

NAME

gv_python - graph manipulation in python

SYNOPSIS

```
#!/usr/bin/python
import sys
import gv
```

USAGE**INTRODUCTION**

gv_python is a dynamically loaded extension for **python** 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);
```

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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*);

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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 ing, 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, python.