

NAME

gv_ruby - graph manipulation in ruby

SYNOPSIS

```
#!/usr/bin/ruby
require 'gv'
```

USAGE**INTRODUCTION**

gv_ruby is a dynamically loaded extension for **ruby** 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, ruby.