#### **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>
Lavout
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.