

**NAME**

gv\_lua - graph manipulation in lua

**SYNOPSIS**

```
#!/usr/bin/lua
require('gv')
```

**USAGE****INTRODUCTION**

**gv\_lua** is a dynamically loaded extension for **lua** that provides access to the graph facilities of **graphviz**.

**COMMANDS****New graphs**

New empty graph

```
graph_handle gv.graph (name);
graph_handle gv.digraph (name);
graph_handle gv.strictgraph (name);
graph_handle gv.strictdigraph (name);
```

New graph from a dot-syntax string or file

```
graph_handle gv.readstring (string);
graph_handle gv.read (string filename);
graph_handle gv.read (channel);
```

Add new subgraph to existing graph

```
graph_handle gv.graph (graph_handle, name);
```

**New nodes**

Add new node to existing graph

```
node_handle gv.node (graph_handle, name);
```

**New edges**

Add new edge between existing nodes

```
edge_handle gv.edge (tail_node_handle, head_node_handle);
```

Add a new edge between an existing tail node, and a named head node which will be induced in the graph if it doesn't already exist

```
edge_handle gv.edge (tail_node_handle, head_name);
```

Add a new edge between an existing head node, and a named tail node which will be induced in the graph if it doesn't already exist

```
edge_handle gv.edge (tail_name, head_node_handle);
```

Add a new edge between named tail and head nodes which will be induced in the graph if they don't already exist

```
edge_handle gv.edge (graph_handle, tail_name, head_name);
```

**Setting attribute values**

Set value of named attribute of graph/node/edge - creating attribute if necessary

```
string gv.setv (graph_handle, attr_name, attr_value);
string gv.setv (node_handle, attr_name, attr_value);
string gv.setv (edge_handle, attr_name, attr_value);
```

Set value of existing attribute of graph/node/edge (using attribute handle)

```
string gv.setv (graph_handle, attr_handle, attr_value);
string gv.setv (node_handle, attr_handle, attr_value);
```

*string* **gv.setv** (*edge\_handle*, *attr\_handle*, *attr\_value*);

### Getting attribute values

Get value of named attribute of graph/node/edge

*string* **gv.getv** (*graph\_handle*, *attr\_name*);

*string* **gv.getv** (*node\_handle*, *attr\_name*);

*string* **gv.getv** (*edge\_handle*, *attr\_name*);

Get value of attribute of graph/node/edge (using attribute handle)

*string* **gv.getv** (*graph\_handle*, *attr\_handle*);

*string* **gv.getv** (*node\_handle*, *attr\_handle*);

*string* **gv.getv** (*edge\_handle*, *attr\_handle*);

### Obtain names from handles

*string* **gv.nameof** (*graph\_handle*);

*string* **gv.nameof** (*node\_handle*);

*string* **gv.nameof** (*attr\_handle*);

### Find handles from names

*graph\_handle* **gv.findsubg** (*graph\_handle*, *name*);

*node\_handle* **gv.findnode** (*graph\_handle*, *name*);

*edge\_handle* **gv.findedge** (*tail\_node\_handle*, *head\_node\_handle*);

*attribute\_handle* **gv.findattr** (*graph\_handle*, *name*);

*attribute\_handle* **gv.findattr** (*node\_handle*, *name*);

*attribute\_handle* **gv.findattr** (*edge\_handle*, *name*);

### Misc graph navigators returning handles

*node\_handle* **gv.headof** (*edge\_handle*);

*node\_handle* **gv.tailof** (*edge\_handle*);

*graph\_handle* **gv.graphof** (*graph\_handle*);

*graph\_handle* **gv.graphof** (*edge\_handle*);

*graph\_handle* **gv.graphof** (*node\_handle*);

*graph\_handle* **gv.rootof** (*graph\_handle*);

### Obtain handles of proto node/edge for setting default attribute values

*node\_handle* **gv.protonode** (*graph\_handle*);

*edge\_handle* **gv.protoedge** (*graph\_handle*);

### Iterators

Iteration termination tests

*bool* **gv.ok** (*graph\_handle*);

*bool* **gv.ok** (*node\_handle*);

*bool* **gv.ok** (*edge\_handle*);

*bool* **gv.ok** (*attr\_handle*);

Iterate over subgraphs of a graph

*graph\_handle* **gv.firstsubg** (*graph\_handle*);

*graph\_handle* **gv.nextsubg** (*graph\_handle*, *subgraph\_handle*);

Iterate over supergraphs of a graph (obscure and rarely useful)

*graph\_handle* **gv.firstsupg** (*graph\_handle*);

*graph\_handle* **gv.nextsupg** (*graph\_handle*, *subgraph\_handle*);

Iterate over edges of a graph

*edge\_handle* **gv.firstedge** (*graph\_handle*);

*edge\_handle* **gv.nextedge** (*graph\_handle*, *edge\_handle*);

Iterate over outedges of a graph

```
edge_handle gv.firstout (graph_handle);
edge_handle gv.nextout (graph_handle, edge_handle);
```

Iterate over edges of a node

```
edge_handle gv.firstedge (node_handle);
edge_handle gv.nextedge (node_handle, edge_handle);
```

Iterate over out-edges of a node

```
edge_handle gv.firstout (node_handle);
edge_handle gv.nextout (node_handle, edge_handle);
```

Iterate over head nodes reachable from out-edges of a node

```
node_handle gv.firsthead (node_handle);
node_handle gv.nexthead (node_handle, head_node_handle);
```

Iterate over in-edges of a graph

```
edge_handle gv.firstin (graph_handle);
edge_handle gv.nextin (node_handle, edge_handle);
```

Iterate over in-edges of a node

```
edge_handle gv.firstin (node_handle);
edge_handle gv.nextin (graph_handle, edge_handle);
```

Iterate over tail nodes reachable from in-edges of a node

```
node_handle gv.firsttail (node_handle);
node_handle gv.nexttail (node_handle, tail_node_handle);
```

Iterate over nodes of a graph

```
node_handle gv.firstnode (graph_handle);
node_handle gv.nextnode (graph_handle, node_handle);
```

Iterate over nodes of an edge

```
node_handle gv.firstnode (edge_handle);
node_handle gv.nextnode (edge_handle, node_handle);
```

Iterate over attributes of a graph

```
attribute_handle gv.firstattr (graph_handle);
attribute_handle gv.nextattr (graph_handle, attr_handle);
```

Iterate over attributes of an edge

```
attribute_handle gv.firstattr (edge_handle);
attribute_handle gv.nextattr (edge_handle, attr_handle);
```

Iterate over attributes of a node

```
attribute_handle gv.firstattr (node_handle);
attribute_handle gv.nextattr (node_handle, attr_handle);
```

### Remove graph objects

```
bool gv.rm (graph_handle);
bool gv.rm (node_handle);
bool gv.rm (edge_handle);
```

### Layout

Annotate a graph with layout attributes and values using a specific layout engine

```
bool gv.layout (graph_handle, string engine);
```

### Render

Render a layout into attributes of the graph

```
bool gv.render (graph_handle);
```

Render a layout to stdout

*bool* **gv.render** (*graph\_handle*, *string format*);

Render to an open file

*bool* **gv.render** (*graph\_handle*, *string format*, *channel fout*);

Render a layout to an unopened file by name

*bool* **gv.render** (*graph\_handle*, *string format*, *string filename*);

Render to a string result

*string* **gv.renderresult** (*graph\_handle*, *string format*);

**gv.renderresult** (*graph\_handle*, *string format*, *string outdata*);

Render to an open channel

*bool* **gv.renderchannel** (*graph\_handle*, *string format*, *string channelname*);

Render a layout to a malloc'ed string, to be free'd by the caller

(deprecated - too easy to leak memory)

(still needed for "eval [gv::renderdata \$G tk]" )

*string* **gv.renderdata** (*graph\_handle*, *string format*);

Writing graph back to file

*bool* **gv.write** (*graph\_handle*, *string filename*);

*bool* **gv.write** (*graph\_handle*, *channel*);

Graph transformation tools

*bool* **gv.tred** (*graph\_handle*);

## KEYWORDS

graph, dot, neato, fdp, circo, twopi, lua.