

**NAME**

gv\_tcl - graph manipulation in tcl

**SYNOPSIS**

```
#!/usr/bin/tclsh
package require gv
```

**USAGE**

Requires tcl8.3 or later.

**INTRODUCTION**

**gv\_tcl** is a dynamically loaded extension for **tcl** 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>  
 <attr\_handle> **gv::findattr** <graph\_handle> <name>  
 <attr\_handle> **gv::findattr** <node\_handle> <name>  
 <attr\_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

<boolean\_string> **gv::ok** <graph\_handle>  
 <boolean\_string> **gv::ok** <node\_handle>  
 <boolean\_string> **gv::ok** <edge\_handle>  
 <boolean\_string> **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

```
<attr_handle> gv::firstattr <graph_handle>
<attr_handle> gv::nextattr <graph_handle> <attr_handle>
```

Iterate over attributes of an edge

```
<attr_handle> gv::firstattr <edge_handle>
<attr_handle> gv::nextattr <edge_handle> <attr_handle>
```

Iterate over attributes of a node

```
<attr_handle> gv::firstattr <node_handle>
<attr_handle> gv::nextattr <node_handle> <attr_handle>
```

### Remove graph objects

```
<boolean_string> gv::rm <graph_handle>
<boolean_string> gv::rm <node_handle>
<boolean_string> gv::rm <edge_handle>
```

### Layout

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

```
<boolean_string> gv::layout <graph_handle> <string> engine
```

**Render**

Render a layout into attributes of the graph

*<boolean\_string>* **gv::render** *<graph\_handle>*

Render a layout to stdout

*<boolean\_string>* **gv::render** *<graph\_handle>* *<string>* *format*

Render to an open file

*<boolean\_string>* **gv::render** *<graph\_handle>* *<string>* *format* *<channel>* *fout*

Render a layout to an unopened file by name

*<boolean\_string>* **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

*<boolean\_string>* **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

*<boolean\_string>* **gv::write** *<graph\_handle>* *<string>* *filename*

*<boolean\_string>* **gv::write** *<graph\_handle>* *<channel>*

Graph transformation tools

*<boolean\_string>* **gv::tred** *<graph\_handle>*

**KEYWORDS**

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