Plunge interactive

Cocos2d-x!

Videojocs multi-plataforma amb C++

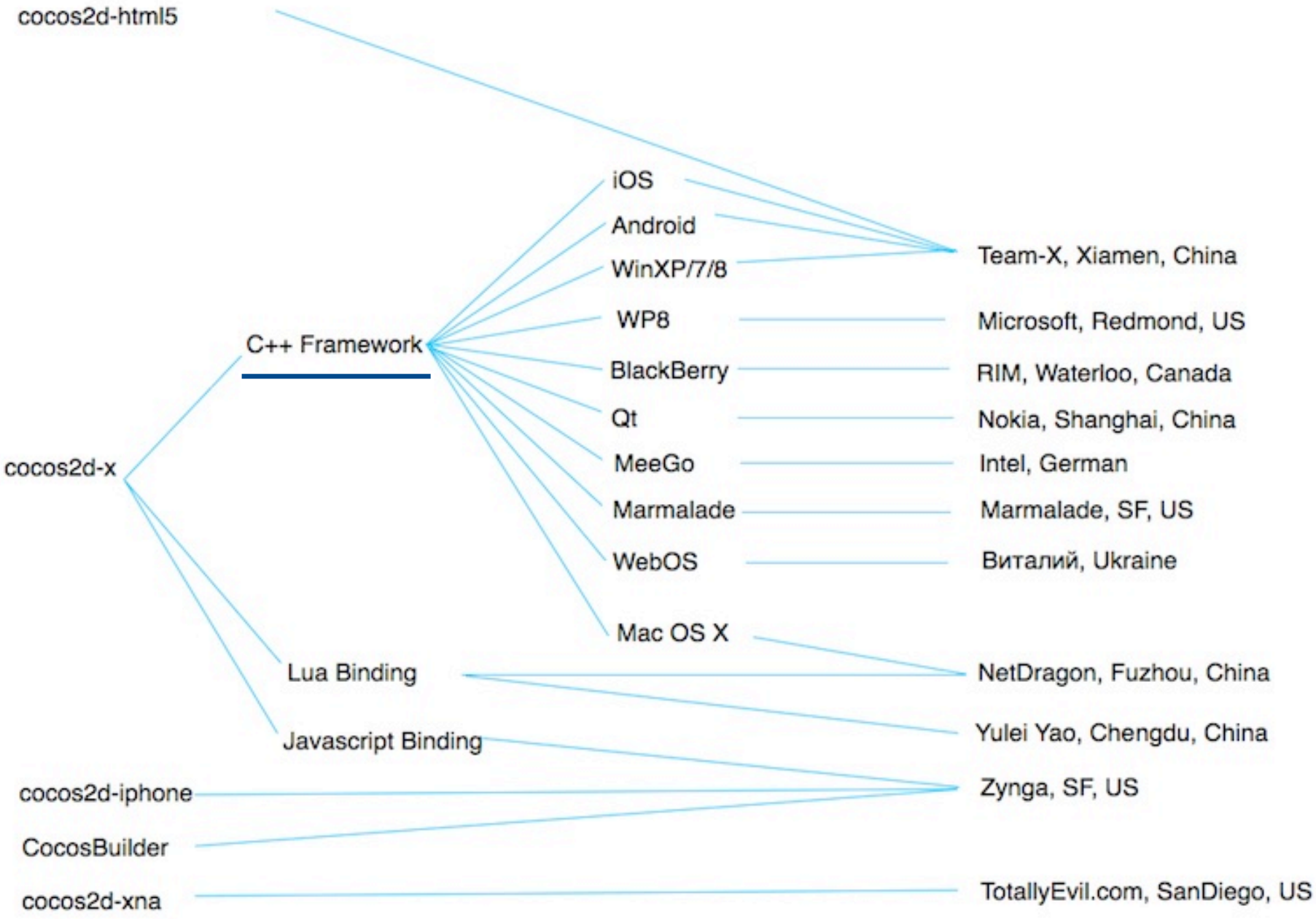
Plunge interactive

Hola Cocos!

Plunge interactive

Posem-nos en situació

- Orígens en Cocos2d
- Open source (MIT)
- Utilitzat per Zynga, Glu, Gree, Knoami...
- Diferents llenguatges de programació
- Suportat per múltiples plataformes
- Enorme quantiat de tools disponibles


cocos2d-html5
cocos2d-x
C++ Framework
Lua Binding
Javascript Binding
iOS
Android
WinXP/7/8
WP8
BlackBerry
Qt
MeeGo
Marmalade
WebOS
Mac OS X
Team-X, Xiamen, China
Microsoft, Redmond, US
RIM, Waterloo, Canada
Nokia, Shanghai, China
Intel, German
Marmalade, SF, US
Виталий, Ukraine
NetDragon, Fuzhou, China
Yulei Yao, Chengdu, China
cocos2d-iphone
CocosBuilder
Zynga, SF, US
cocos2d-xna
TotallyEvil.com, SanDiego, US

Tools

Plunge interactive

Tools

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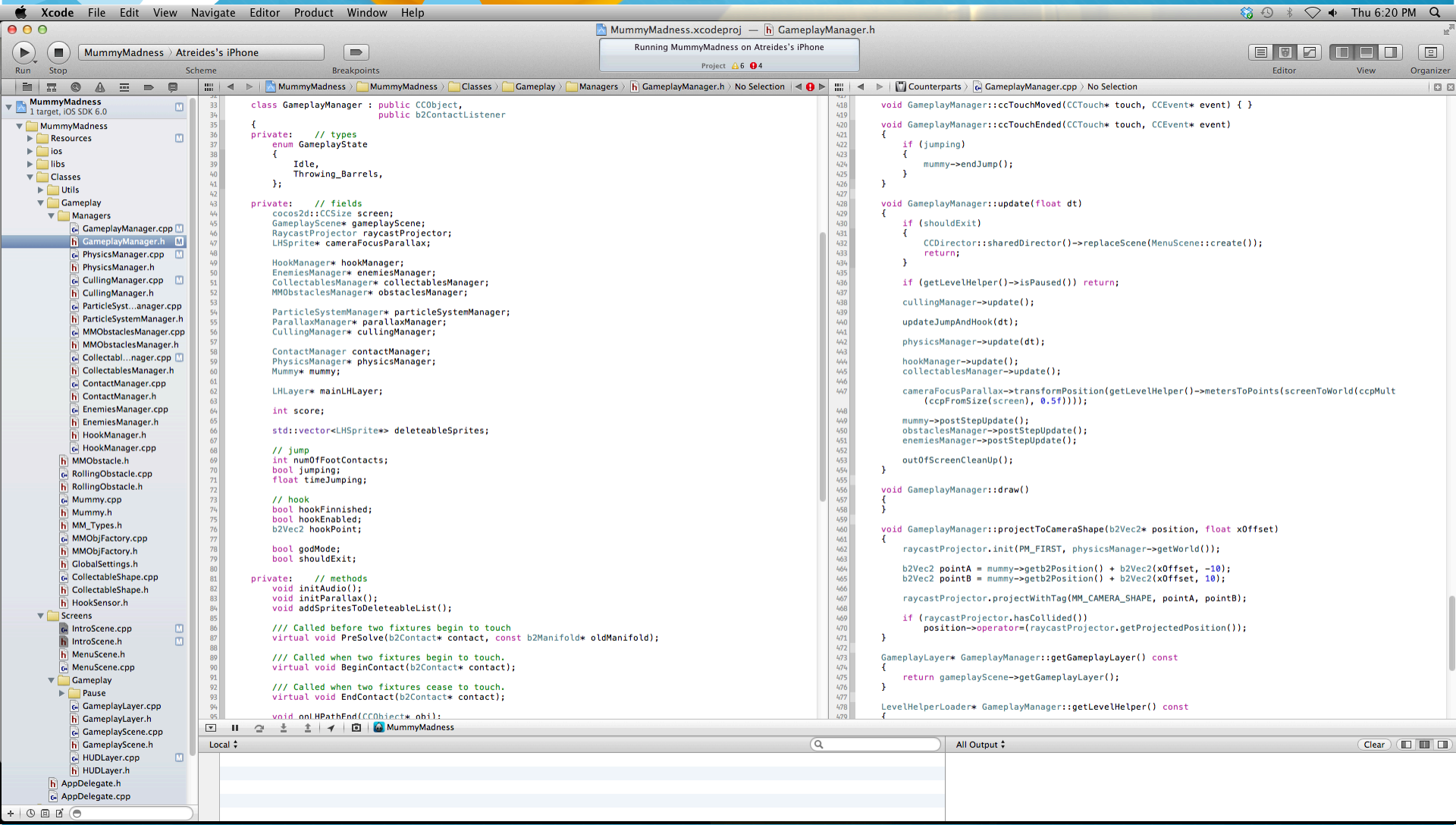
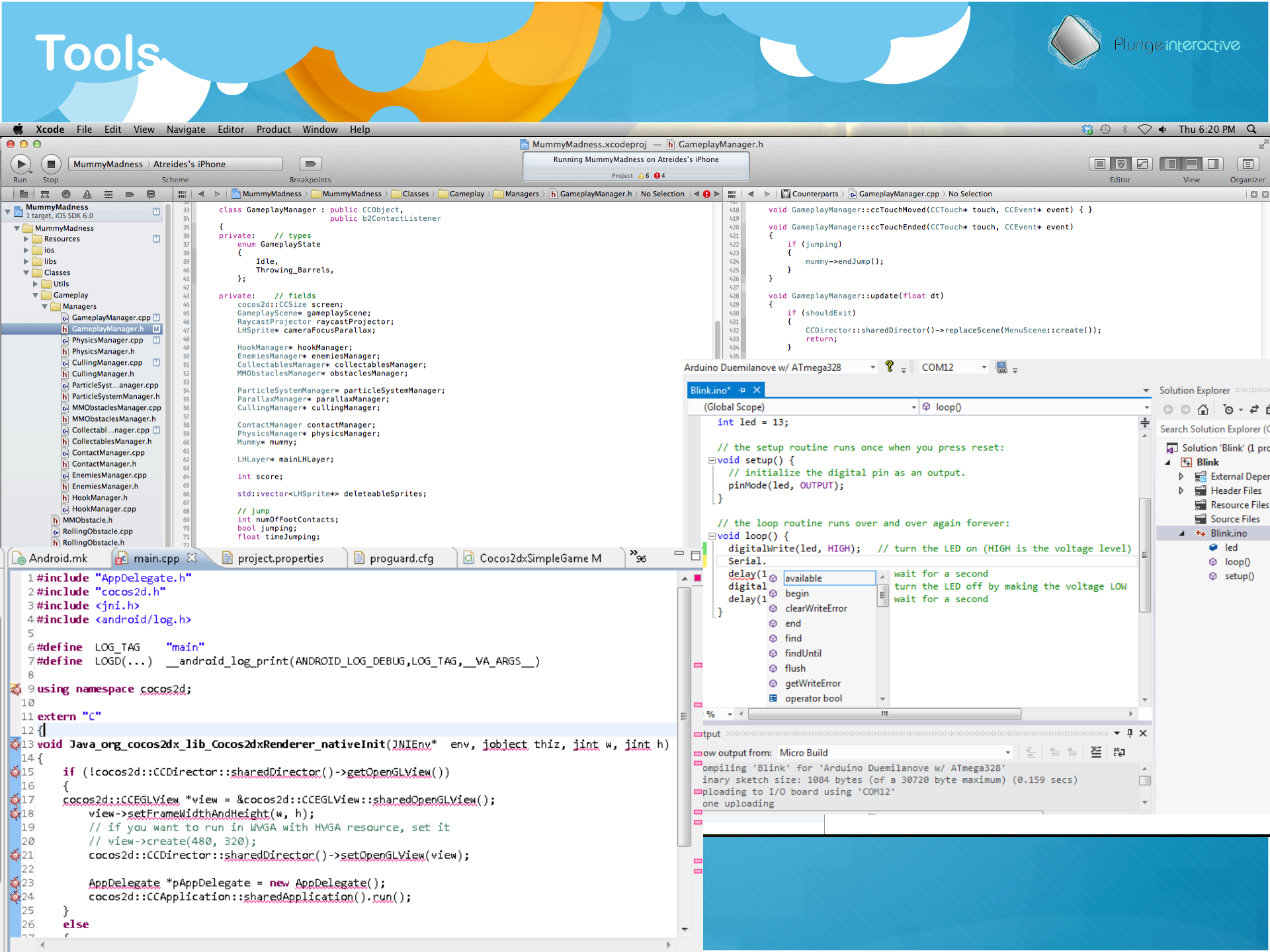


Tools


Xcode File Edit View Navigate Editor Product Window Help
Thu 6:20 PM
MummyMadness.xcodeproj — GameplayManager.h
Running MummyMadness on Atreides's iPhone
Run Stop Scheme Breakpoints Editor View Organizer
MummyMadness
1 target, iOS SDK 6.0
Resources
ios
libs
Classes
Utils
Gameplay
Managers
GameplayManager.cpp
GameplayManager.h
PhysicsManager.cpp
PhysicsManager.h
CullingManager.cpp
CullingManager.h
MMObstacle.h
RollingObstacle.cpp
RollingObstacle.h
class GameplayManager : public CCObject,
public b2ContactListener
{
private: // types
enum GameplayState
{
Idle,
Throwing_Barrels,
};
private: // fields
cocos2d::CCSize screen;
GameplayScene* gameplayScene;
RaycastProjector raycastProjector;
LHSprite* cameraFocusParallax;
HookManager* hookManager;
EnemiesManager* enemiesManager;
CollectablesManager* collectablesManager;
MMObstaclesManager* obstaclesManager;
ParticleSystemManager* particleSystemManager;
ParallaxManager* parallaxManager;
CullingManager* cullingManager;
ContactManager contactManager;
PhysicsManager* physicsManager;
Mummy* mummy;
LHLayer* mainLHLayer;
int score;
std::vector<LHSprite*> deleteableSprites;
// jump
int numOfFootContacts;
bool jumping;
float timeJumping;
void GameplayManager::ccTouchMoved(CCTouch* touch, CCEvent* event) { }
void GameplayManager::ccTouchEnded(CCTouch* touch, CCEvent* event)
{
if (jumping)
{
mummy->endJump();
}
}
void GameplayManager::update(float dt)
{
if (shouldExit)
{
CCDirector::sharedDirector()->replaceScene(MenuScene::create());
return;
}
Android.mk
main.cpp
project.properties
proguard.cfg
Cocos2dxSimpleGame M
#include "AppDelegate.h"
#include "cocos2d.h"
#include <jni.h>
#include <android/log.h>
#define LOG_TAG "main"
#define LOGD(...) __android_log_print(ANDROID_LOG_DEBUG,LOG_TAG,__VA_ARGS__)
using namespace cocos2d;
extern "C"
{
void Java_org_cocos2dx_lib_Cocos2dxRenderer_nativeInit(JNIEnv* env, jobject thiz, jint w, jint h)
{
if (!cocos2d::CCDirector::sharedDirector()->getOpenGLView())
{
cocos2d::CCEGLView *view = &cocos2d::CCEGLView::sharedOpenGLView();
view->setFrameWidthAndHeight(w, h);
// if you want to run in WVGA with HVGA resource, set it
// view->create(480, 320);
cocos2d::CCDirector::sharedDirector()->setOpenGLView(view);
AppDelegate *pAppDelegate = new AppDelegate();
cocos2d::CCApplication::sharedApplication().run();
}
else
Arduino Duemilanove w/ ATmega328
COM12
Blink.ino*
(Global Scope)
loop()
int led = 13;
// the setup routine runs once when you press reset:
void setup() {
// initialize the digital pin as an output.
pinMode(led, OUTPUT);
}
// the loop routine runs over and over again forever:
void loop() {
digitalWrite(led, HIGH); // turn the LED on (HIGH is the voltage level)
Serial.
delay(1
digital
delay(1
}
available
begin
clearWriteError
end
find
findUntil
flush
getWriteError
operator bool
wait for a second
turn the LED off by making the voltage LOW
wait for a second
Solution Explorer
Search Solution Explorer
Solution 'Blink' (1 pro
Blink
External Deper
Header Files
Resource Files
Source Files
Blink.ino
led
loop()
setup()
tput
ow output from: Micro Build
ompiling 'Blink' for 'Arduino Duemilanove w/ ATmega328'
inary sketch size: 1084 bytes (of a 30720 byte maximum) (0.159 secs)
ploading to I/O board using 'COM12'
one uploading

Tools

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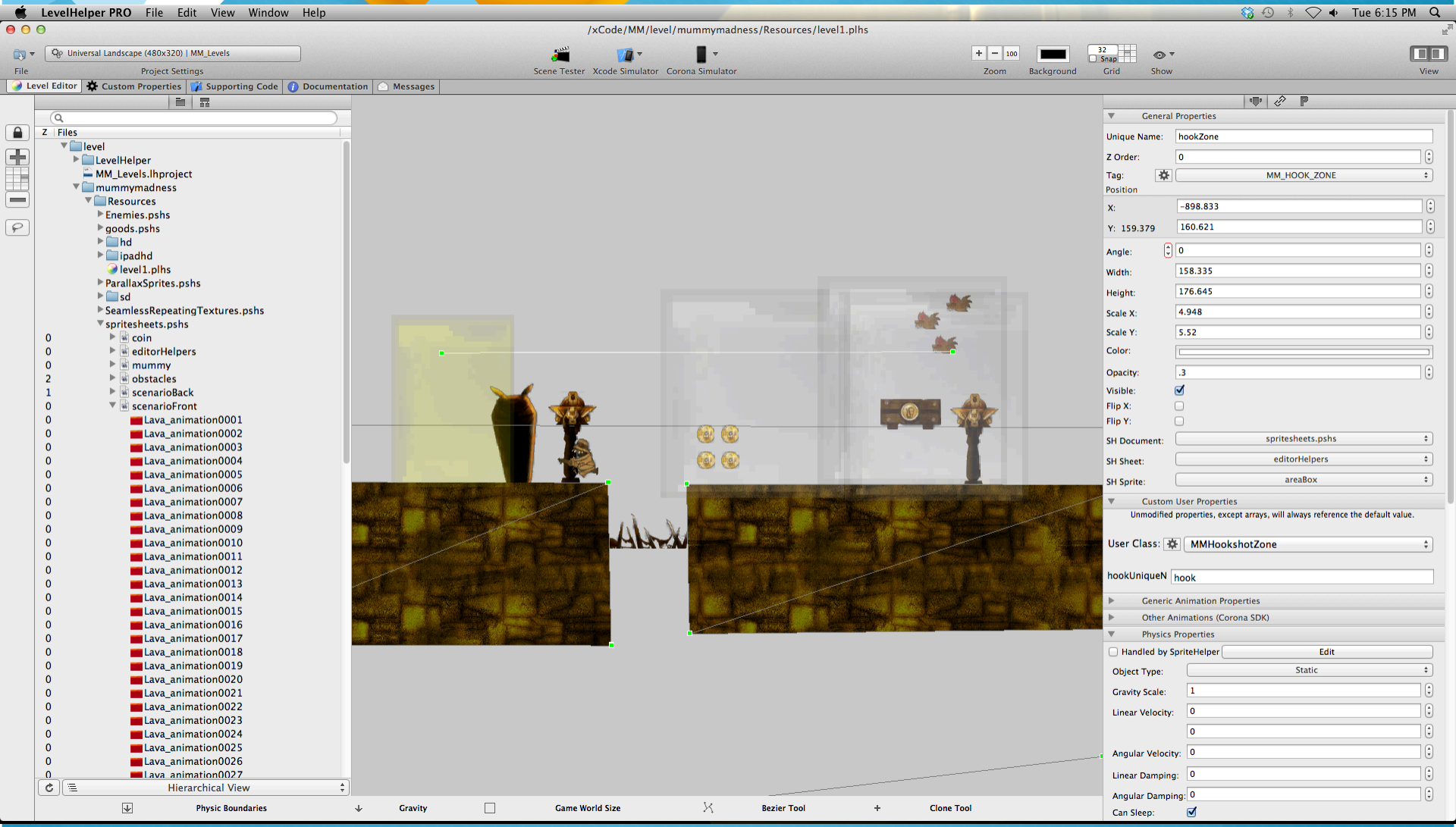
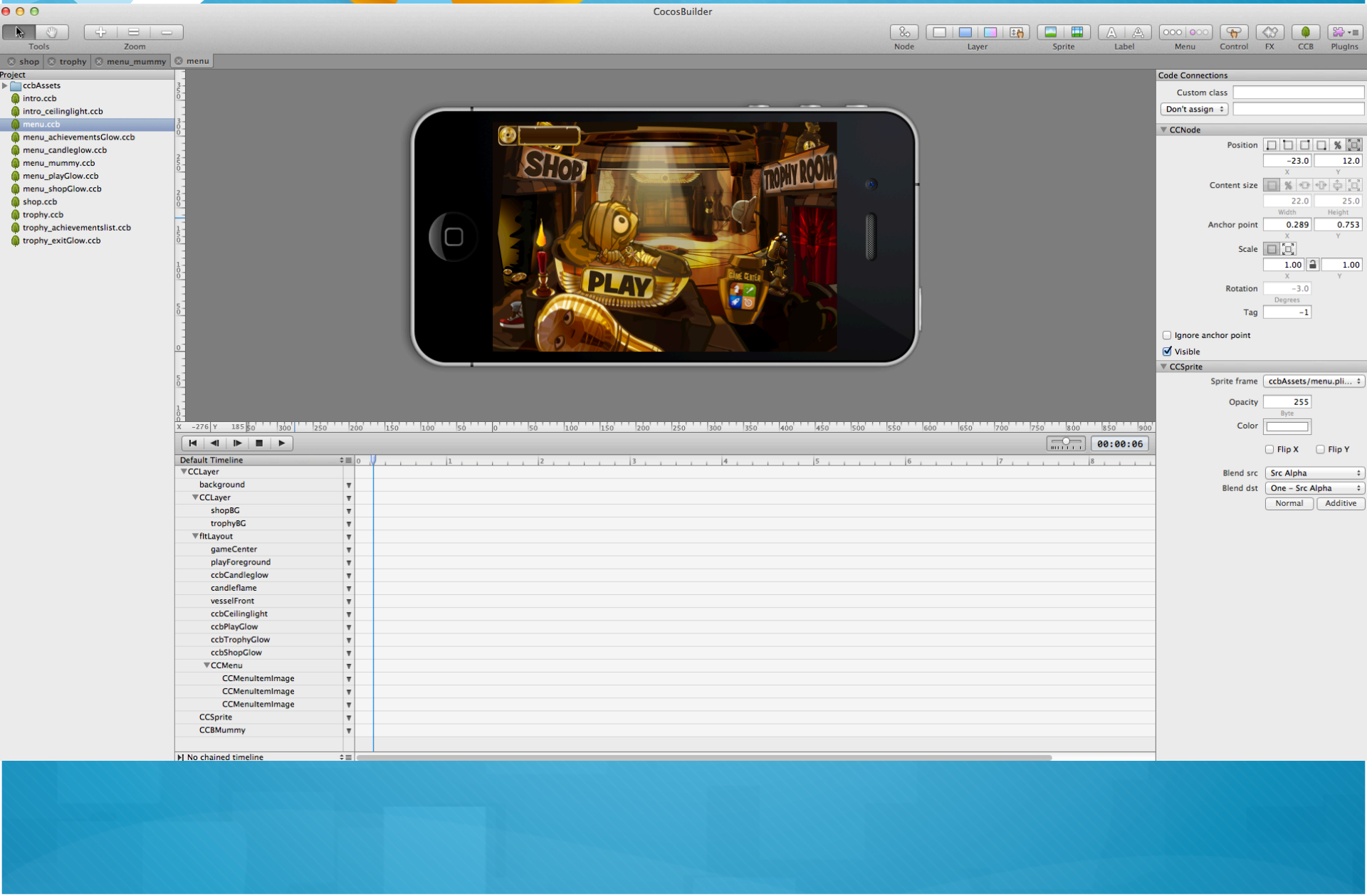


Tools

Plunge interactive



Tools

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bmGlyph

Open | Save | Save as | Publish | work on selected glyph(s) only | Preview

Anti Alias

Texture

Width x Height

512px x 512px

Background :

CheckerBoard :

Auto Size :

Publish Settings

Color : RGBA8888

... Directory :

Font Name :

Format : Cocos2...

Auto SD Level : HD (@2...

SD Quality : Default

Redraw when downscaling

Packing

Bounding Box : + 0 px

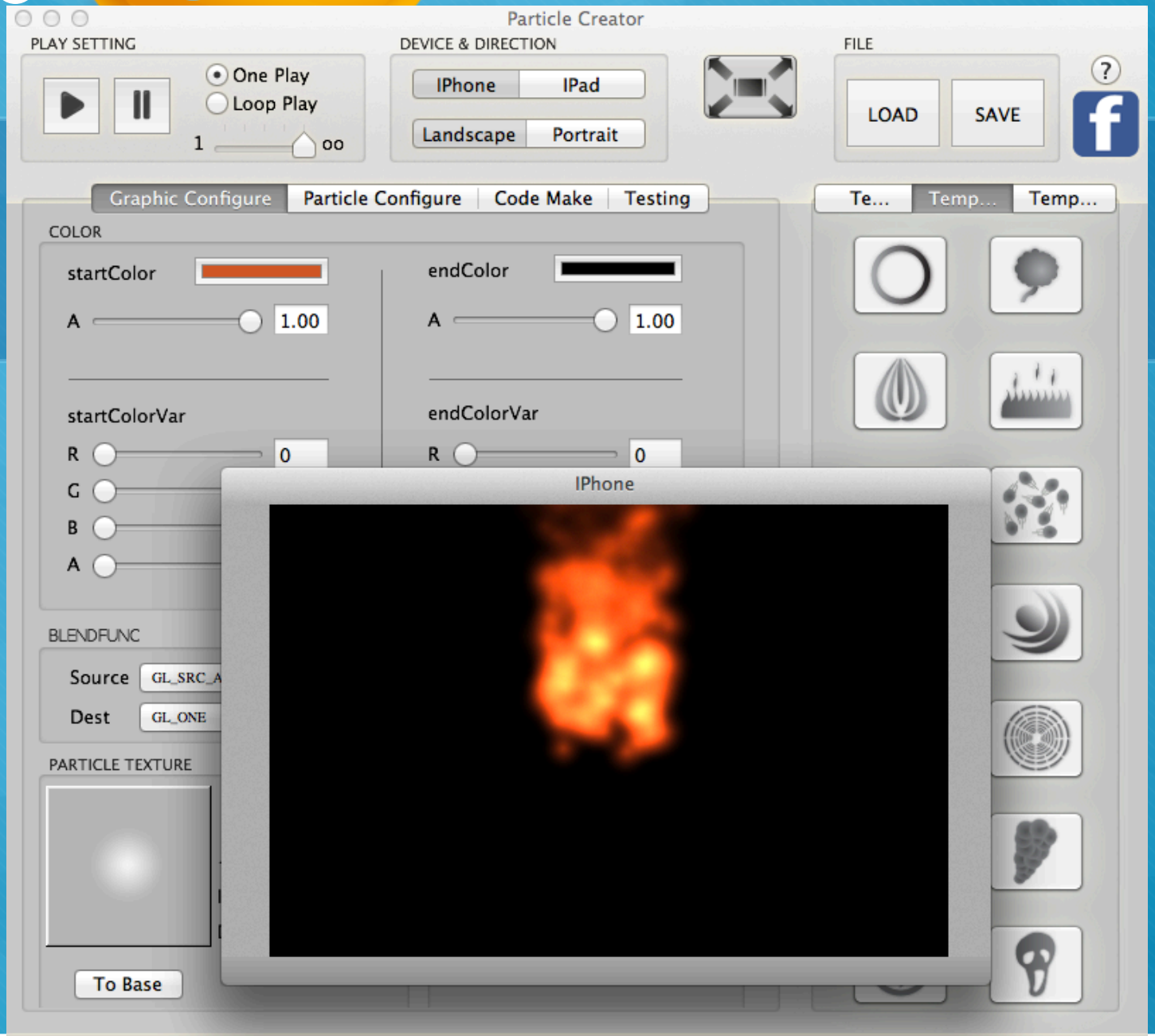
Padding : 2px

Sort Method : Special

Reversed :

Refresh

Tools


Particle Creator
PLAY SETTING
One Play
Loop Play
1
oo
DEVICE & DIRECTION
IPhone
IPad
Landscape
Portrait
FILE
LOAD
SAVE
Graphic Configure
Particle Configure
Code Make
Testing
Te...
Temp...
Temp...
COLOR
startColor
A
1.00
endColor
A
1.00
startColorVar
R
0
G
B
A
endColorVar
R
0
IPhone
BLENDFUNC
Source
GL_SRC_A
Dest
GL_ONE
PARTICLE TEXTURE
To Base

Tools

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page16.tps

New Open Save Save defaults Add Sprites Add Folder Delete Publish PVR Viewer

TextureSettings

Output

Data Format: cocos2d
Data file: ›/Spritesheet/page16-ipadhd.plist
Texture format: zlib compr. PVR (.pvr.ccz, Ver.2)
Texture file: pritesheet/page16-ipadhd.pvr.ccz
Premultiply alpha: ☑
Flip PVR: ☐
Image format: RGBA8888
Dithering: NearestNeighbour
AutoSD

Geometry

Max size: W: 4096 H: 2048
Fixed size: W: H:
Size constraints: POT (Power of 2)
Force squared: ☐
Force word aligned: ☐
Pack: Best
Scale: 0.5
Scale mode: Smooth

Layout

Algorithm: MaxRects
Heuristics: Best
Border padding: 2
Shape Padding: 2
Inner Padding: 0
Extrude: 0
Common divisor: x 1 y 1
Reduce border artifacts: ☐
Allow rotation: ☑

1.00

Sprites

Sprites
- braç-llop.png
- cella-llop1.png
- cella-llop2.png
- fi.png
- fin.png
- fum1.png
- fum2.png
- fum3.png
- fum4.png
- llop-cara.png
- llop-cos.png
- llop-cua.png
- llop-ulls-oberts.png
- llop-ulls-tancats.png
- pajarita.png
- the-end.png
- toll-aigua.png
- transparencia-aigua-cua.png
- transparencia-aigua-cul.png

Size: 512x1024 (2048kB)

Tools

- Tools = més dades i menys codi
- Menys codi = menys bugs
- Menys codi = més productivitat

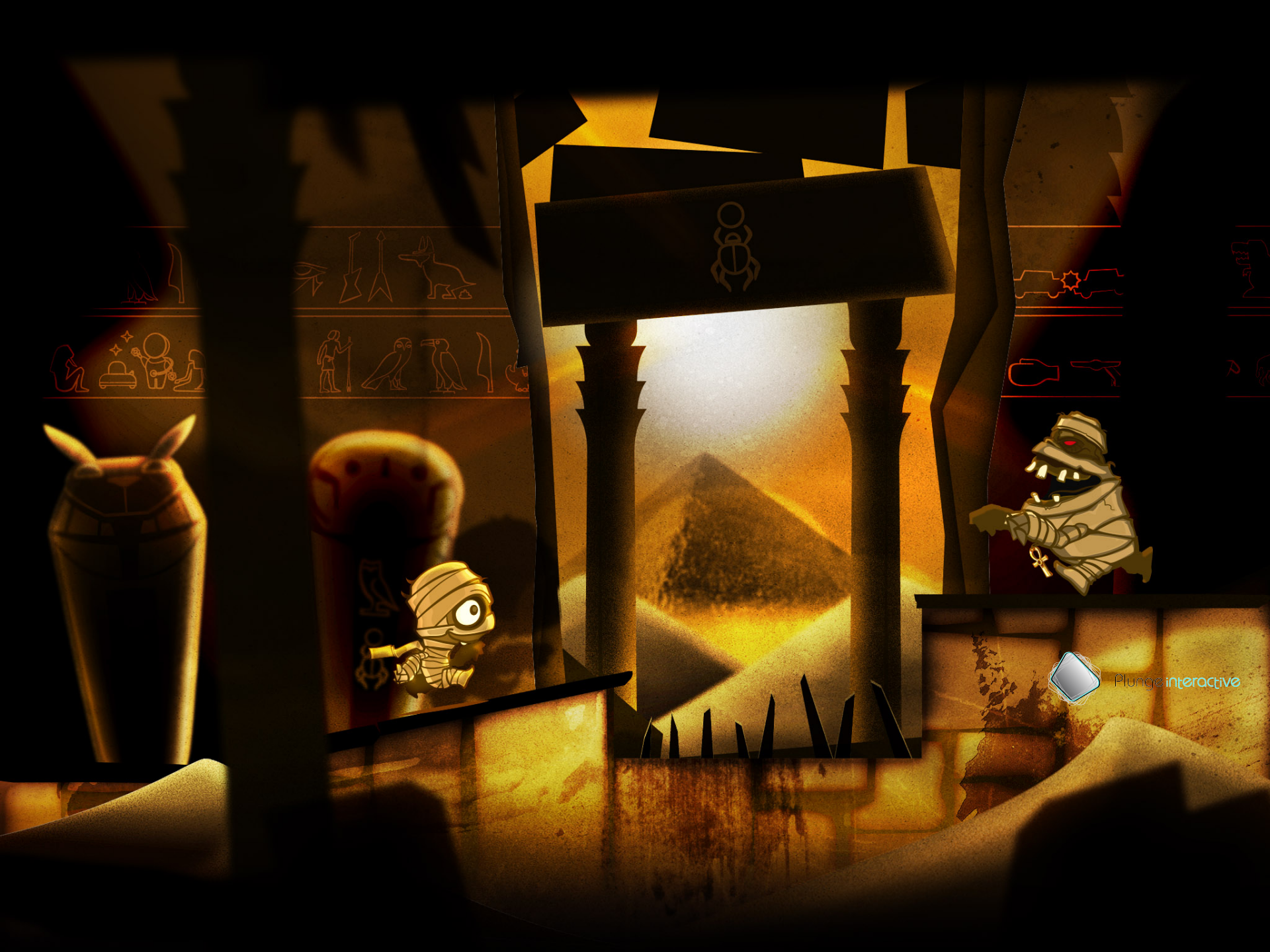
*** El codi ha d'existir per a les coses importants**

Exemples

Plunge interactive

Exemples: jocs fets a Plunge Interactive

SAY HELLO
TO CHARLIE
AND HIS FRIENDS!


Plunge interactive


Plunge interactive
INTERACTÚA
CON EL CUENTO
3

Altres exemples

Plunge interactive

Featured


WW II


我叫MT Online


渡劫成仙


FengYunTianXia


神仙道


DaZhangMen


WoLongYin


XingChenBian

TouchMix 2


Fishing Joy 2


Warring States


BattleLand:Warrior

Last Updated


Spot the Number


Boomlings


Roger jolly pirate


Memory


Duro Race


Tap Bubble


Maya Matrix


Hashi Puzzles:


김치스토리


YiGuo


Xamalga


打鼹鼠Super


김치스토리


Christmas Eve Rush


Hobbit The Beggar


Hobbit Jetpack


EgyptDash


Touch Music


WuZhiXiYou


The TIme Master


Missile Missio


Fearless


Doggie Destroyer


Credit - ElScootro


Super Darwin


Captain Torrent


Card Puzzle


卡片拼图

Consells previs

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Disclaimer

- Entorns més fàcils de configurar:
  - iOS
  - Windows (win32)
- Entorns més complicats
  - Android (especialment sobre windows)
  - Windows 8
  - Windows Phone 8

Introducció a Cocos2d-x

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Disclaimer

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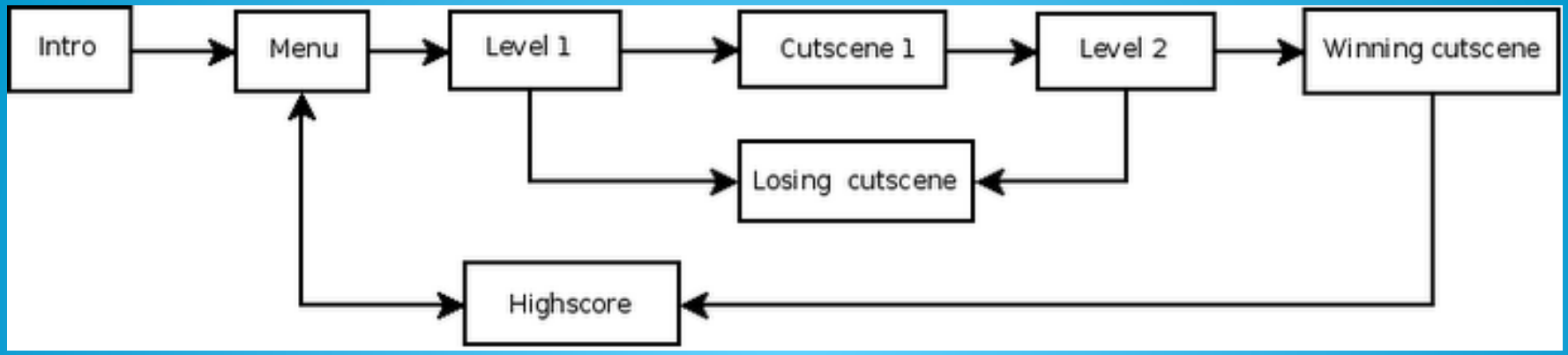
Algunes nomenclatures i classes existeixen únicament per facilitar la portabilitat de codi existent fet amb Cocos2d-iPhone (Objective-C) a C++

Conceptes bàsics: CCScene



Conceptes bàsics: CCScene

HelloWorldScene.h

```
#ifndef __HELLOWORLDSCENE_H__
#define __HELLOWORLDSCENE_H__

#include "cocos2d.h"

class HelloWorldScene: public cocos2d::CCScene
{
private:    // methods
                HelloWorldScene ()  { }
                ~HelloWorldScene () { }

                bool init();

public:     // methods
                CREATE_FUNC(HelloWorldScene);
};

#endif
```

HelloWorldScene.cpp

```
#include "HelloWorldScene.h”

using namespace cocos2d;

bool HelloWorldScene::init()
{
   if (!CCScene::init())
      return false;

  // do something

   return true;
}
```

Important:

- Hereda de CCNode

Conceptes bàsics: CCDirector


```
CCDirector::sharedDirector()->replaceScene(HelloWorldScene);
```

Conceptes bàsics: CCTransition

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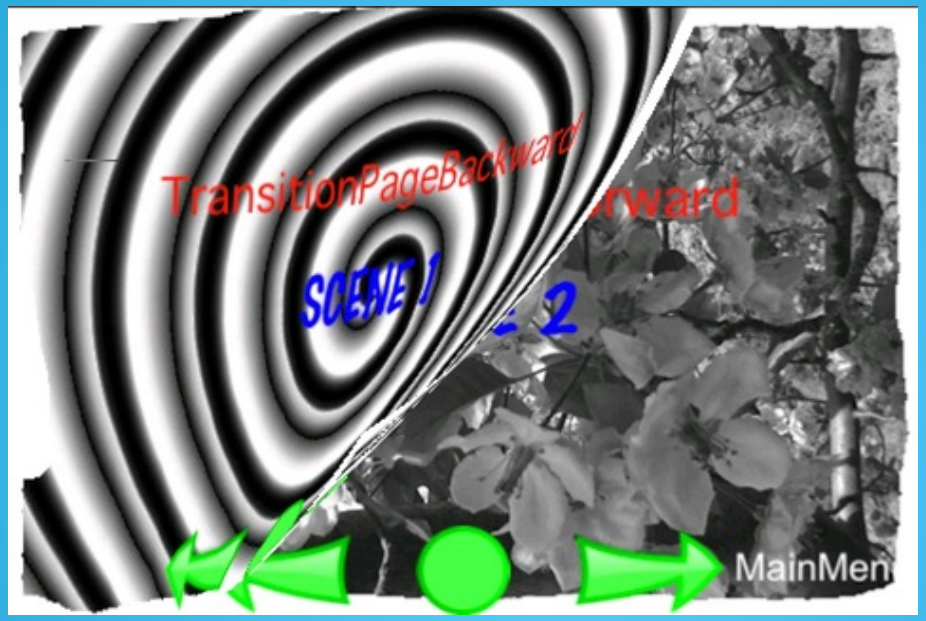
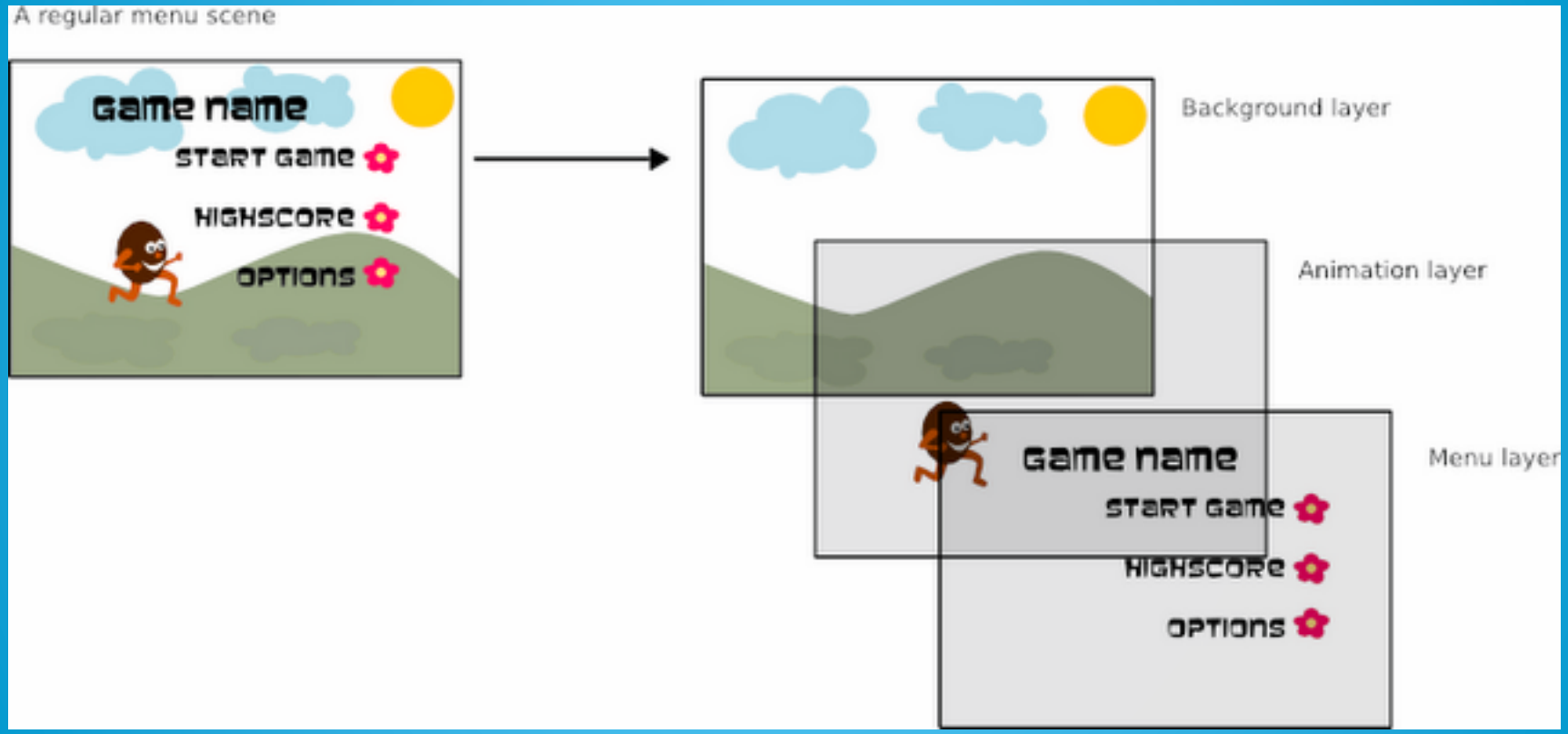
```
CCDirector::sharedDirector()->replaceScene(CCTransitionFade::create(0.5,newScene));
```



[CCTransitionEaseScene](#)
[CCTransitionSceneOriented](#)
[CCTransitionRotoZoom](#)
[CCTransitionJumpZoom](#)
[CCTransitionMoveInR](#)
[CCTransitionMoveInL](#)
[CCTransitionSplitRows](#)
I moltes mes...

Conceptes bàsics: CCLayer



Subclasses interessants:

- **CCLayerColor**
  - **CCLayerColor**

Conceptes bàsics: CCSprite

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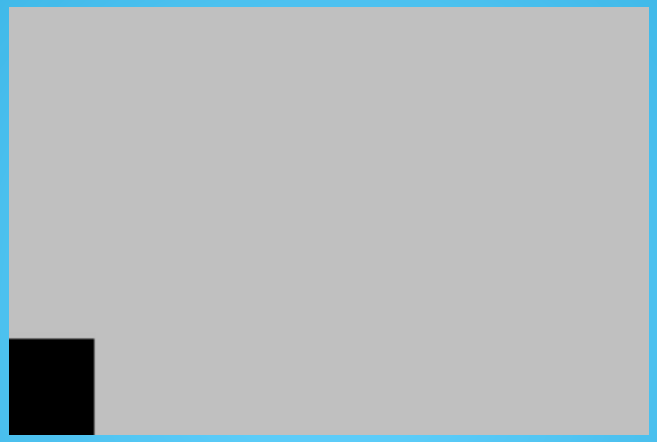
CCSprite::create(”mario.png");

Conceptes bàsics: CCSprite

```
mySprite->setAnchorPoint(cpp(0, 0));
mySprite->setPosition(cpp(10, 10));
```



El anchor Point importa per:

- Posicionament
- Rotació

Conceptes bàsics: CCSprite

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Molts sprites poden decrementar el framerate de manera dràstica

Conceptes bàsics: CCSprite

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Problemes dels sprites:

- Escalats a potència de 2
- Consum de memòria
- El render necessita temps

64x128

La solució són els Sprite sheets

- Escalats a potència de 2
- Consum de memòria
- El render necessita temps

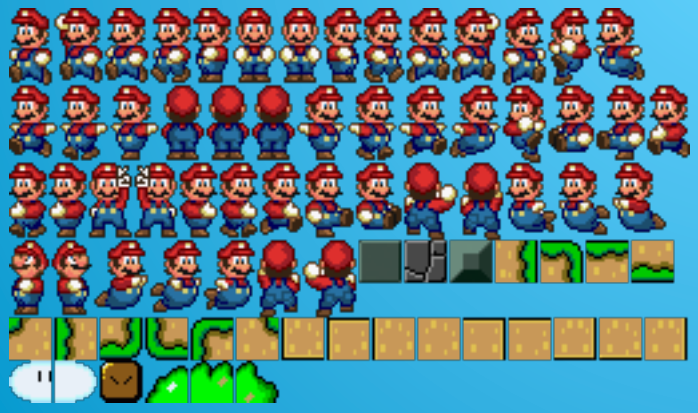
Conceptes bàsics: Sprite Batch

La solució són els sprite sheets combinats amb el sprite batch

- Escalats a potència de 2 (també)
- Millor aprofitament de la memòria
- Render més fàcil (amb sprite batch)

Classes clau:

- CCSpriteBatchNode (textura)
- CCSpriteFrameCache (informació de la textura)



```
xt Document ion="1.0" encoding="UTF-8"?>
<!DOCTYPE plist PUBLIC "-//Apple Computer//DTD PLIST 1.0//EN" "http://www.apple.
<plist version="1.0">
    <dict>
        <key>frames</key>
        <dict>
            <key>BACKGROUND-cel-color.png</key>
            <dict>
                <key>frame</key>
                <string>{{995,916},{25,25}}</string>
                <key>offset</key>
                <string>{0,0}</string>
                <key>rotated</key>
                <false/>
                <key>sourceColorRect</key>
                <string>{{0,0},{25,25}}</string>
                <key>sourceSize</key>
                <string>{25,25}</string>
            </dict>
            <key>BACKGROUND-gespa-color.png</key>
            <dict>
                <key>frame</key>
                <string>{{995,889},{25,25}}</string>
                <key>offset</key>
                <string>{0,0}</string>
                <key>rotated</key>
                <false/>
                <key>sourceColorRect</key>
                <string>{{0,0},{25,25}}</string>
                <key>sourceSize</key>
                <string>{25,25}</string>
            </dict>
            <key>arbre-darrera-1.png</key>
            <dict>
                <key>frame</key>
                <string>{{545,992},{160,272}}</string>
                <key>offset</key>
                <string>{0,1}</string>
                <key>rotated</key>
                <true/>
                <key>sourceColorRect</key>
                <string>{{120,13},{160,272}}</string>
                <key>sourceSize</key>
                <string>{400,300}</string>
            </dict>
            <key>arbre-darrera-3.png</key>
            <dict>
                <key>frame</key>
                <string>{{545,828},{162,278}}</string>
                <key>offset</key>
                <string>{0,1}</string>
                <key>rotated</key>
                <true/>
                <key>sourceColorRect</key>
                <string>{{119,10},{162,278}}</string>
                <key>sourceSize</key>
                <string>{400,300}</string>
            </dict>
            <key>arbres-darrera-2.png</key>
            <dict>
                <key>frame</key>
                <string>{{348,1036},{160,270}}</string>
```

Conceptes bàsics: Sprite Batch


```
CCSpriteBatchNode *spritebatch = CCSpriteBatchNode::create("assets/arbreLectura.pvr.ccz");
treeMenu->addChild(spritebatch);
CCSpriteFrameCache::sharedSpriteFrameCache()->addSpriteFramesWithFile("assets/arbreLectura.plist");

CCSprite* background = CCSprite::createWithSpriteFrameName(”bg1.png");
background->setPosition(ccp(10, 10));
CCSprite* background2 = CCSprite::createWithSpriteFrameName(”bg2.png");
background2->setPosition(ccp(10, 10));
treeMenu->addChild(background);
treeMenu->addChild(background2);
```

Conceptes bàsics: CCAnimation


```
CCSpriteFrameCache* cache = CCSpriteFrameCache::sharedSpriteFrameCache();
cache->addSpriteFramesWithFile("Screens/Cover/cover.plist");

// Initialize spritebatch for the foreground
CCSpriteBatchNode *foregroundBatch = CCSpriteBatchNode::create("Screens/Cover/cover.pvr.ccz");

// add the sprite as a child to this layer
this->addChild(foregroundBatch);

CCSize s = CCDirector::sharedDirector()->getWinSize();
cache->addSpriteFramesWithFile("Animations/Spritesheet.plist");
CCSpriteBatchNode *animationBatch = CCSpriteBatchNode::create("Animations/Spritesheet.pvr.ccz");
this->addChild(animationBatch);

CCSprite *sprite = CCSprite::createWithSpriteFrameName("BirdFlop001.png");
sprite->setPosition(ccp(s.width * 0.6f, s.height * 0.5f));

CCArray* animFrames = CCArray::create();
char str[100] = {0};
for(int i = 1; i < 8; i++)
{
   // Obtain frames by alias name
   sprintf(str, "BirdFlop%03d.png", i);
   CCSpriteFrame *frame = cache->spriteFrameByName(str);
   animFrames->addObject(frame);
}

CCAnimation *animation = CCAnimation::create(animFrames, 1.0f/30.0f);

sprite->runAction(CCRepeatForever::create(CCAnimate::create(animation)));
animationBatch->addChild(sprite);
```

Conceptes bàsics: CCMenu


```
        // Setup menu backgrounds
        CCSprite *menuBG1 = CCSprite::createWithSpriteFrameName(”1white-button-large.png");
        CCSprite *menuBG2 = CCSprite::createWithSpriteFrameName(”2white-button-large.png");
        CCSprite *menuBG3 = CCSprite::createWithSpriteFrameName(”3white-button-large.png");

        CCMenuItemSprite *menu1 = CCMenuItemSprite::create(menuBG1, NULL, NULL, this,
menu_selector(SubShop::clickAvatar));
        menu1->setAnchorPoint(ccp(0,0));
        menu1->setPosition(ccp(150, 470));

        CCMenuItemSprite *menu2 = CCMenuItemSprite::create(menuBG2, NULL, NULL, this,
menu_selector(SubShop::clickMoves));
        menu2->setAnchorPoint(ccp(0,0));
        menu2->setPosition(ccp(150, 360));


        CCMenuItemSprite *menu3 = CCMenuItemSprite::create(menuBG3, NULL, NULL, this,
menu_selector(SubShop::clickBackground));
        menu3->setAnchorPoint(ccp(0,0));
        menu3->setPosition(ccp(150, 250));

        CCMenu* menu = CCMenu::create(menu1, menu2, menu3, NULL);
        menu->setAnchorPoint(ccp(0,0));
        menu->setPosition(ccp(0,0));

        this->addChild(menu);
```

Conceptes bàsics: CCMenu


```
// Setup menu backgrounds
CCSprite *menuBG1 = CCSprite::createWithSpriteFrameName(”1white-button-large.png");
CCSprite *menuBG2 = CCSprite::createWithSpriteFrameName(”2white-button-large.png");
CCSprite *menuBG3 = CCSprite::createWithSpriteFrameName(”3white-button-large.png");

CCMenuItemSprite *menu1 = CCMenuItemImage::create(menuBG1, NULL, NULL, this,       menu_selector(SubShop::clickAvatar));
menu1->setAnchorPoint(ccp(0,0));
menu1->setPosition(ccp(150, 470));

CCMenuItemSprite *menu2 = CCMenuItemImage::create(menuBG2, NULL, NULL, this, menu_selector(SubShop::clickMoves));
menu2->setAnchorPoint(ccp(0,0));
menu2->setPosition(ccp(150, 360));


CCMenuItemSprite *menu3 = CCMenuItemImage::create(menuBG3, NULL, NULL, this, menu_selector(SubShop::clickBackground));
menu3->setAnchorPoint(ccp(0,0));
menu3->setPosition(ccp(150, 250));

CCMenu* menu = CCMenu::create(menu1, menu2, menu3, NULL);
menu->setAnchorPoint(ccp(0,0));
menu->setPosition(ccp(0,0));

this->addChild(menu);
```

Conceptes bàsics: CCAction

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Es poden aplicar a qualsevol CCNode (Layers, Sprites, Menús, Escenes...)

Exemple:

```
CCRepeatForever *repeat = CCRepeatForever::create(CCRotateBy::create(10.0f, 360));
myCCNode->runAction(repeat);
```

Conceptes bàsics: CCAction

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Acció de escala

```
CCActionInterval*  actionTo = CCScaleTo::create(0.8f, 2.5f);
myObject->runAction(actionTo);
```

Conceptes bàsics: CCAction

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Interpolació de la velocitat

```
CCActionInterval*  actionTo = CCScaleTo::create(0.8f, 2.5f);
CCAction *easeIn = CCEaseIn::actionWithAction(actionTo, 5);

myObject->runAction(easeIn);
```

Conceptes bàsics: CCAction

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Concatenant accions en sequències

```
CCActionInterval *actionTo = CCScaleTo::create(0.8f, 2.5f);
CCAction *easeIn = CCEaseIn::actionWithAction(actionTo, 5);
CCMoveBy *move = CCMoveBy::create(0.8f, ccp(100, 200));
CCFiniteTimeAction* actF = CCSequence::create(move, easeIn, NULL);

myObject->runAction(actF);
```

Conceptes bàsics: CCAction

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Executant accions en paral·lel

```
CCActionInterval *actionTo = CCScaleTo::create(0.8f, 2.5f);
CCMoveBy *move = CCMoveBy::create(0.8f, ccp(100, 200));
CCAction *finalAction = CCSpawn::create(actionTo, move);

menuPlayItem->runAction(finalAction);
```

Conceptes bàsics: CCAction

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position
CCMoveBy
CCMoveTo
CCJumpBy
CCJumpTo
CCBezierBy
CCBezierTo
CCPlace

scale
CCScaleBy
CCScaleTo

rotation
CCRotateBy
CCRotateTo

visible
CCShow
CCHide
CCBlink
CCToggleVisibility

opacity
CCFadeIn
CCFadeOut
CCFadeTo

color
CCTintBy
CCTintTo

Conceptes bàsics: Estructures de dades

Plunge interactive

Classes importants

CCArray
CCDictionary (es pot inicialitzar amb un XML! i els XML es poden binaritzar!)
CCPoint
CCSize
CCRect

CCInteger
CCString
CCStringCompare

Conceptes bàsics: Sistemes de partícules

Plunge interactive

Gravity Mode

```
CCParticleSystemQuad* m_emitter = newCCParticleSystemQuad();
m_emitter = CCParticleFire::create();

// Gravity Mode
this->m_nEmitterMode = kCCParticleModeGravity;

// Gravity Mode: gravity
this->modeA.gravity = ccp(0,-90);
```

Conceptes bàsics: Sistemes de partícules

Plunge interactive

Gravity Mode

```
// Radius Mode
this->m_nEmitterMode = kCCParticleModeRadius;

// Radius Mode: startRadius
this->modeB.startRadius = 0;
this->modeB.startRadiusVar = 0;//ccp(0,0);
```

Conceptes bàsics: schedulers

Mètodes que es criden repetitivament en un interval de temps

```
this->schedule(MenuBottom::methodName, 1.0f);
```

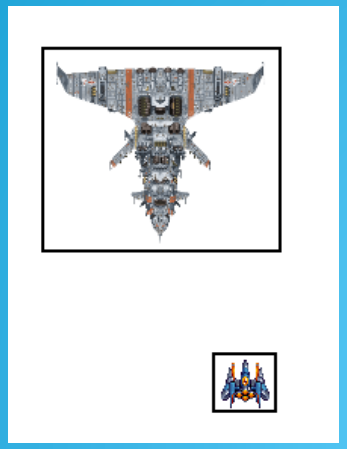
A tenir en compte:

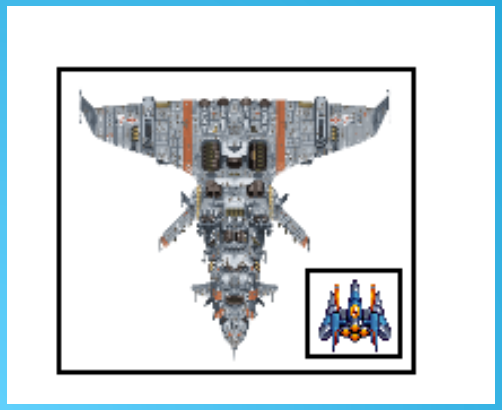
- Posar-ne molts afecta al rendiment, i a la mantenibilitat del codi
- Pauses / resumes automàtics (CCDirector::sharedDirector()->pause();

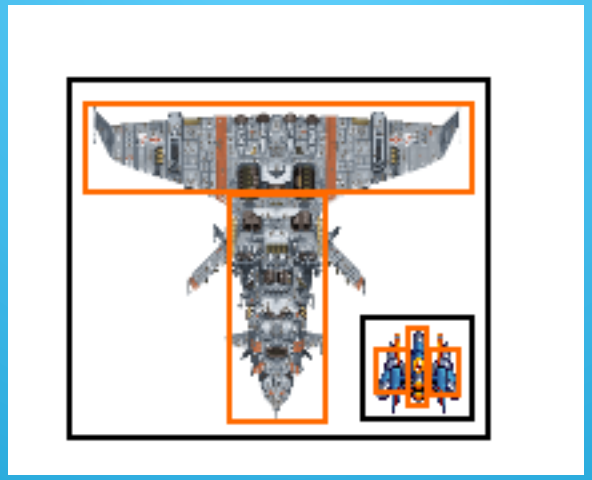
Conceptes bàsics: detecció de col·lisions

Plunge interactive

Basades en rectangles







Conceptes bàsics: detecció de col·lisions

Plunge interactive

Pixel perfect

Conceptes bàsics: detecció de col·lisions

Exemple bàsic sense fantasies

```
CCRect targetRect = CCRectMake(
        target->getPosition().x - (target->getContentSize().width/2),
        target->getPosition().y - (target->getContentSize().height/2),
        target->getContentSize().width,
        target->getContentSize().height);

if (projectileRect.intersectsRect(targetRect))
{
        // bullet impact, aarrrggghh! (so, do something here)
}
```

Alguns trucs

Plunge interactive

Trucs, consells, bones pràctiques...

- Utilitza sprite sheets + sprite batch
- Utilitza sprite fonts (no labels)

  CCLabelBMFont enlloc de CCLabelTTF

- Sempre que sigui possible, utilitza textures de 16 o 4 bits i no 32

  CCTexture2D::setDefaultAlphaPixelFormat(kTexture2DPixelFormat_RGBA4444);

- Elimina les textures de la caché! O es queden en memòria...

  CCSpriteFrameCache::sharedSpriteFrameCache()->removeUnusedSpriteFrames();
  CCTextureCache::sharedTextureCache()->removeUnusedTextures();

  CCTextureCache::sharedTextureCache()->removeAllTextures();

- No programis els schedulers perquè vagin més ràpid que els FPS del joc
- Inicialitza els CCNodes al init() preferiblement
- No creis una jerarquia massa gran de CCLayers

Tests

Plunge interactive

Plunge interactive

Ara us toca a vosaltres ☺