（0， 0）。

```
stoneLayer= Layer::create();
stoneLayer->ignoreAnchorPointForPosition(true);
stoneLayer->setPosition(Vec2(0, 0));
this->addChild(stoneLayer, 0);
```

```
mouseLayer = Layer::create();
mouseLayer->ignoreAnchorPointForPosition(true);
mouseLayer->setPosition(Vec2(0, visibleSize.height/2));
this->addChild(mouseLayer);
```

3.在 stonelayer 添加石头，射击 Label。

```
stone = Sprite::createWithSpriteFrameName("stone-0.png");
Animate* stoneAnimate = Animate::create(AnimationCache::getInstance()-
    >getAnimation("stoneAnimation"));
stone->runAction(RepeatForever::create(stoneAnimate));
stone->setPosition(Vec2(560, 480));
stoneLayer->addChild(stone, 1);
```

```
auto shoot = MenuItemLabel::create(Label::createWithTTF("SHOOT", "Marker Felt.ttf", 50),
    CC_CALLBACK_1(GameSence::shootMenuCallback,this));
shoot->setPosition(Vec2(750, 480));
auto menu = Menu::create(shoot, NULL);
menu->setPosition(Vec2::ZERO);
stoneLayer->addChild(menu, 1);
```

SHOOT 是 menuItemLabel 类型的，有回调函数。
在回调函数中我们获取 mouse 的位置，并通过他所在的 mouseLayer 将其转换为相对于锚点的坐标，也就是世界坐标。并将这个坐标作为石头 MoveTo 的坐标将其移动过去。Seq 这个序列保证了石头在射击后又退回到原点。
为了防止快速连续点两次导致的走位不正常的状况，在每次点击的时候先停止石头和老鼠的动作。~~（大概是热能追踪导弹技术让石头一直跟着老鼠跑）~~
老鼠随机跑开是利用 random 函数生成 0 到画面宽度/高度之间的一个数字，并将其设置为老鼠跑去的坐标。

```
void GameSence::shootMenuCallback(Ref* pSender){
    stone->stopAllActions();
    mouse->stopAllActions();
    auto location = mouseLayer->convertToWorldSpace(mouse->getPosition());
    auto shoot = MoveTo::create(1, location);
    auto shootback = MoveTo::create(1, Vec2(560, 480));
    auto seq = Sequence::create(shoot, shootback,  NULL);
    stone->runAction(seq);

   auto diamond = Sprite::create("diamond.png");
    diamond->setPosition(mouse->getPosition());

    Size visibleSize = Director::getInstance()->getVisibleSize();
    auto run = MoveTo::create(1, mouseLayer->convertToNodeSpace(Vec2(random(0.0f, visibleSize.
        width), random(0.0f, visibleSize.height))));
    mouse->runAction(run);
    mouseLayer->addChild(diamond, 0);
}
```

4. 点击屏幕任意位置，在该位置添加一块奶酪，老鼠跑到该位置吃掉奶酪。奶酪延迟 1 秒消失达到被老鼠吃掉的效果。

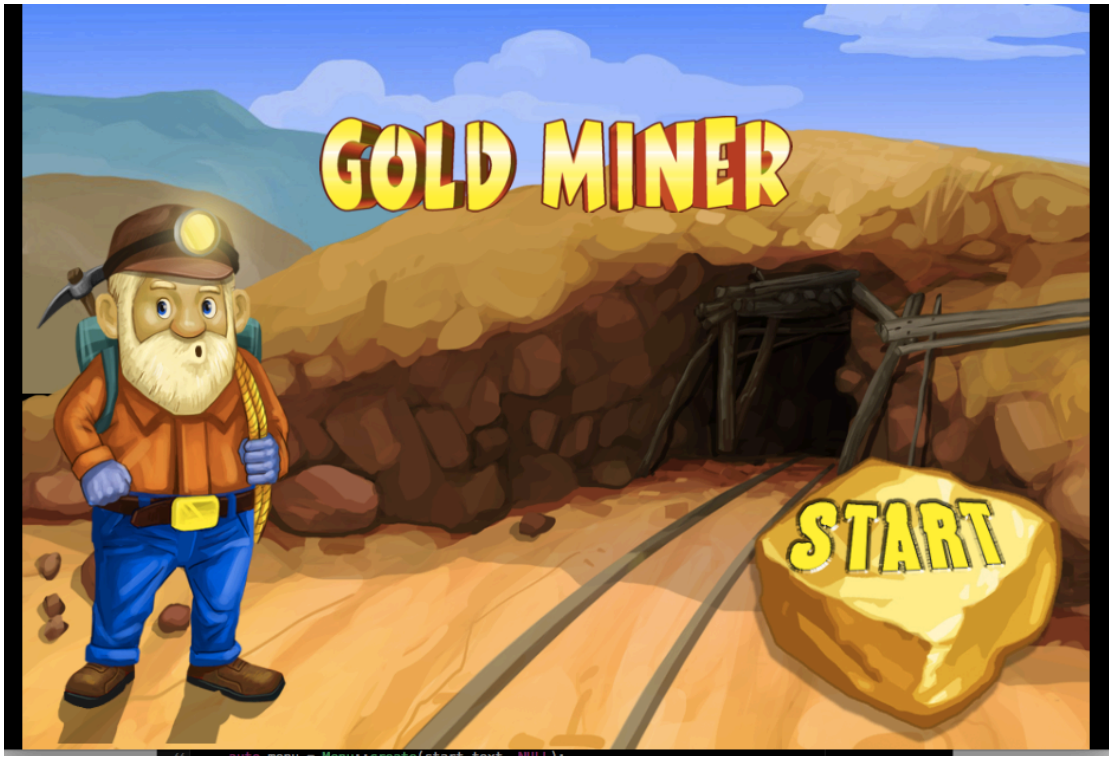
```
bool GameSence::onTouchBegan(Touch *touch, Event *unused_event) {
    auto location = touch->getLocation();
    auto cheese = Sprite::create("cheese.png");
    mouse->stopAllActions();
    cheese->setPosition(location);
    this->addChild(cheese);
    auto moveTo = MoveTo::create(1, mouseLayer->convertToNodeSpace(location));
    auto cheesefadeOut = FadeOut::create(0.2f);
    auto seq1 = Sequence::createWithTwoActions(DelayTime::create(1), cheesefadeOut);
    mouse->runAction(moveTo);
    cheese->runAction(seq1);
    return true;
}
```

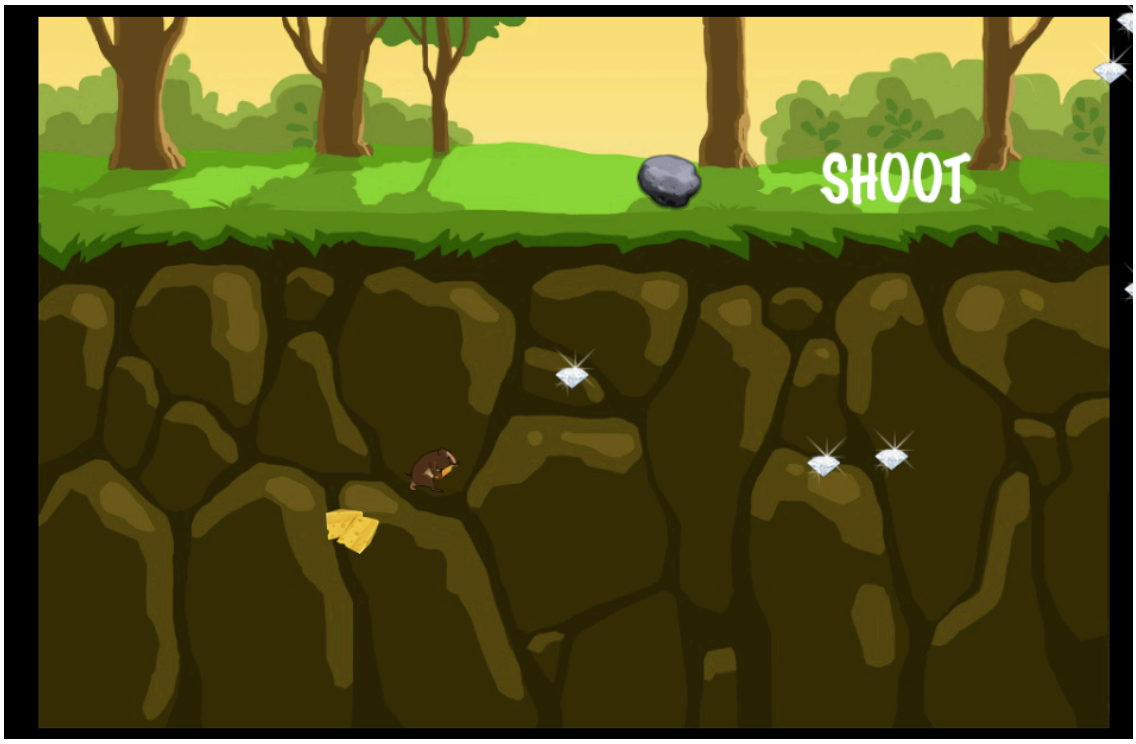
5.添加一些小动画

```
SpriteFrameCache::getInstance()->addSpriteFramesWithFile("level-sheet.plist");
char totalFrames_2 = 2;
char frameName_2[11];
Animation* stoneAnimation = Animation::create();
for (int i = 0; i < totalFrames_2; i++)
{
    sprintf(frameName_2, "stone-%d.png", i);
    stoneAnimation->addSpriteFrame(SpriteFrameCache::getInstance()->getSpriteFrameByName
        (frameName_2));
}
stoneAnimation->setDelayPerUnit(0.5);
AnimationCache::getInstance()->addAnimation(stoneAnimation, "stoneAnimation");

char totalFrames_3 = 8;
char frameName_3[11];
Animation* mouseAnimation = Animation::create();
for (int i = 0; i < totalFrames_3; i++)
{
    sprintf(frameName_3, "mouse-%d.png", i);
    mouseAnimation->addSpriteFrame(SpriteFrameCache::getInstance()->getSpriteFrameByName
        (frameName_3));
}
mouseAnimation->setDelayPerUnit(0.1);
AnimationCache::getInstance()->addAnimation(mouseAnimation, "mouseAnimation");
```

三、效果截图





四、收获与感受

通过本次实验，我熟练的掌握了关于不同 Layer 之间的坐标转换以及给精灵添加动作。需要注意的是给精灵添加动作的时候由于有先后顺序，因此会使用到 Sequence。