Clean Code: Functions

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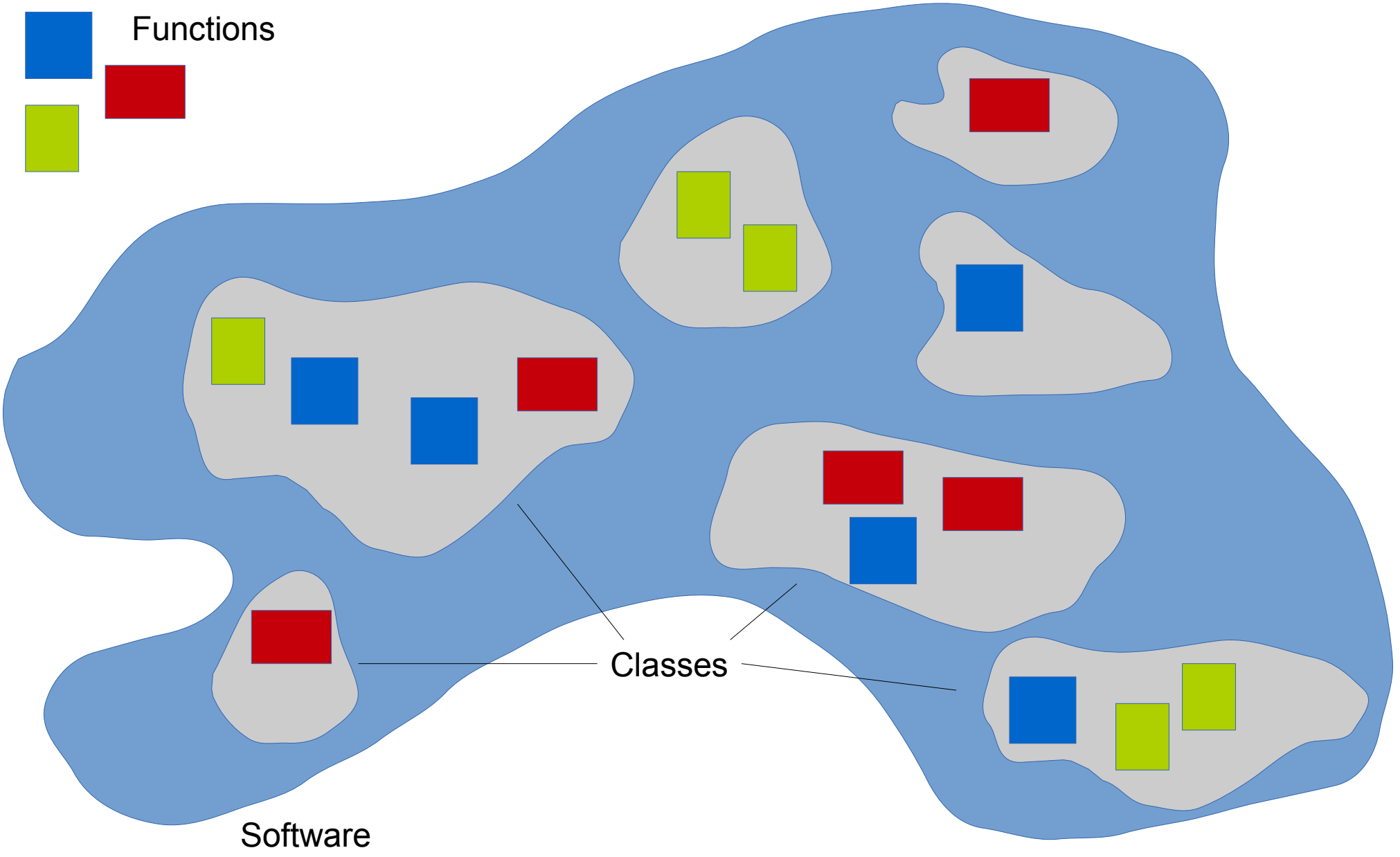
Individual Software Process

Basic building blocks



Let's try to read the code

- You might wonder how your **`update`** methods are called.
- Let's try to chase it down.

cc.Director.drawScene

```
335     drawScene: function() {
336         // calculate "global" dt
337         this.calculateDeltaTime();
338
339         //tick before glClear: issue #533
340         if (!this._paused)
341             this._scheduler.update(this._deltaTime);
342
343         this._clear();
344
345         /* to avoid flickr, nextScene MUST be here: after tick and before draw.
346          XXX: Which bug is this one. It seems that it can't be reproduced with v0.9 */
347         if (this._nextScene) {
348             this.setNextScene();
349         }
350
351         if (this._beforeVisitScene) this._beforeVisitScene();
352
353         // draw the scene
354         if (this._runningScene)
355             this._runningScene.visit();
356
357         // draw the notifications node
358         if (this._notificationNode)
359             this._notificationNode.visit();
360
361         if (this._displayStats)
362             this._showStats();
363
364         if (this._afterVisitScene) this._afterVisitScene();
365
366         this._totalFrames++;
367
368         if (this._displayStats)
369             this._calculateMPF();
370     },
```

cc.Scheduler.update (p.1)

```
559     update:function (dt) {
560         this._updateHashLocked = true;
561 
562         if (this._timeScale != 1.0) {
563             dt *= this._timeScale;
564         }
565 
566         //Iterate all over the Updates selectors
567         var tmpEntry;
568         var i;
569         for (i = 0; i < this._updatesNegList.length; i++) {
570             tmpEntry = this._updatesNegList[i];
571             if ((!tmpEntry.paused) && (!tmpEntry.markedForDeletion)) {
572                 tmpEntry.target.update(dt);
573             }
574         }
575 
576         // updates with priority == 0
577         for (i = 0; i < this._updates0List.length; i++) {
578             tmpEntry = this._updates0List[i];
579             if ((!tmpEntry.paused) && (!tmpEntry.markedForDeletion)) {
580                 tmpEntry.target.update(dt);
581             }
582         }
583 
584         // updates with priority > 0
585         for (i = 0; i < this._updatesPosList.length; i++) {
586             tmpEntry = this._updatesPosList[i];
587             if ((!tmpEntry.paused) && (!tmpEntry.markedForDeletion)) {
588                 tmpEntry.target.update(dt);
589             }
590         }
591 
```

cc.Scheduler.update (p.2)

```
592         //Interate all over the custom selectors
593         var elt;
594         for (i = 0; i < this._arrayForTimers.length; i++) {
595             this._currentTarget = this._arrayForTimers[i];
596             elt = this._currentTarget;
597             this._currentTargetSalvaged = false;
598 
599             if (!this._currentTarget.paused) {
600                 // The 'timers' array may change while inside this loop
601                 for (elt.timerIndex = 0; elt.timerIndex < elt.timers.length; elt.timerIndex++) {
602                     elt.currentTimer = elt.timers[elt.timerIndex];
603                     elt.currentTimerSalvaged = false;
604 
605                     elt.currentTimer.update(dt);
606                     elt.currentTimer = null;
607                 }
608             }
609 
610             if ((this._currentTargetSalvaged) && (this._currentTarget.timers.length == 0)) {
611                 this._removeHashElement(this._currentTarget);
612             }
613         }
614 
```

cc.Scheduler.update (p.3)

```
615         //delete all updates that are marked for deletion
616         // updates with priority < 0
617         for (i = 0; i < this._updatesNegList.length; i++) {
618             if (this._updatesNegList[i].markedForDeletion) {
619                 this._removeUpdateFromHash(this._updatesNegList[i]);
620             }
621         }
622 
623         // updates with priority == 0
624         for (i = 0; i < this._updates0List.length; i++) {
625             if (this._updates0List[i].markedForDeletion) {
626                 this._removeUpdateFromHash(this._updates0List[i]);
627             }
628         }
629 
630         // updates with priority > 0
631         for (i = 0; i < this._updatesPosList.length; i++) {
632             if (this._updatesPosList[i].markedForDeletion) {
633                 this._removeUpdateFromHash(this._updatesPosList[i]);
634             }
635         }
636 
637         this._updateHashLocked = false;
638         this._currentTarget = null;
639     },
```

SpriteFrameCache

- I am trying to work with spritesheet, but the TexturePacker does not work on my machine.
- I tried open-source darkFunction Editor. It is written in Java, and it runs fine on my machine.
- But the information file it generates is in a different, unusable format. T_T

```
<?xml version="1.0"?>
<!-- Generated by darkFunction Editor (www.darkfunction.com) -->
<img name="newSpriteSheet.png" w="1024" h="1024">
  <definitions>
    <dir name="/">
      <spr name="0" x="1" y="1" w="40" h="40"/>
      <spr name="1" x="42" y="1" w="40" h="40"/>
    </dir>
  </definitions>
</img
```

What should I do?

- I am planning to write a converter.
- So I need to see how Cocos2d-html5 works with their **plist** file.
  - Can I do that? Yes. Cocos2d-html5 is open-source software.
  - This is the beauty of open-source software.

cc.SpriteFrameCache. addSpriteFrames (p.1)

```
169     /**
170      * <p>
171      *   Adds multiple Sprite Frames from a plist or json file.<br/>
172      *   A texture will be loaded automatically. The texture name will composed by replacing the .plist or .json s
173      *   If you want to use another texture, you should use the addSpriteFrames:texture method.<br/>
174      * </p>
175      * @param {String} filePath file path
176      * @param {HTMLImageElement|cc.Texture2D|string} texture
177      * @example
178      * // add SpriteFrames to SpriteFrameCache With File
179      * cc.SpriteFrameCache.getInstance().addSpriteFrames(s_grossiniPlist);
180      * cc.SpriteFrameCache.getInstance().addSpriteFrames(s_grossiniJson);
181      */
182     addSpriteFrames: function (filePath, texture) {
183         if (!filePath)
184             throw "cc.SpriteFrameCache.addSpriteFrames(): plist should be non-null";
185
186         var fileUtils = cc.FileUtils.getInstance(), dict;
187         var ext = filePath.substr(filePath.lastIndexOf(".", filePath.length) + 1, filePath.length);
188         if (ext == "plist") {
189             var fullPath = fileUtils.fullPathForFilename(filePath);
190             dict = fileUtils.dictionaryWithContentsOfFileThreadSafe(fullPath);
191         }
192         else {
193             dict = JSON.parse(fileUtils.getTextFileData(filePath));
194         }
195
```

cc.SpriteFrameCache. addSpriteFrame (p.2)

```
196         switch (arguments.length) {
197             case 1:
198                 if (!cc.ArrayContainsObject(this._loadedFileNames, filePath)) {
199                     var texturePath = "";
200                     var metadataDict = dict["metadata"] || dict["meta"];
201                     if (metadataDict) {
202                         // try to read  texture file name from meta data
203                         texturePath = metadataDict["textureFileName"] || metadataDict["image"];
204                     }
205 
206                     if (texturePath != "") {
207                         // build texture path relative to plist file
208                         texturePath = fileUtils.fullPathFromRelativeFile(texturePath, filePath);
209 
210                     } else {
211                         // build texture path by replacing file extension
212                         texturePath = filePath;
213 
214                         // remove .xxx
215                         var startPos = texturePath.lastIndexOf(".", texturePath.length);
216                         texturePath = texturePath.substr(0, startPos);
217 
218                         // append .png
219                         texturePath = texturePath + ".png";
220                     }
221 
222                     var getTexture = cc.TextureCache.getInstance().addImage(texturePath);
223                     if (getTexture)
224                         this._addSpriteFramesWithDictionary(dict, getTexture);
225                     else
226                         cc.log("cocos2d: cc.SpriteFrameCache: Couldn't load texture");
227                 }
228                 break;
```

cc.SpriteFrameCache. addSpriteFrames (p.3)

```
229             case 2:
230                 if (texture instanceof cc.Texture2D) {
231                     /** Adds multiple Sprite Frames from a plist file. The texture will be associated with the
created sprite frames. */
232                     this._addSpriteFramesWithDictionary(dict, texture);
233                 } else {
234                     /** Adds multiple Sprite Frames from a plist file. The texture will be associated with the
created sprite frames.
235                      @since v0.99.5
236                      */
237                     var textureFileName = texture;
238                     if (!textureFileName)
239                         throw "cc.SpriteFrameCache.addSpriteFrames(): texture name should not be null";
240                     var gTexture = cc.TextureCache.getInstance().addImage(textureFileName);
241
242                     if (gTexture) {
243                         this._addSpriteFramesWithDictionary(dict, gTexture);
244                     } else {
245                         cc.log("cocos2d: cc.SpriteFrameCache: couldn't load texture file. File not found " +
textureFileName);
246                     }
247                 }
248                 break;
249             default:
250                 throw "Argument must be non-nil ";
251         }
252     },
```

cc.SpriteFrameCache._addSpriteFramesWithDictionary (1)

```
49      /**
50       * Adds multiple Sprite Frames with a dictionary. The texture will be associated with the created sprite frames.
51       * @param {object} dictionary
52       * @param {cc.Texture2D} texture
53       */
54      _addSpriteFramesWithDictionary: function (dictionary, texture) {
55          var metadataDict = dictionary["metadata"] || dictionary["meta"];
56          var framesDict = dictionary["frames"];
57
58          var format = 0;
59          // get the format
60          if (metadataDict) {
61              var tmpFormat = metadataDict["format"];
62              format = (tmpFormat.length <= 1) ? parseInt(tmpFormat) : tmpFormat;
63          }
64
65          // check the format
66          if (format < 0 || format > 3) {
67              cc.log("format is not supported for cc.SpriteFrameCache.addSpriteFramesWithDictionary");
68              return;
69          }
70
71          for (var key in framesDict) {
72              var frameDict = framesDict[key];
73              if (frameDict) {
74                  var spriteFrame = this._spriteFrames[key];
75                  if (spriteFrame) {
76                      continue;
77                  }
78
79                  if (format == 0) {

97                  }
98                  else if (format == 1 || format == 2) {

110                 }
111                 else if (format == 3) {

135                 }
136                 else {

144                 }
145
146                 if (cc.renderContextType === cc.CANVAS && spriteFrame.isRotated()) {
147                     //clip to canvas
148                     var locTexture = spriteFrame.getTexture();
149                     if (locTexture.isLoaded()) {
150                         var tempElement = spriteFrame.getTexture().getHtmlElementObj();
151                         tempElement = cc.cutRotateImageToCanvas(tempElement, spriteFrame.getRectInPixels());
152                         var tempTexture = new cc.Texture2D();
153                         tempTexture.initWithElement(tempElement);
154                         tempTexture.handleLoadedTexture();
155                         spriteFrame.setTexture(tempTexture);
156
157                         var rect = spriteFrame._rect;
158                         spriteFrame.setRect(cc.rect(0, 0, rect.width, rect.height));
159                     }
160                 }
161
162                 // add sprite frame
163                 var keyName = (filename != null) ? filename : key;
164                 this._spriteFrames[keyName] = spriteFrame;
165             }
166         }
167     },
```

cc.SpriteFrameCache._addSpriteFramesWithDictionary (2)

```
79                  if (format == 0) {
80                      var x = parseFloat(frameDict["x"]);
81                      var y = parseFloat(frameDict["y"]);
82                      var w = parseFloat(frameDict["width"]);
83                      var h = parseFloat(frameDict["height"]);
84                      var ox = parseFloat(frameDict["offsetX"]);
85                      var oy = parseFloat(frameDict["offsetY"]);
86                      var ow = parseInt(frameDict["originalWidth"]);
87                      var oh = parseInt(frameDict["originalHeight"]);
88                      // check ow/oh
89                      if (!ow || !oh) {
90                          cc.log("cocos2d: WARNING: originalWidth/Height not found on the
91                      }
92                      // Math.abs ow/oh
93                      ow = Math.abs(ow);
94                      oh = Math.abs(oh);
95                      // create frame
96                      spriteFrame = cc.SpriteFrame.createWithTexture(texture, cc.rect(x, y
97                  }
```

Small

- Function should be small.
- `cc.Directory.drawScene` is not very small, but small enough to fit this presentation screen.
- `cc.Scheduler.update`, `cc.SpriteFrameCache.addSpriteFrames`, and `cc.SpriteFrameCache._addSpriteFramesWithDictionary` are not.

Why small?

- What do you think?