现代操作系统应用开发实验报告

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一．参考资料

http://www.bkjia.com/Androidjc/954421.html

课件

二．实验步骤

1、 设置飞船和陨石的掩码，实现飞船和陨石会 相撞且会传递碰撞事件，陨石和陨石之间碰撞不传递 碰撞事件。两者和边界都会发生碰撞，不传递事件

通过查看碰撞掩码的设置所对应碰撞处理，设置飞船，陨石，边界相应的掩码为

```
// TODO set bit mask
player->setTag(40);
player->getPhysicsBody()->setCategoryBitmask(0x0000FFFF);
player->getPhysicsBody()->setContactTestBitmask(0xFFFF0000);
```

```
// TODO set bitmask
re->getPhysicsBody()->setGroup(-1);
re->getPhysicsBody()->setCategoryBitmask(0xFFFF0000);
re->getPhysicsBody()->setContactTestBitmask(0x0000FFFF);
re->getPhysicsBody()->setTag(tag);
```

```
edgeSp->getPhysicsBody()->setGroup(1);
edgeSp->getPhysicsBody()->setContactTestBitmask(0x00000000);
```

2、飞船和陨石碰撞后触发碰撞事件，陨石爆炸 消失，并播放爆炸音效和爆炸的粒子特效

飞船和陨石碰撞会调用 onConcactBegan（ ）函数， 通过 tag 判断碰撞的物体为陨石，并让陨石消失，同时播放爆炸音效和粒子特效

```
bool Breakout::onConcactBegan(PhysicsContact& contact) {
    // TODO
    auto body1 = contact.getShapeA()->getBody();
    auto body2 = contact.getShapeB()->getBody();
    auto sp1 = (Sprite*)body1->getNode();
    auto sp2 = (Sprite*)body2->getNode();
    if (sp1->getTag() != 40) {
        sp1->removeFromParentAndCleanup(true);
        meet();
    }
    if (sp2->getTag() != 40) {
        sp2->removeFromParentAndCleanup(true);
        meet();
    }
```

```
void Breakout::meet() {
    SimpleAudioEngine::getInstance()->playEffect("music/meet_stone.wav");
    /*auto explore = ParticleSystemQuad::create("explore.plist");
    explore->setPositionType(ParticleSystemQuad::PositionType::RELATIVE);
    explore->setPosition(player->getPosition());*/
    auto explore = ParticleExplosion::create();
    explore->setPosition(player->getPosition());
    addChild(explore);
```

3、实现游戏成功和失败的判定和场景

（1） 添加游戏时间，通过调度器更新时间

```
void Breakout::addTime() {
    TTFConfig ttfConfig;
    ttfConfig.fontFilePath = "fonts/arial.ttf";
    ttfConfig.fontSize = 36;
    time = Label::createWithTTF(ttfConfig, "30");

    dtime = 30;
    time->setPosition(Vec2(visibleSize.width / 2, visibleSize.height - time->getContentSize().height));
    addChild(time);
}
```

```
void Breakout::update(float f) {
    dtime--;
    if (dtime == 0) win();
    else {
        char str[3];
        sprintf(str, "%d", dtime);
        time->setString(str);
    }

    newEnemys();
}
```

（2） 添加玩家血量

```
void Breakout::addPT() {
    Sprite* sp0 = Sprite::create("hp.png", CC_RECT_PIXELS_TO_POINTS(Rect(0, 320, 420, 47)));
    Sprite* sp = Sprite::create("hp.png", CC_RECT_PIXELS_TO_POINTS(Rect(610, 362, 4, 16)));

    pT = ProgressTimer::create(sp);
    pT->setScaleX(90);
    pT->setAnchorPoint(Vec2(0, 0));
    pT->setType(ProgressTimerType::BAR);
    pT->setBarChangeRate(Point(1, 0));
    pT->setMidpoint(Point(0, 1));
    pT->setPercentage(100);
    pT->setPosition(Vec2(14 * pT->getContentSize().width, visibleSize.height - 2 * pT->getContentSize().height));
    addChild(pT, 1);
    sp0->setAnchorPoint(Vec2(0, 0));
    sp0->setPosition(Vec2(pT->getContentSize().width, visibleSize.height - sp0->getContentSize().height));
    addChild(sp0, 0);
}
```

（3） 添加游戏成功场景

```
bool Gamewin::init()
{
    if (!Layer::init()) {
        return false;
    }
    Size visibleSize = Director::getInstance()->getVisibleSize();
    auto background = Sprite::create("success.jpg");
    background->setPosition(visibleSize / 2);
    background->setScale(visibleSize.width / background->getContentSize().width,
        visibleSize.height / background->getContentSize().height);
    this->addChild(background, 0);

    auto startItem = MenuItemImage::create("start-0.png",
        "start-1.png",
        [](Ref* sender) {
        auto sence = Breakout::createScene();
        Director::getInstance()->replaceScene(TransitionFade::create(1.0f, sence));
    });
    startItem->setPosition(Vec2(visibleSize.width - 180, 220));
    auto menu = Menu::create(startItem, NULL);
    menu->setPosition(Point(0, 0));
    this->addChild(menu, 1);

    return true;
```

（4） 添加游戏失败场景

```
bool Gameover::init()
{
    if (!Layer::init())
        return false;
    Size visibleSize = Director::getInstance()->getVisibleSize();
    auto bg = Sprite::create("gameover.jpg");
    bg->setPosition(Vec2(visibleSize.width / 2, visibleSize.height / 2));
    addChild(bg, 0);
    auto startItem = MenuItemImage::create("start-0.png",
        "start-1.png",
        [](Ref* sender) {
        auto sence = Breakout::createScene();
        Director::getInstance()->replaceScene(TransitionFade::create(1.0f, sence));
    });
    startItem->setPosition(Vec2(visibleSize.width  - 180,  220));
    auto menu = Menu::create(startItem, NULL);
    menu->setPosition(Point(0, 0));
    this->addChild(menu, 1);

    return true;
}
```

（5） 实现游戏逻辑，成功与失败判断

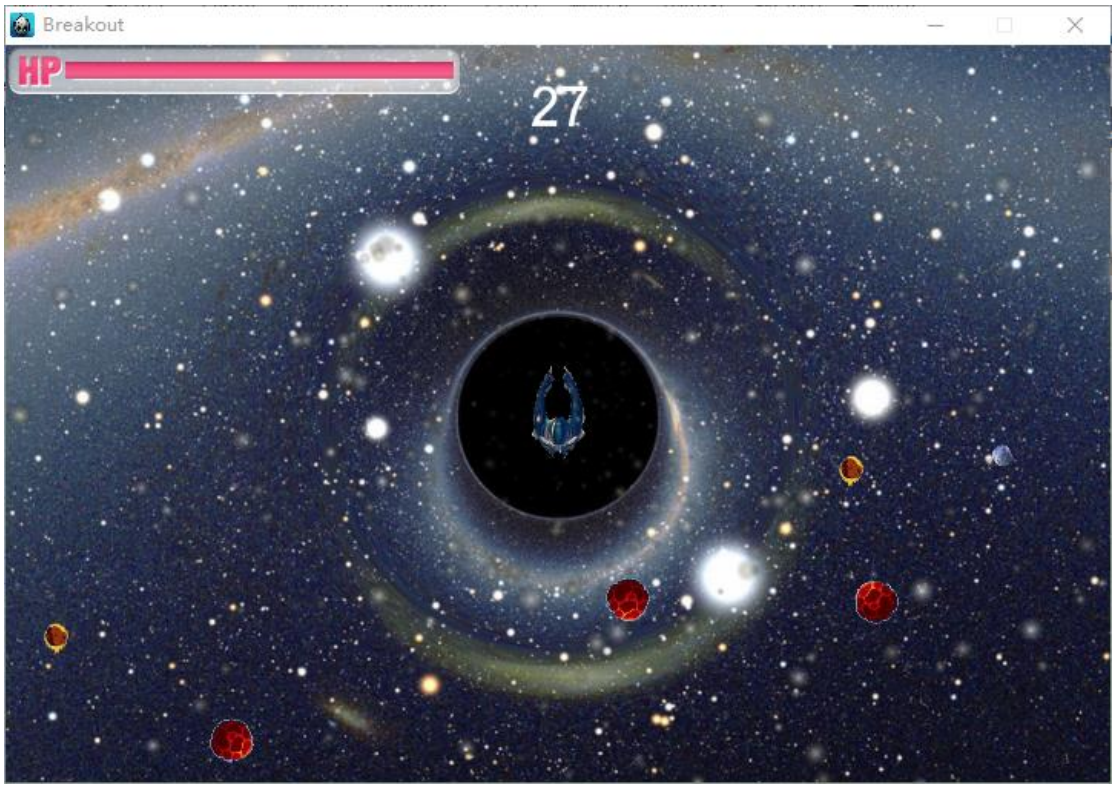
```
ProgressFromTo* progressFromTo = ProgressFromTo::create(0.5f, pT->getPercentage(), pT->getPercentage() - 10);
pT->runAction(progressFromTo);
if (pT->getPercentage() == 0) gameOver();
```

```
void Breakout::gameOver() {
    _eventDispatcher->removeAllEventListeners();
    auto director = Director::getInstance();
    auto scene = Gameover::createScene();
    director->replaceScene(TransitionSlideInT::create(1, scene));
}
```

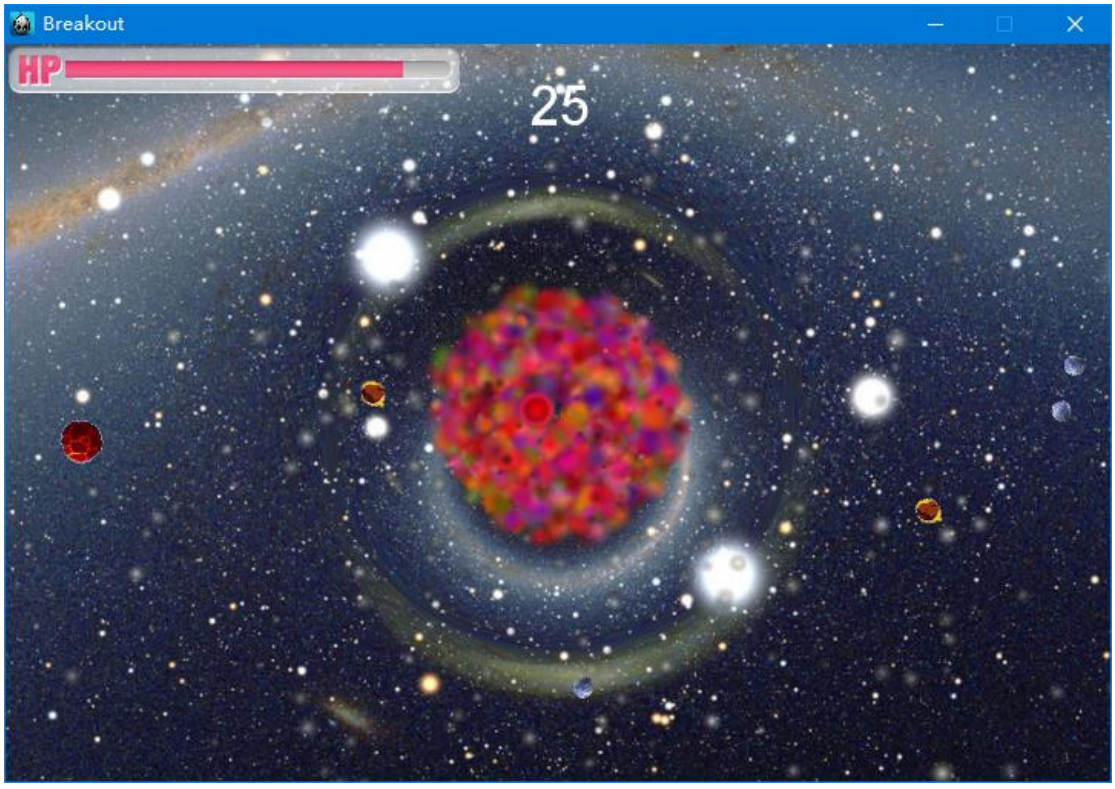
```
void Breakout::win() {
    _eventDispatcher->removeAllEventListeners();
    auto director = Director::getInstance();
    auto scene = Gamewin::createScene();
    director->replaceScene(TransitionSlideInT::create(1, scene));
}
```

三．实验结果截图

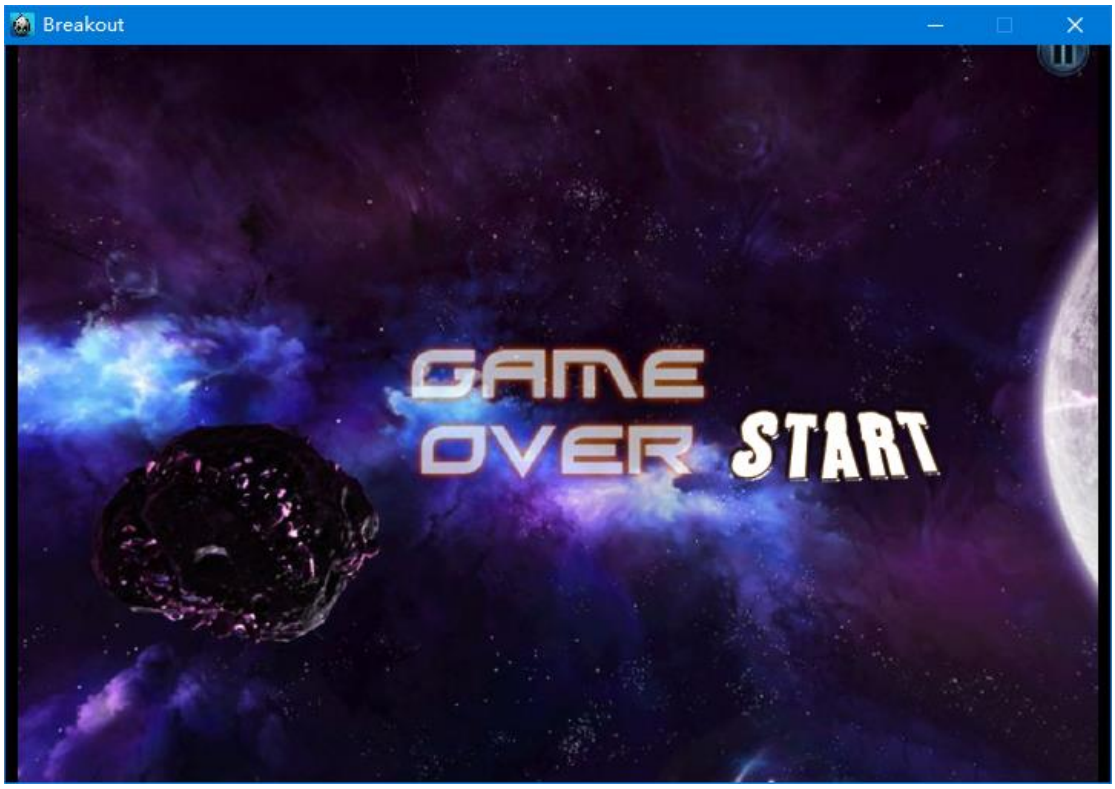
程序运行



爆炸效果



失败



重新开始，坚持 30 后游戏胜利

四．实验过程遇到的问题

问题：使用 demo 中提供的 explore.plist 播放爆炸粒子特效，但即便像群里说的加入 black_hole.plist 后两行碰撞后还是无爆炸效果

解决方法：使用系统自带粒子效果代替

五．思考与总结

因为本周作业相对较多，所以也没去实现 bonues 功能，比较遗憾，主要也是因为找到满意的素材来实现，所以希望能推荐好的游戏素材网站