### **NAME**

gv\_java - graph manipulation in java

#### **SYNOPSIS**

```
System.loadLibrary("gv");
```

### **USAGE**

### INTRODUCTION

gv\_java is a dynamically loaded extension for java that provides access to the graph facilities of graphviz.

### **COMMANDS**

#### New graphs

```
New empty graph

SWIGTYPE_p_Agraph_t gv.graph (string name);

SWIGTYPE_p_Agraph_t gv.digraph (string name);

SWIGTYPE_p_Agraph_t gv.strictgraph (string name);

SWIGTYPE_p_Agraph_t gv.strictdigraph (string name);

New graph from a dot-syntax string or file

SWIGTYPE_p_Agraph_t gv.readstring (string string);

SWIGTYPE_p_Agraph_t gv.read (string filename);

SWIGTYPE_p_Agraph_t gv.read (SWIGTYPE_p_FILE f);

Add new subgraph to existing graph

SWIGTYPE_p_Agraph_t gv.graph (SWIGTYPE_p_Agraph_t g, string name);
```

#### New nodes

Add new node to existing graph

```
SWIGTYPE_p_Agnode_t gv.node (SWIGTYPE_p_Agraph_t g, string name);
```

## New edges

Add new edge between existing nodes

```
SWIGTYPE_p_Agedge_t gv.edge (SWIGTYPE_p_Agnode_t t, SWIGTYPE_p_Agnode_t h);
```

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

```
SWIGTYPE_p_Agedge_t gv.edge (SWIGTYPE_p_Agnode_t t, string hname);
```

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

```
SWIGTYPE_p_Agedge_t gv.edge (string tname, SWIGTYPE_p_Agnode_t h);
```

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

```
SWIGTYPE_p_Agedge_t gv.edge (SWIGTYPE_p_Agraph_t g, string tname, string hname);
```

## Setting attribute values

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

string gv.setv (SWIGTYPE_p_Agraph_t g, string attr, string val);

string gv.setv (SWIGTYPE_p_Agnode_t n, string attr, string val);

string gv.setv (SWIGTYPE_p_Agedge_t e, string attr, string val);

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

string gv.setv (SWIGTYPE_p_Agraph_t g, SWIGTYPE_p_Agsym_t a, string val);

string gv.setv (SWIGTYPE_p_Agnode_t n, SWIGTYPE_p_Agsym_t a, string val);

string gv.setv (SWIGTYPE_p_Agedge_t e, SWIGTYPE_p_Agsym_t a, string val);
```

16 March 2021

### **Getting attribute values**

```
Get value of named attribute of graph/node/edge
       string gv.getv (SWIGTYPE_p_Agraph_t g, string attr);
       string gv.getv (SWIGTYPE_p_Agnode_t n, string attr);
       string gv.getv (SWIGTYPE_p_Agedge_t e, string attr);
Get value of attribute of graph/node/edge (using attribute handle)
       string gv.getv (SWIGTYPE p Agraph t g, SWIGTYPE p Agsym t a);
       string gv.getv (SWIGTYPE_p_Agnode_t n, SWIGTYPE_p_Agsym_t a);
       string gv.getv (SWIGTYPE_p_Agedge_t e, SWIGTYPE_p_Agsym_t a);
Obtain names from handles
       string gv.nameof (SWIGTYPE_p_Agraph_t g);
       string gv.nameof (SWIGTYPE_p_Agnode_t n);
       string gv.nameof (SWIGTYPE_p_Agsym_t a);
Find handles from names
       SWIGTYPE_p_Agraph_t gv.findsubg (SWIGTYPE_p_Agraph_t g, string name);
       SWIGTYPE p Agnode t gv.findnode (SWIGTYPE p Agraph t g, string name);
       SWIGTYPE_p_Agedge_t gv.findedge (SWIGTYPE_p_Agnode_t t, SWIGTYPE_p_Agnode_t h);
       SWIGTYPE_p_Agsym_t gv.findattr (SWIGTYPE_p_Agraph_t g, string name);
       SWIGTYPE_p_Agsym_t gv.findattr (SWIGTYPE_p_Agnode_t n, string name);
       SWIGTYPE_p_Agsym_t gv.findattr (SWIGTYPE_p_Agedge_t e, string name);
Misc graph navigators returning handles
       SWIGTYPE_p_Agnode_t gv.headof (SWIGTYPE_p_Agedge_t e);
       SWIGTYPE_p_Agnode_t gv.tailof (SWIGTYPE_p_Agedge_t e);
       SWIGTYPE_p_Agraph_t gv.graphof (SWIGTYPE_p_Agraph_t g);
       SWIGTYPE_p_Agraph_t gv.graphof (SWIGTYPE_p_Agedge_t e);
       SWIGTYPE_p_Agraph_t gv.graphof (SWIGTYPE_p_Agnode_t n);
       SWIGTYPE_p_Agraph_t gv.rootof (SWIGTYPE_p_Agraph_t g);
Obtain handles of proto node/edge for setting default attribute values
       SWIGTYPE_p_Agnode_t gv.protonode (SWIGTYPE_p_Agraph_t g);
       SWIGTYPE_p_Agedge_t gv.protoedge (SWIGTYPE_p_Agraph_t g);
Iterators
Iteration termination tests
       bool gv.ok (SWIGTYPE_p_Agraph_t g);
       bool gv.ok (SWIGTYPE_p_Agnode_t n);
       bool gv.ok (SWIGTYPE_p_Agedge_t e);
       bool gv.ok (SWIGTYPE_p_Agsym_t a);
Iterate over subgraphs of a graph
       SWIGTYPE_p_Agraph_t gv.firstsubg (SWIGTYPE_p_Agraph_t g);
       SWIGTYPE_p_Agraph_t gv.nextsubg (SWIGTYPE_p_Agraph_t g, SWIGTYPE_p_Agraph_t sg);
Iterate over supergraphs of a graph (obscure and rarely useful)
       SWIGTYPE_p_Agraph_t gv.firstsupg (SWIGTYPE_p_Agraph_t g);
       SWIGTYPE_p_Agraph_t gv.nextsupg (SWIGTYPE_p_Agraph_t g, SWIGTYPE_p_Agraph_t sg);
Iterate over edges of a graph
       SWIGTYPE_p_Agedge_t gv.firstedge (SWIGTYPE_p_Agraph_t g);
       SWIGTYPE_p_Agedge_t gv.nextedge (SWIGTYPE_p_Agraph_t g, SWIGTYPE_p_Agedge_t e);
Iterate over outedges of a graph
       SWIGTYPE_p_Agedge_t gv.firstout (SWIGTYPE_p_Agraph_t g);
```

SWIGTYPE\_p\_Agedge\_t gv.nextout (SWIGTYPE\_p\_Agraph\_t g, SWIGTYPE\_p\_Agedge\_t e);

16 March 2021 2

```
Iterate over edges of a node
       SWIGTYPE_p_Agedge_t gv.firstedge (SWIGTYPE_p_Agnode_t n);
       SWIGTYPE_p_Agedge_t gv.nextedge (SWIGTYPE_p_Agnode_t n, SWIGTYPE_p_Agedge_t e);
Iterate over out-edges of a node
       SWIGTYPE_p_Agedge_t gv.firstout (SWIGTYPE_p_Agnode_t n);
       SWIGTYPE_p_Agedge_t gv.nextout (SWIGTYPE_p_Agnode_t n, SWIGTYPE_p_Agedge_t e);
Iterate over head nodes reachable from out-edges of a node
       SWIGTYPE_p_Agnode_t gv.firsthead (SWIGTYPE_p_Agnode_t n);
       SWIGTYPE_p_Agnode_t gv.nexthead (SWIGTYPE_p_Agnode_t n, SWIGTYPE_p_Agnode_t h);
Iterate over in-edges of a graph
       SWIGTYPE_p_Agedge_t gv.firstin (SWIGTYPE_p_Agraph_t g);
       SWIGTYPE_p_Agedge_t gv.nextin (SWIGTYPE_p_Agnode_t n, SWIGTYPE_p_Agedge_t e);
Iterate over in-edges of a node
       SWIGTYPE_p_Agedge_t gv.firstin (SWIGTYPE_p_Agnode_t n);
       SWIGTYPE_p_Agedge_t gv.nextin (SWIGTYPE_p_Agraph_t g, SWIGTYPE_p_Agedge_t e);
Iterate over tail nodes reachable from in-edges of a node
       SWIGTYPE_p_Agnode_t gv.firsttail (SWIGTYPE_p_Agnode_t n);
       SWIGTYPE_p_Agnode_t gv.nextail (SWIGTYPE_p_Agnode_t n, SWIGTYPE_p_Agnode_t t);
Iterate over nodes of a graph
       SWIGTYPE_p_Agnode_t gv.firstnode (SWIGTYPE_p_Agraph_t g);
       SWIGTYPE_p_Agnode_t gv.nextnode (SWIGTYPE_p_Agraph_t g, SWIGTYPE_p_Agnode_t n);
Iterate over nodes of an edge
       SWIGTYPE p Agnode t gv.firstnode (SWIGTYPE p Agedge t e);
       SWIGTYPE_p_Agnode_t gv.nextnode (SWIGTYPE_p_Agedge_t e, SWIGTYPE_p_Agnode_t n);
Iterate over attributes of a graph
       SWIGTYPE_p_Agsym_t gv.firstattr (SWIGTYPE_p_Agraph_t g);
       SWIGTYPE_p_Agsym_t gv.nextattr (SWIGTYPE_p_Agraph_t g, SWIGTYPE_p_Agsym_t a);
Iterate over attributes of an edge
       SWIGTYPE_p_Agsym_t gv.firstattr (SWIGTYPE_p_Agedge_t e);
       SWIGTYPE_p_Agsym_t gv.nextattr (SWIGTYPE_p_Agedge_t e, SWIGTYPE_p_Agsym_t a);
Iterate over attributes of a node
       SWIGTYPE_p_Agsym_t gv.firstattr (SWIGTYPE_p_Agnode_t n);
       SWIGTYPE_p_Agsym_t gv.nextattr (SWIGTYPE_p_Agnode_t n, SWIGTYPE_p_Agsym_t a);
Remove graph objects
       bool gv.rm (SWIGTYPE_p_Agraph_t g);
       bool gv.rm (SWIGTYPE_p_Agnode_t n);
       bool gv.rm (SWIGTYPE_p_Agedge_t e);
Layout
Annotate a graph with layout attributes and values using a specific layout engine
       bool gv.layout (SWIGTYPE_p_Agraph_t g, string engine);
Render
Render a layout into attributes of the graph
       bool gv.render (SWIGTYPE_p_Agraph_t g);
Render a layout to stdout
       bool gv.render (SWIGTYPE_p_Agraph_t g, string format);
Render to an open file
```

bool **gv.render** (SWIGTYPE\_p\_Agraph\_t g, string format, SWIGTYPE\_p\_FILE fout);

16 March 2021 3

```
Render a layout to an unopened file by name
        bool gv.render (SWIGTYPE_p_Agraph_t g, string format, string filename);
Render to a string result
        string gv.renderresult (SWIGTYPE_p_Agraph_t ing, string format);
        gv.renderresult (SWIGTYPE_p_Agraph_t g, string format, string outdata);
Render to an open channel
        bool gv.renderchannel (SWIGTYPE_p_Agraph_t g, 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 (SWIGTYPE_p_Agraph_t g, string format);
Writing graph back to file
        bool gv.write (SWIGTYPE_p_Agraph_t g, string filename);
        bool gv.write (SWIGTYPE_p_Agraph_t g, SWIGTYPE_p_FILE f);
Graph transformation tools
        bool gv.tred (SWIGTYPE_p_Agraph_t g);
```

# **KEYWORDS**

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

16 March 2021 4