

Desutezeoid Point and Click Game Engine

API and usage manual.

By Thomas Leathers

v1.1

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History

v1.0: initial version.

v1.1: various improvements and new sections.

Introduction

Desutezeoid is an XML-driven, event-based point and click game engine. It features a plugin system, a string-based event scripting system, music and sound support, and more.

contributions of both code and help with this manual are welcome.

XML Structure

Desutezeoid has a page structure primarily divided into 3 parts:

Pageconf

pageconf is the area where the page is configured, the optional pagekeys are found and activated, background music is controlled, and other related operations occur.

forks

Forks are the heart of Desutezeoid's event logic, and various fork types can be found in the example XML files included with Desutezeoid

core

Core objects are where the display happens, and come in 4 default types:

box, image, label, and text. again, see included examples for more detailed descriptions and examples.

Image Type

```
<img x="80" y="80" hovpic="1" hoverkey="onhov1">
  <con>no-tr-testimg0.png</con>
  <altcon>no-tr-testimg1.png</altcon>
  <act type="quit" ref="test1.xml"/>
</img>
<img x="400" y="100" vscroll="2" hscroll="4">
  <con>no-tr-animtest1a.png</con>
  <act type="none"/>
</img>
<img x="500" y="100" vscroll='-0.2' hscroll="0.4">
  <con>no-tr-animtest1a.png</con>
  <act type="none"/>
</img>
<img x="0" y="0" mouseh="2" mousev="2" onkey="warptest1"
takekey="warptest1">
  <con>warptest1.jpg</con>
  <act type="key"/>
</img>
```

The image Type has a variety of functions and features not found in other clickable types.

For example hscroll and vscroll can be set to floats and integers that represent the number of pixels to scroll the image per frame. (Note: this feature does use more CPU.)

the image file is described in "con" and a hover image can be described in "altcon" when the hovpic attribute is set to "1".

as other clickable core types the Image Type supports the standard Act component.

mouseh and mousev can be set to 1 to follow the mouse, 2 to center on the mouse when following it, or 3 to be in the opposing position of the screen.

setting mouseh and mousev to 3 is actually what the demo's "panoramic" screens do. the trick is that

panoramic image is 2x the width and height as the screen. for click boxes to work, select them in the panoramic using an image editor such as GIMP, and divide the position and size values by 2. (the clickbox highlighting debug feature can help with this!)

Label Type

```
<label x="125" y="210" size="24" BGCOLOR="#000000" FGColor="#FFFFFF">
  <con>HI!</con>
  <act type="key" ref="test1.xml"/>
</label>
<label x="80" y="150" size="24" transp="1" FGColor="#000000">
  <con>this should dissappear in 3.5 seconds</con>
  <act type="none"/>
</label>
```

The Label Type will present the label described in "con". using the value "size" as the font size, "BGCOLOR" and "FGColor" for the background and text colors repectively. You can specify the transp attribute as "1" for the text to be rendered with a transparent background.

Box Type

```
<box x="300" y="200" sizex="40" sizey="60" COLOR="#FF0000" alpha="60"
hovalpha="150" onhov="1" HOVCOLOR="#FF0000">
  <act type="none"/>
</box>
```

the box type is a very useful core object. it allows both colored "COLOR" rectangles with alpha "alpha", with optional separate color "HOVCOLOR" and alpha "hovalpha" values for hover colors if "onhov" is specified.

The size of the rect is determined by the sizey and sizex attributes. The alpha value attributes are in the range 0-255. If you dont wish to have separate hover values, you can omit "onhov", "HOVCOLOR" and "hovalpha".

Another Use of the Box Type is to make portions of larger images clickable. by setting alpha to 0, you can define arbitrary invisible rects on the screen.

Text Type

```
<text x="10" y="30" size="20" transp="1" FGColor="#000000">Desutezeoid is an arbitrary, XML based, point and click engine that is programmed in python using pygame. It has many features. Check the comments in the xml files and the DOCS folder to learn more. also see the various test screens and demos and special effects examples in action.
```

```
Click on the menu button to begin.</text>
```

The text type can be quite useful, But unlike the other builtin core types it DOES NOT support the standard act component. it does support the same formatting attributes as the builtin label type though. and can be quite helpful for some text-based screens like for example: the "About" screen in the included demo program, or in the example's case, the start screen of the demo.

Standard keyid masking

the attributes "onkey" and "offkey" can be defined to manipulate when a core type is processed.

(Plugin note: the system does this regardless of what your plugin does.)

Please note this truth table:

onkey present	offkey present	is core type active?
yes	yes	no
yes	no	Yes
yes	not specified	Yes
No	not specified	No
not specified	no	Yes
not specified	yes	No

Standard Act component

```
<img x="0" y="0" mouseh="2" mousev="2" onkey="warptest1" takekey="warptest1">
  <con>warptest1.jpg</con>
  <act type="key"/>
</img>
<label x="0" y="230" size="24" BGColor="#000088" FGColor="#FFFFFF" keyid="predelta">
  <con>or here!</con>
  <act type="iref" ref="test1.xml"/>
</label>
```


The standard act component provides various basic click even support.

(plugin note: to use the sandard act component with your add-on core types, you should return a pygame Rect of the clickable area when you detect and process said types, otherwise, return None.)

Act Tag attributes

type

the type attribute determines what is done with the given attributes. the ref attribute is only needed with the "iref" type.

type	description
key	process only keyid and takekey values (see below)
iref	go to page described in "ref" (see below) also process keyids.
prev	goto previous page
quit	prompt user with the quit dialog

ref:

if reftype is iref, load page filename described here.

Main Tag attributes

keyid:

if clicked, add this keyid to keylist, (use "0" for none)

takekey:

if clicked, remove this keyid from keylist, (use "0" for none)

hoverkey:

if mouse is over clickbox, the given keyid is actively made active, otherwise it is actively made inactive.

(plugin note: in order for this to do anything in your add-on core types, you must return a Rect and therefore activate the standard act component!

sfxclick and sound:

if sfxclick set to 1, load and play sound file described by "sound"

set sfxclick to 0 and sound to None for no click sound

Plugin API:

The plugin system works by dynamically loading each plugin into a central plugin library.

the plugins all must be located in the "plugins" folder and end in ".dzup.py"

plugin class names should take the form: PLUGIN_pluginname

As always, see example plugins!

each plugin file should have a plugin class, and the following variables defined:

plugname	name of the plugin
plugclass	reference to the plugin class (NOT an instance, the class itself.)
plugpath	the name of the subdirectory in the plugin directory that this plugin uses. (mainly for future-proofing)

Plugin Class functions. (required)

function	description
<code>__init__(self, screensurf, keylist):</code>	screensurf is the pygame display surface keylist is a direct reference to Desutezeoid's keyid list.
<code>fork(self, tagobj):</code>	called during fork processing, plugins should check any fork tags it wishes to. (tip: for if statements try: <code>tagobj.tag=="yourforktag"</code>)
<code>core(self, tagobj)</code>	called during core processing, plugins should check any core tags it wishes to. (tip: for if statements try: <code>tagobj.tag=="yourcoretag"</code>) also: Should either return None, or pygame Rect. If Rect is returned, the system will attempt to parse the standard "act" component, and associated related attributes... you may also want to use the provided click events in place of the standard act component. if you want hoverkey to be active, you MUST return a Rect! #onkey/offkey masking is honored by the system regardless.

def pump(self):	called every clock loop before pygame events are processed. return a list of clicktab instances to have them appended to Desutezeoid's list of clicktab instances for that loop.
click(self, event):	provides Pygame MOUSEBUTTONDOWN events.
clickup(self, event):	provides Pygame MOUSEBUTTONUP events.
pageclear(self)	called every pageload.
clickreport(self, clickinst):	to use clickreport, you must specify the "report" acttype in the clicktab objects returned by pump() for each clicktab object you want to be reported on click. also use the data value to store any generic data you might need. you can also use the ctreport() function in dzulib. Note: This is only required if you want to use the clicktab reporting feature.

Clicktab Reporting

Plugins have access to a special feature of clicktab objects. they can store a generic data value (string, int, list, ect), and when using the **"report"** reftype and specifying ref as self, and returning clicktab objects like such with the **pump()** method, clicks on these objects will be reported to the clickreport method of the plugin instance referenced in ref.

The main advantage of this over the builtin act component is the ability for a plugin to respond directly to the click, rather than employing some sort of keyid fork trick.

you can also use the simplified wrapper function:

```
ReportEnabledClickTabObject=dzulib.ctreport(box, selfref, dataval):
```

box is a pygame Rect, **selfref** is a reference to the plugin's self, **dataval** is the generic data variable of the clicktab objets.

basic example:

```
def pump(self):
    return(dzulib.ctreport(self.somerect, self, "Hello world")
...
user clicks said clicktab object.
...
def clickreport(self, clickinst):
    print clickinst.data
```

```
...
output:
"Hello world"
```

a more elaborate version of this can be found in the plugin: test3.dzup.py

clicktab objects:

clicktab objects are used internally by Desutezeoid to describe clickable objects, and can be returned by the **pump()** method of a plugin class in the form of a list. (even if only 1 clicktab instance is given, it **MUST** be in a list)

clicktabexample=clicktab(box, reftype, ref, keyid, takekey, sfxclick, sound, quitab=0, data=None)

box:

box should be the Pygame Rect representing the area of the screen surface you want the clicktab to respond to.

reftype:

what you want the clicktab to do when clicked.

type	description
key	process only keyid and takekey values (see below)
iref	go to page described in "ref" (see below) also process keyids.
prev	goto previous page
quit	prompt user with the quit dialog
report	this is required for the clickreport feature. To use this, ref MUST be a refrence to the plugin's self, and the plugin MUST have the clickreport method!

ref:

if reftype is iref, load page filename described here.

if reftype is report, then it will attempt to call the plugin instance stored in ref, and call that plugin's clickreport method.

keyid:

if clicked, add this keyid to keylist, (use "0" for none)

takekey:

if clicked, remove this keyid from keylist, (use "0" for none)

sfxclick and sound:

if sfxclick set to 1, load and play sound file described by "sound"

set sfxclick to 0 and sound to None for no click sound

quitab

quitab is used by the internal quit dialog. if you want to prompt a user quit, use the "quit" reftype.

data

this is a generic data variable that is only really useful with the clickreport feature (and the "report" reftype.) you might use a list for multiple values if needed.

Cache Functions:

Desutezeoid has cache functions for images and rendered text. These cache functions store this data for each page, as its requested, and are flushed when a new page is loaded. image files should be in the "img" directory.

filelookup(imagefilename)

filelookup's usage is quite straightforward, you pass the filename of an image, and it will try and load it from the "img" directory, and will cache the resulting surface for as long as that page is loaded.

textrender(text, size, fgcolor, bgcolor, transp)

textrender's usage is understandably a bit more complicated. textrender stores the rendered text based upon a key built from the passed values. **text** is the text to be rendered. **size** is the desired text size, fgcolor, and bgcolor are the text and background colors respectively, **Note: these should be a color acceptable by pygame's Color class, usually for XML attributes, Desutezeoid uses an HTML color form.**

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