

API CLASSES + METHODS

Animation (Parent: Object)

.nextFrame .pause .resume .stop

AppObserver (Parent: Object)

.onNewModel .onOpenModel .onQuit
.onUnloadExtension

ArcCurve (Parent: Curve)

.center .end_angle .normal .plane .radius
.start_angle .xaxis .yaxis

Array (Parent: Object)

.cross .distance .distance_to_line
.distance_to_plane .dot .normalize
.normalize! .offset .offset! .on_line?
.on_plane? .project_to_line
.project_to_plane .transform .transform!
.vector_to .x .x= .y .y= .z .z=

AttributeDictionaries (Parent: Object)

.[] .delete .each

AttributeDictionary (Parent: Object)

.[] .[]= .delete_key .each .each_key
.each_pair .keys .length .name .size
.values

Behavior (Parent: Entity)

.always_face_camera=
.always_face_camera? .cuts_opening=
.cuts_opening? .is2d= .is2d?
.no_scale_mask= .no_scale_mask?
.shadows_face_sun= .shadows_face_sun?
.snapto .snapto=

BoundingBox (Parent: Object)

.add .center .clear .contains? .corner
.depth .diagonal .empty? .height
.intersect .max .min .new .valid? .width

Camera (Parent: Object)

.aspect_ratio .aspect_ratio= .description
.description= .direction .eye .focal_length
.focal_length= .fov .fov= .height
.height= .image_width .image_width=
.new .perspective= .perspective? .set
.target .up .xaxis .yaxis .zaxis

Color (Parent: Object)

.alpha .alpha= .blend .blue .blue=
.green .green= .names .new .red
.red= .to_a .to_i .to_s

Command (Parent: Object)

.large_icon= .menu_text= .new
.set_validation_proc .small_icon=
.status_bar_text= .tooltip=

ComponentDefinition (Parent:

Drawingelement)
.<=> .== .add_observer .behavior
.count_instances .description
.description= .entities .group? .guid
.hidden? .image? .insertion_point
.insertion_point= .instances .internal?
.invalidate_bounds .name .name=
.path .refresh_thumbnail
.remove_observer .save_as
.save_thumbnail

ComponentInstance (Parent:

Drawingelement)
.add_observer .definition .definition=
.explode .glued_to .glued_to=
.locked= .locked? .make_unique
.move! .name .name=
.remove_observer .transform!
.transformation .transformation=

ConstructionLine (Parent:

Drawingelement)
.direction .direction= .end .end=
.position .position= .reverse! .start
.start= .stipple .stipple=

ConstructionPoint (Parent:

Drawingelement)
.position

Curve (Parent: Entity)

.count_edges .each_edge .edges
.first_edge .is_polygon? .last_edge
.length .move_vertices .vertices

DefinitionList (Parent: Entity)

.[] .add .add_observer .at .count
.each .length .load .load_from_url

.purge_unused .remove_observer
.unique_name

DefinitionObserver (Parent: Object)

.onComponentInstanceAdded
.onComponentInstanceRemoved
.onComponentAdded
.onComponentPropertiesChanged
.onComponentRemoved
.onComponentTypeChanged

Drawingelement (Parent: Entity)

.bounds .casts_shadows=
.casts_shadows? .erase! .hidden=
.hidden? .layer .layer= .material
.material= .receives_shadows=
.receives_shadows? .visible= .visible?

Edge (Parent: Drawingelement)

.all_connected .common_face .curve
.end .explode_curve .faces .find_faces
.length .line .other_vertex
.reversed_in? .smooth= .smooth?
.soft= .soft? .split .start .used_by?
.vertices

EdgeUse (Parent: Entity)

.edge .end_vertex_normal .face .loop
.next .partners .previous .reversed?
.start_vertex_normal

Entities (Parent: Object)

.[] .add_3d_text .add_arc .add_circle
.add_cline .add_cpoint .add_curve
.add_edges .add_face
.add_faces_from_mesh .add_group
.add_image .add_instance .add_line
.add_ngon .add_observer .add_text
.at .clear! .count .each .erase_entities
.fill_from_mesh .intersect_with .length
.model .parent .remove_observer
.transform_by_vectors
.transform_entities

EntitiesObserver (Parent: Object)

.onContentsModified .onElementAdded
.onElementRemoved .onEraseEntities

Entity (Parent: Object)

.add_observer .attribute_dictionaries
.attribute_dictionary .delete_attribute
.deleted? .entityID .get_attribute .model
.parent .remove_observer .set_attribute
.to_s .typename .valid?

EntityObserver (Parent: Object)

.onChangeEntity .onEraseEntity

Face (Parent: Drawingelement)

.all_connected .area .back_material
.back_material= .classify_point .edges
.followme .get_UVHelper
.get_glued_instances .loops .material
.material= .mesh .normal .outer_loop
.plane .position_material .pushpull
.reverse! .vertices

Geom (Parent: N/A)

.closest_points .fit_plane_to_points
.intersect_line_line .intersect_line_plane
.intersect_plane_plane .linear_combination
.point_in_polygon_2D

Group (Parent: Drawingelement)

.add_observer .copy .description
.description= .entities .explode
.local_bounds .locked= .locked?
.make_unique .move! .name .name=
.remove_observer .to_component
.transform! .transformation
.transformation=

Image (Parent: Drawingelement)

.explode .height .height= .normal .origin
.origin= .path .pixelheight .pixelwidth
.size= .transform! .width .width=
.zrotation

Importer (Parent: Object)

.description .do_options .file_extension .id
.load_file .supports_options?

InputPoint (Parent: Object)

.== .clear .copy! .degrees_of_freedom
.depth .display? .draw .edge .face .new
.pick .position .tooltip .transformation
.valid? .vertex

InstanceObserver (Parent: Object)

.onClose .onOpen

LatLong (Parent: Object)

.latitude .longitude .new .to_a .to_s
.to_utm

Layer (Parent: Entity)

.<=> .== .name .name=
.page_behavior .page_behavior= .visible=
.visible?

Layers (Parent: Entity)

[] .add .add_observer .at .count .each
.length .purge_unused .remove_observer
.unique_name

LayersObserver (Parent: Object)

.onCurrentLayerChanged .onLayerAdded
.onLayerRemoved .onRemoveAllLayers

Length (Parent: Object)

< .<= .<=> .== .> .>= .inspect
.to_f .to_s

Loop (Parent: Entity)

.convex? .edges .edgeuses .face .outer?
.vertices

Material (Parent: Entity)

.<=> .== .alpha .alpha= .color .color=
.display_name .Type .name .texture
.texture= .use_alpha?

Materials (Parent: Entity)

[] .add .add_observer .at .count .current
.current= .each .length .purge_unused
.remove_observer

MaterialsObserver (Parent: Object)

.onMaterialAdd .onMaterialChange
.onMaterialRefChange .onMaterialRemove
.onMaterialRemoveAll
.onMaterialSetCurrent
.onMaterialUndoRedo

Menu (Parent: Object)

.add_item .add_separator .add_submenu
.set_validation_proc

Model (Parent: Object)

.abort_operation .active_entities
.active_layer .active_layer= .active_path

.active_view .add_note .add_observer
.attribute_dictionaries
.attribute_dictionary .behavior .bounds
.close_active .commit_operation
.definitions .description .description=
.edit_transform .entities .export
.georeferenced? .get_attribute
.get_datum .get_product_family .guid
.import .latlong_to_point .layers
.list_datums .materials .mipmapping=
.mipmapping? .modified? .name
.name= .number_faces .options
.pages .path .place_component
.point_to_latlong .point_to_utm
.raytest .remove_observer
.rendering_options .save
.save_thumbnail .select_tool .selection
.set_attribute .set_datum
.shadow_info .start_operation .styles
.tags .tags= .title .tools
.utm_to_point .valid?

ModelObserver (Parent: Object)

.onActivePathChanged
.onAfterComponentSaveAs
.onBeforeComponentSaveAs
.onDeleteModel .onEraseAll
.onExplode .onPlaceComponent
.onSaveModel .onTransactionAbort
.onTransactionCommit
.onTransactionEmpty
.onTransactionRedo
.onTransactionStart
.onTransactionUndo

Numeric (Parent: Object)

.cm .degrees .feet .inch .km .m .mile
.mm .radians .to_cm .to_feet .to_inch
.to_km .to_l .to_m .to_mile .to_mm
.to_yard .yard

OptionsManager (Parent: Object)

[] .count .each .keys .size

OptionsProvider (Parent: Object)

[] []= .add_observer .count .each

.each_key .each_pair .each_value
.has_key? .key? .keys .name
.remove_observer .size

OptionsProviderObserver (Parent: Object)

.onOptionsProviderChanged

Page (Parent: Entity)

.camera .delay_time .delay_time=
.description .description=
.hidden_entities .label .layers .name
.name= .rendering_options
.set_visibility .shadow_info .style
.transition_time .transition_time=
.update .use_axes= .use_axes?
.use_camera= .use_camera?
.use_hidden= .use_hidden?
.use_hidden_layers=
.use_hidden_layers?
.use_rendering_options=
.use_rendering_options?
.use_section_planes=
.use_section_planes?
.use_shadow_info= .use_shadow_info?
.use_style= .use_style?

Pages (Parent: Entity)

[] .add .add_frame_change_observer
.add_matchphoto_page .add_observer
.count .each .erase .parent
.remove_frame_change_observer
.remove_observer .selected_page
.selected_page= .show_frame_at .size
.slideshow_time

PagesObserver (Parent: EntitiesObserver)

.onContentsModified .onElementAdded
.onElementRemoved

PickHelper (Parent: Object)

.all_picked .best_picked .count
.depth_at .do_pick .element_at .init
.leaf_at .path_at .pick_segment
.picked_edge .picked_element
.picked_face .test_point
.transformation_at .view

Point3d (Parent: Object)

.+ .- .< .== .[] []= .clone .distance
.distance_to_line .distance_to_plane
.inspect .linear_combination .new .offset
.offset! .on_line? .on_plane?
.project_to_line .project_to_plane .set!
.to_a .to_s .transform .transform!
.vector_to .x .x= .y .y= .z .z=

PolygonMesh (Parent: Object)

.add_point .add_polygon .count_points
.count_polygons .new .normal_at
.point_at .point_index .points .polygon_at
.polygon_points_at .polygons .set_point
.transform! .uv_at .uvs

RenderingOptions (Parent: Object)

[] []= .add_observer .each .each_key
.each_pair .keys .remove_observer

RenderingOptionsObserver (Parent: Object)

.onRenderingOptionsChanged

SectionPlane (Parent: DrawingElement)

.get_plane .set_plane

Selection (Parent: Object)

[] .add .add_observer .at .clear
.contains? .count .each .empty? .first
.include? .is_curve? .is_surface? .length
.model .nitems .remove .remove_observer
.shift .single_object? .toggle

SelectionObserver (Parent: Object)

.onSelectionAdded .onSelectionBulkChange
.onSelectionCleared .onSelectionRemoved

Set (Parent: Object)

.clear .contains? .delete .each .empty?
.include? .insert .length .new .size .to_a

ShadowInfo (Parent: Entity)

[] []= .add_observer .each .each_key
.each_pair .keys .remove_observer

ShadowInfoObserver (Parent: Object)

.onShadowInfoChanged

Sketchup (Parent: N/A)

.active_model .add_observer .app_name
.break_edges= .break_edges?
.create_texture_writer

.display_name_from_action .file_new
 .find_support_file .find_support_files
 .format_angle .format_area
 .format_degrees .format_length
.full_detail_render_delay_max=
.full_detail_render_delay_min=
 .get_datfile_info .get_i18ndatfile_info
 .get_locale .get_resource_path
 .get_shortcuts .is_online .is_pro?
 .is_valid_filename? .load .open_file
 .os_language .parse_length .read_default
 .register_extension .register_importer
 .remove_observer .require .save_thumbnail
 .send_action .set_status_text .status_text=
 .template .template= .template_dir .undo
 .vcb_label= .vcb_value= .version
 .version_number .write_default

SketchupExtension (Parent: Object)

.copyright .copyright= .creator .creator=
 .description .description= .name .name=
 .new .version .version=

String (Parent: Object)

.to_i

Style (Parent: Object)

.description .description= .name .name=

Styles (Parent: Object)

[.] .active_style .active_style_changed
 .add_style .count .each .parent
 .purge_unused .selected_style
 .selected_style= .size
 .update_selected_style

Text (Parent: DrawingElement)

.arrow_type .arrow_type=
 .display_leader= .display_leader?
 .has_leader? .leader_type .leader_type=
 .line_weight .line_weight= .point .point=
 .set_text .text .text= .vector .vector=

Texture (Parent: Entity)

.average_color .filename .height
 .image_height .image_width .size= .valid?
 .width

TextureWriter (Parent: Object)

.count .filename .handle .length .load
 .write .write_all

Tool (Parent: Object)

.activate .deactivate .draw
 .enableVCB? .getExtents
 .getInstructorContentDirectory
 .getMenu .onCancel .onKeyDown
 .onKeyUp .onLButtonDoubleClick
 .onLButtonDown .onLButtonUp
 .onMButtonDoubleClick
 .onMButtonDown .onMButtonUp
 .onMouseEnter .onMouseLeave
 .onMouseMove .onRButtonDoubleClick
 .onRButtonDown .onRButtonUp
 .onReturn .onSetCursor .onUserText
 .resume .suspend

Toolbar (Parent: Object)

.add_item .add_separator
 .get_last_state .hide .new .restore
 .show .visible?

Tools (Parent: Object)

.active_tool_id .active_tool_name
 .add_observer .model .pop_tool
 .push_tool .remove_observer

ToolsObserver (Parent: Object)

.onActiveToolChanged
 .onToolStateChanged

Transformation (Parent: Object)

* .axes .clone .identity? .interpolate
 .inverse .invert! .new .origin .rotation
 .scaling .set! .to_a .translation .xaxis
 .yaxis .zaxis

UI (Parent: N/A)

.add_context_menu_handler .beep
 .create_cursor .inputbox
 .inspector_names .menu .messagebox
 .model_info_pages .openURL
 .openpanel .play_sound
 .preferences_pages .refresh_inspectors
 .savepanel .set_cursor
 .set_toolbar_visible .show_inspector

.show_model_info .show_preferences
 .start_timer .stop_timer .toolbar
 .toolbar_names .toolbar_visible?
UVHelper (Parent: Object)
 .get_back_UVQ .get_front_UVQ
Vector3d (Parent: Object)
 .% .* .+ .- .< .== .[] .[]=
 .angle_between .axes .clone .cross
 .dot .inspect .length .length=
 .linear_combination .new .normalize
 .normalize! .parallel? .perpendicular?
 .reverse .reverse! .samedirection? .set!
 .to_a .to_s .transform .transform!
 .unitvector? .valid? .x .x= .y .y= .z
 .z=

Vertex (Parent: Entity)

.common_edge .curve_interior? .edges
 .faces .loops .position .used_by?

View (Parent: Object)

.add_observer .animation=
 .average_refresh_time .camera
 .camera= .center .corner .draw
 .draw2d .draw_line .draw_lines
 .draw_points .draw_polyline
 .draw_text .drawing_color=
 .dynamic= .field_of_view
 .field_of_view= **.force_invalidate**
 .guess_target .inference_locked?
 .inputpoint .invalidate
 .last_refresh_time .line_stipple=
 .line_width= .lock_inference .model
 .pick_helper .pickray .pixels_to_model
.refresh .remove_observer
 .screen_coords .set_color_from_line
 .show_frame .tooltip= .vpheight
 .vpwidth .write_image .zoom
 .zoom_extents

ViewObserver (Parent: Object)

.onViewChanged

WebDialog (Parent: Object)

.add_action_callback
 .allow_actions_from_host

.bring_to_front .close .execute_script
 .get_default_dialog_color
 .get_element_value .max_height
 .max_height= .max_width .max_width=
 .min_height .min_height= .min_width
 .min_width=
 .navigation_buttons_enabled=
 .navigation_buttons_enabled? .new
 .post_url .set_background_color .set_file
 .set_full_security= .set_html .set_on_close
 .set_position .set_size .set_url .show
 .show_modal .visible? **.write_image**

NOTE: ***.bold_italic*** methods are new in this release

MORE INFOS

<http://code.google.com/apis/sketchup/>

NOTES

PLUGIN TEMPLATE

Default plugin folder (Win): C:\Program Files\Google\Google SketchUp 7\Plugins\

Default plugin folder (Mac): /Library/Application Support/Google SketchUp 7/SketchUp/Plugins/

Get plugin folder: Sketchup.find_support_file("Plugins")

my_plugin_loader.rb (put in \Plugins\ directory)

```
require "sketchup.rb"
require "extensions.rb"

# Load plugin as extension (so that user can disable it)

my_plugin_loader = SketchupExtension.new "My_Plugin Loader",
  "my_plugin/my_plugin.rb"
my_plugin_loader.copyright= "Copyright 2009 by Me"
my_plugin_loader.creator= "Me, myself and I"
my_plugin_loader.version = "1.0"
my_plugin_loader.description = "Description of plugin."
Sketchup.register_extension my_plugin_loader, true
```

my_plugin.rb* (put in \Plugins\my_plugin\ directory)

```
=begin
Copyright 2009, Author
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THIS SOFTWARE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES,
INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND
FITNESS FOR A PARTICULAR PURPOSE.
License: AuthorsLicenseStatement

Author: AuthorName
Organization: AuthorAffiliationOrOrganizationIfAny
Name: ScriptName
Version: ScriptVersion
SU Version: MinimumSketchUpVersion
Date: Date
Description: ScriptDescription
Usage: ScriptUsageInstructions
History:
  1.000 YYYY-MM-DD Description of changes
=end

require "sketchup.rb"

# Main code (start module name with capital letter)
module My_module
  def self.my_method
```

```
    # do something...
  end
  def self.my_second_method
    # do something...
  end
end

# Create menu items
unless file_loaded?(__FILE__)
  mymenu = UI.menu("Plugins").add_submenu("My Plugin Collection")
  mymenu.add_item("My Tool 1") {My_module::my_method}
  mymenu.add_item("My Tool 2") {My_module::my_second_method}
  file_loaded(__FILE__)
end
```

*this file suffices as a plugin if no extension functionality is needed (put in \Plugins\ directory)

SNIPPETS

MessageBox

```
result = UI.messagebox "Question or Alert", [MB_OK|MB_OKCANCEL
MB_ABORTRETRYCANCEL|MB_YESNOCANCEL|MB_YESNO|MB_RETRYCANCEL
MB_MULTILINE]
```

Open, Save

```
filename = UI.[openpanel|savepanel] "File", "c:\\", "*.jpg"
```

SketchUp version

```
version_as_number = Sketchup.version.to_f
```

MAC or PC

```
PLATFORM = (Object::RUBY_PLATFORM =~ /mswin/i) ? :windows :
((Object::RUBY_PLATFORM =~ /darwin/i) ? :mac : :other)
```

WebDialog

```
dlg_html= "<html><head><title></title></head><body><p>Text</p>
</body></html>"
dlg = UI::WebDialog.new("My Dialog", true,
  "MyDialog", 200, 200, 150, 150, true)
dlg.navigation_buttons_enabled = false
dlg.set_html(dlg_html)
dlg.show
```

Iterate Selection

```
Sketchup.active_model.selection.each {|entity|
# do something... }
```

Check Type

```
an_entity.typename [Face|Edge|Group|ComponentInstance]
```

Add face

```
Sketchup.active_model.entities.add_face
[0,0,0],[0,10,0],[0,10,10]
```

Set/Get attributes

```
an_entity.set_attribute "dictionary_name", "key", "value"
value = an_entity.get_attribute "dictionary_name", "key"
```

Add group

```
group = Sketchup.active_model.entities.add_group
group.entities.add_line [0,0,0],[50,50,50]
```

Look for \Plugins\Examples\ folder for more code samples.