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);*

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 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.