## 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.