graphviz-babel

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Contents

1 Version information

```
(princ (concat (format "Emacs version: %s\n" (emacs-version))
       (format "org version: %s\n" (org-version))))
```

```
Emacs version: GNU Emacs 24.5.1 (x86_64-unknown-linux-gnu, GTK+ Version 3.10.8)
 of 2015-05-04 on dflt1w
org version: 8.2.10
```

2 Links

- graphviz colors
- Node, Edge and Graph Attributes
- excellent tutorial

3 first test

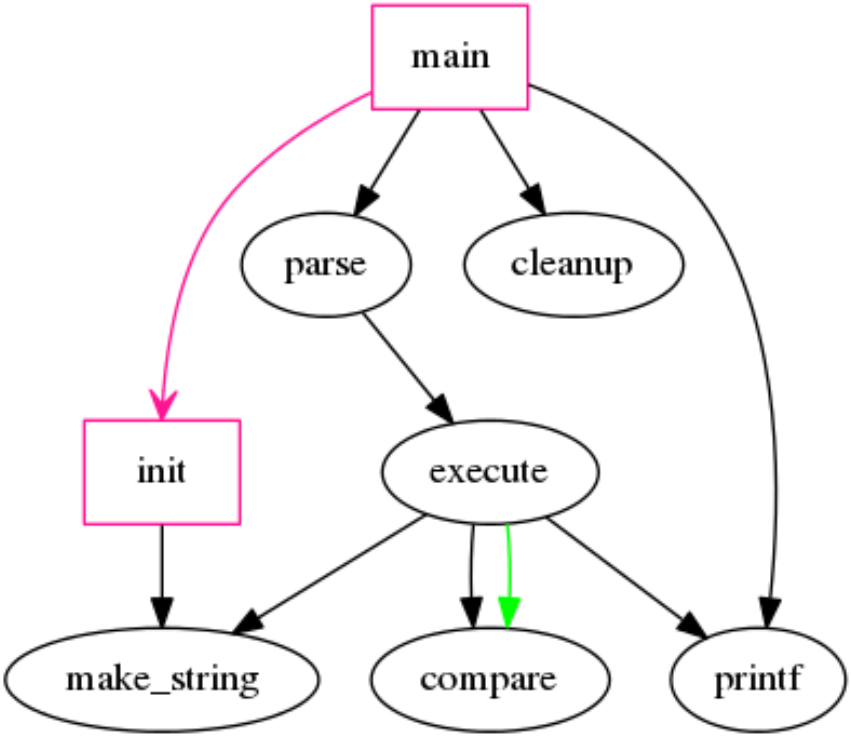
```
digraph {

  node [shape=circle,fontsize=8,fixedsize=true,width=0.9];
  edge [fontsize=8];
  rankdir=LR;

  "low-priority" [shape="doublecircle" color="orange"];
  "high-priority" [shape="doublecircle" color="orange"];

  "s1" -> "low-priority";
  "s2" -> "low-priority";
  "s3" -> "low-priority";

  "low-priority" -> "s4";
  "low-priority" -> "s5";
  "low-priority" -> "high-priority" [label="wait-time exceeded"];

  "high-priority" -> "s4";
  "high-priority" -> "s5";

}
```

4 Examples

4.1 color

```
digraph G {
/* Node main initialisieren und */
/* Attribute für ihn setzen     */
 main [shape=box, color=deeppink]

 main -> parse -> execute

/* Node init initialisieren,       */
/* Edge von main nach init und     */
/* Attribute für diese Edge setzen.*/
 main -> init [color=deeppink,
       arrowhead=vee,
       arrowtail=vee]

/* Attribute für den Node init    */
/* setzen. Das geht auch, nachdem */
/* er schon initialisiert ist.    */
 init [shape=box, color=deeppink]

 main -> cleanup
 execute -> make_string
 execute -> printf
 init -> make_string
```

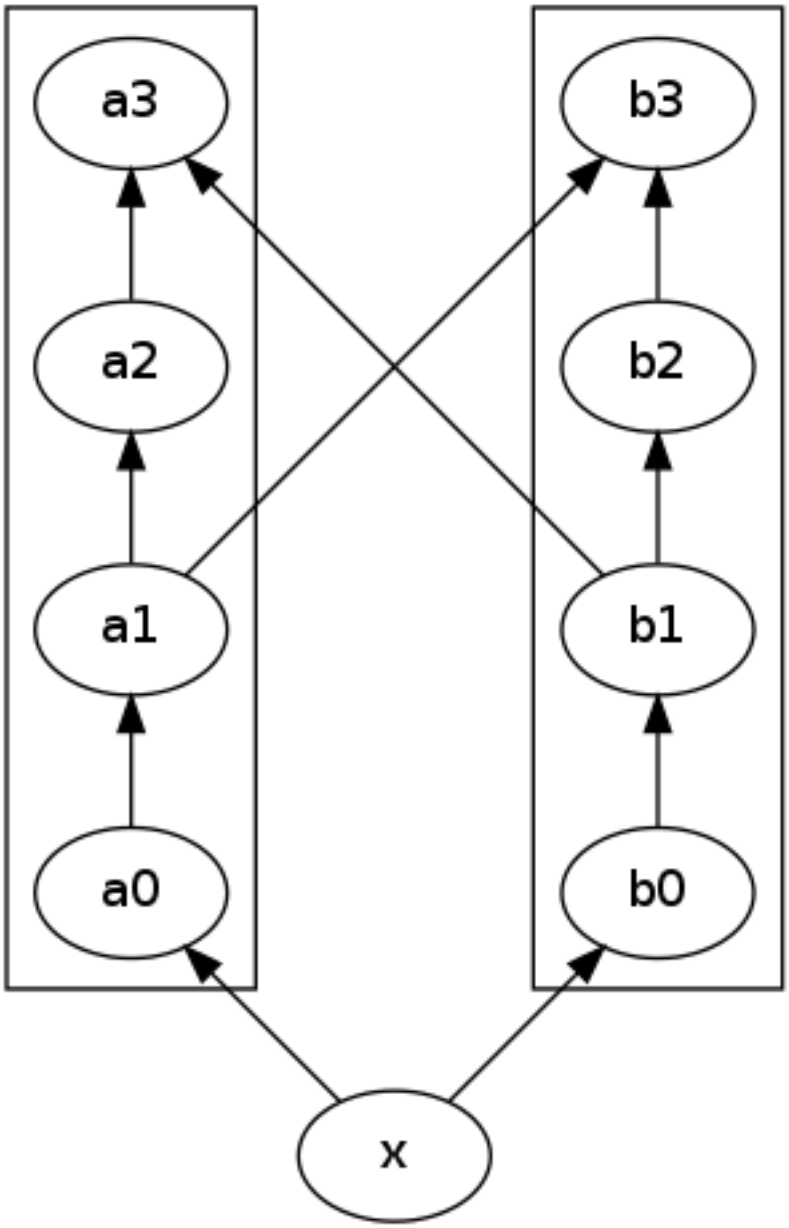
```
 main -> printf

/* Bei Edges kann man die        */
/* Attribute nicht im nachhinein */
/* setzen. Dabei wird nämlich    */
/* eine zweite Edge erzeugt.     */
 execute -> compare
 execute -> compare [color=green,
     arrowtail=tee]
}
```



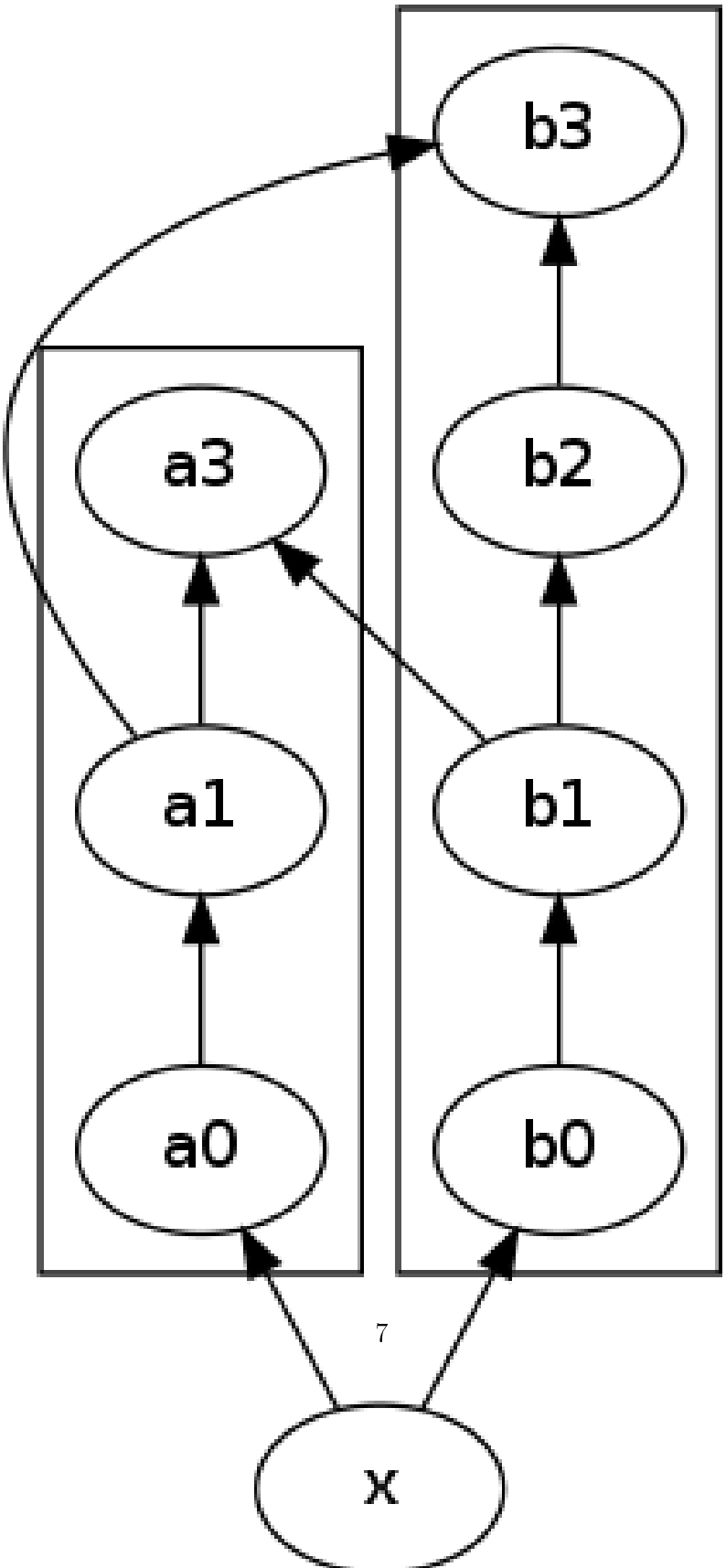
4.2 subcluster

```
digraph G {
rankdir=BT;
subgraph cluster_c0 {a0 -> a1 -> a2 -> a3;}
subgraph cluster_c1 {b0 -> b1 -> b2 -> b3;}
x -> a0;
```

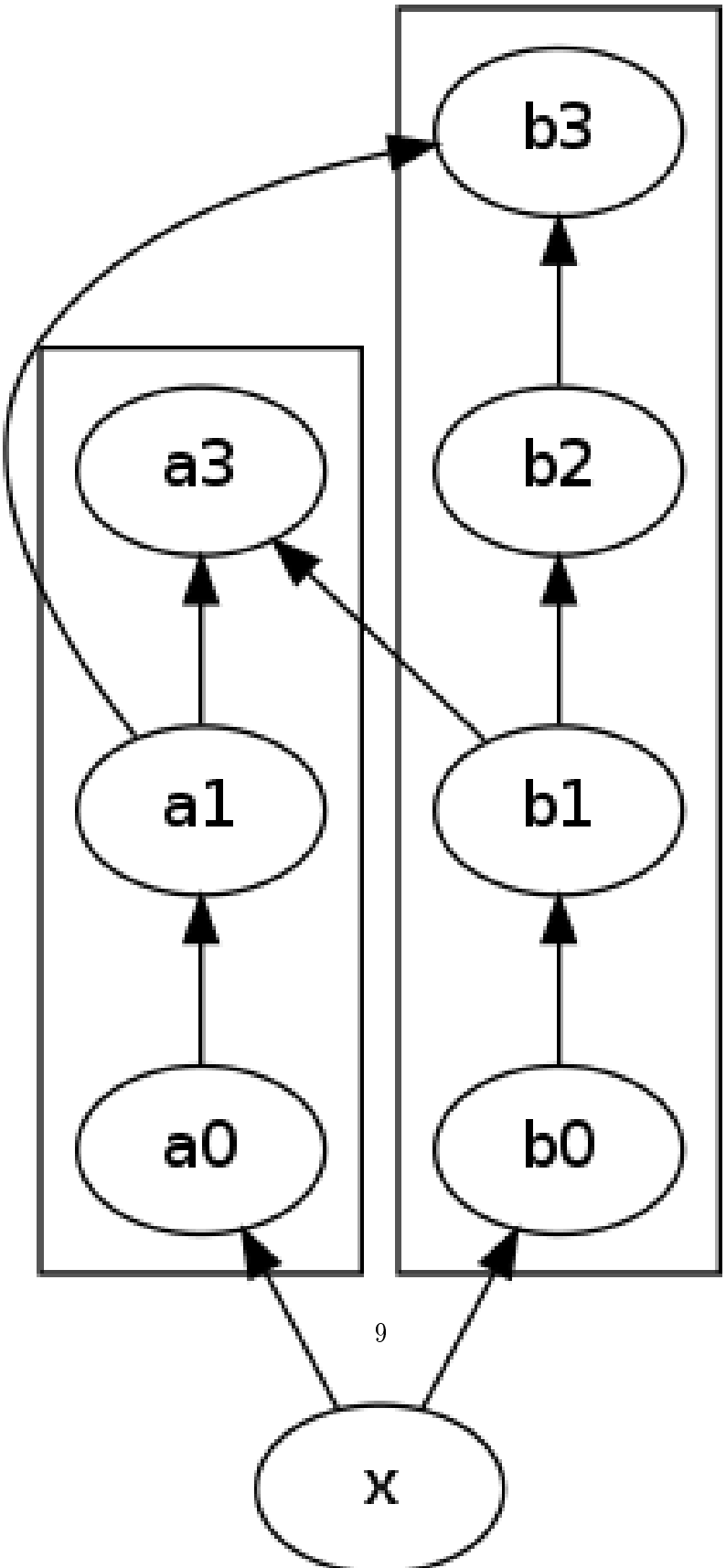
```
x -> b0;
a1 -> b3;
b1 -> a3;
}
```



```
digraph G {
rankdir=BT;
subgraph cluster_c0 {a0 -> a1 -> a3;}
subgraph cluster_c1 {b0 -> b1 -> b2 -> b3;}
x -> a0;
x -> b0;
a1 -> b3;
b1 -> a3;
}
```

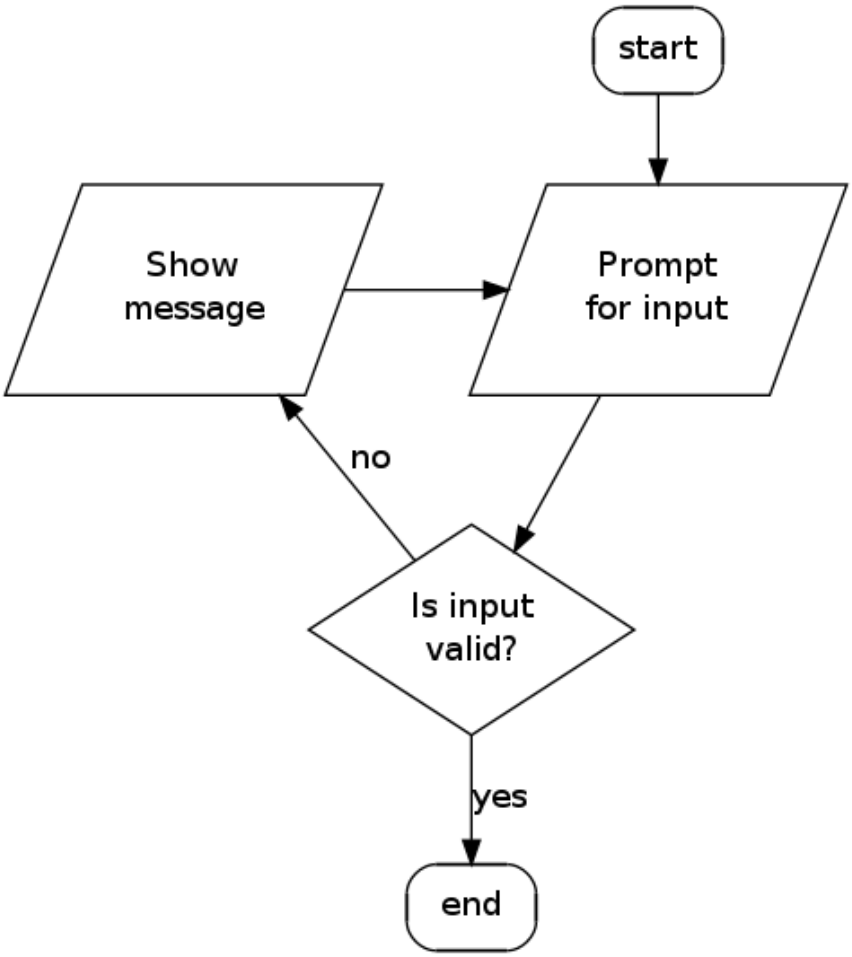

b3
a3
b2
a1
b1
a0
b0
x

```
digraph G {
rankdir=BT;
subgraph cluster_c0 {a0 -> a1 -> a3;}
subgraph cluster_c1 {b0 -> b1 -> b2 -> b3;}
x -> a0;
x -> b0;
a1 -> b3;
b1 -> a3;
}
```


b3
a3
b2
a1
b1
a0
b0
x

4.3 flowchart

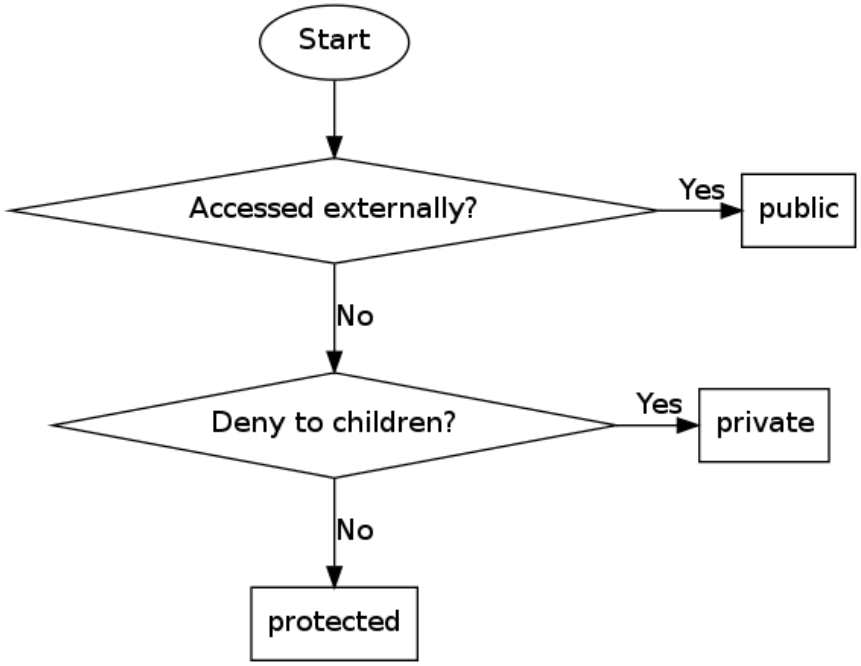
```
digraph {
    label="How to make sure 'input' is valid"

    start[shape="box", style=rounded];
    end[shape="box", style=rounded];
    if_valid[shape="diamond", style=""];
    message[shape="parallelogram", style=""]
    input[shape="parallelogram", style=""]

    start -> input;
    input -> if_valid;
    if_valid -> message[label="no"];
    if_valid -> end[label="yes"];
    message -> input;

    if_valid[label="Is input\nvalid?"]
    message[label="Show\nmessage"]
    input[label="Prompt\nfor input"]

    {rank=same; message input}
}
```



How to make sure 'input' is valid

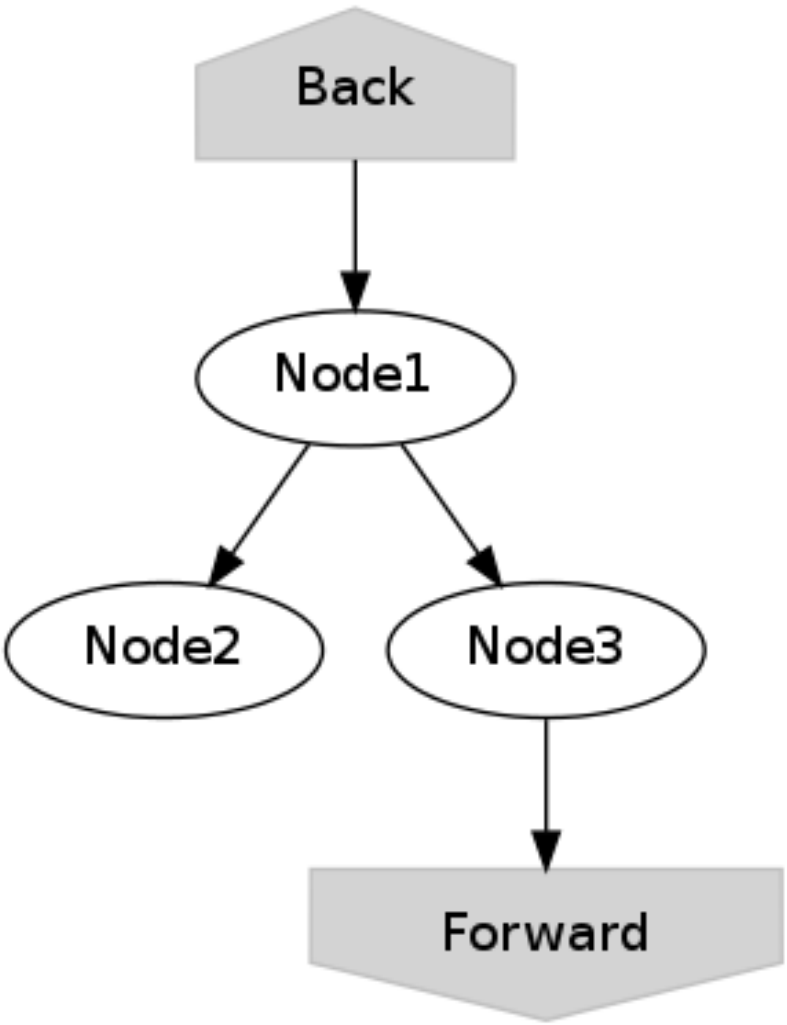
```
digraph {
start [label="Start"];

start -> decision;

decision [shape=diamond, label="Accessed externally?"];

decision -> public [label="Yes"];
decision -> notpublic [label="No"];

public [shape=box, label="public"];
```

```
notpublic [shape=diamond, label="Deny to children?"];

notpublic -> protected [label="No"]
notpublic -> private [label="Yes"]

protected [shape=box, label="protected"]
private [shape=box, label="private"]

{ rank=same; decision; public }
{ rank=same; notpublic; private }

}
```




```
digraph G {
 Back [shape=house,color=gray,style=filled,fillcolor=lightgray] [URL="Back Page"] [too
 subgraph cluster0 {
 Node1
 Back -> Node1
 Node2
 Node1 -> Node2
 Node3
```

```
 Node1 -> Node3
 color=invis
 }
 Forward [shape=invhouse,color=gray,style=filled,fillcolor=lightgray] [URL="Forward Pa
 Node3 -> Forward
}
```



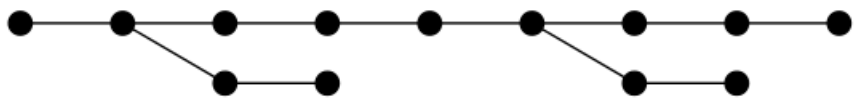
5 git graphs

5.1 schemas with points

5.1.1 using weight

weight can be used to keep the main nodes on the main line (stackoverflow link). The larger the weight factor of an edge is, the straighter, shorter, and in the direction of the graph it will be.

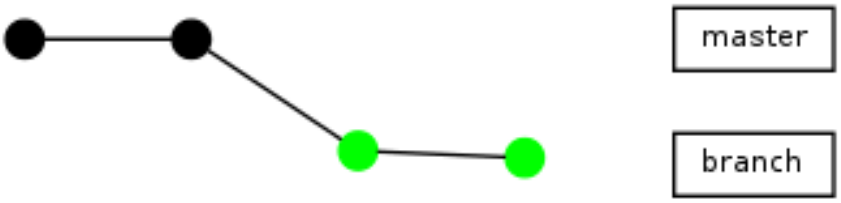
```
digraph G {
    rankdir="LR";
    node[width=0.15, height=0.15, shape=point];
    edge[weight=2, arrowhead=none];
    1 -> 2 -> 3 -> 4 -> 5 -> 6 -> 7 -> 8 -> 9;
    edge[weight=1];
    2 -> b1 -> b2 ;
    6-> c1 -> c2;
}
```



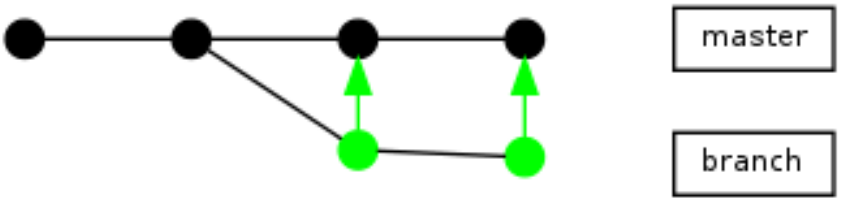
- fontsize
- invisible nodes for aligning graphs

```
digraph G {
    rankdir="LR";
    node[width=0.15, height=0.15, shape=point];
    edge[weight=2, arrowhead=none];
    m1 -> m2;
    // invisible node
    node[style="invis"]
    edge[style="invis"]
    m2 -> m3 -> m4;

    lm[shape=box, style="", color="", label="master", fontsize=8.0];
    m4 -> lm[style="invisible"];

    // the branch
```

```
    node[style="", color="green1"]
    edge[weight=1, style=""];
    m2 -> b1 -> b2;


    lb[shape=box, color="", label="branch", fontsize=8.0];
    b2 -> lb[style="invisible"]
}
```



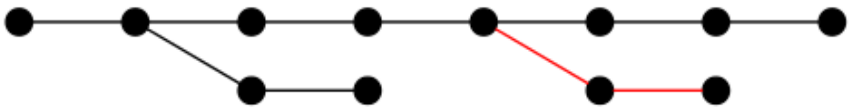

```
digraph G {
    rankdir="LR";
    node[width=0.15, height=0.15, shape=point];
    edge[weight=3, arrowhead=none];
    m1 -> m2;
    // invisible node
    m2 -> m3 -> m4;

    lm[shape=box, style="", color="", label="master", fontsize=8.0];
    m4 -> lm[style="invisible"];

    // the branch
    node[style="", color="green1"]
    edge[weight=2, style=""];
    m2 -> b1 -> b2;

    b1 -> m3[color="green1",arrowhead="", constraint=false];
    b2 -> m4[color="green1",arrowhead="",constraint=false];

    lb[shape=box, color="", label="branch", fontsize=8.0];
    b2 -> lb[style="invisible"]
}
```



5.1.2 aligning by using groups

If the end points of an edge belong to the same group, i.e., have the same group attribute, parameters are set to avoid crossings and keep the edges straight.

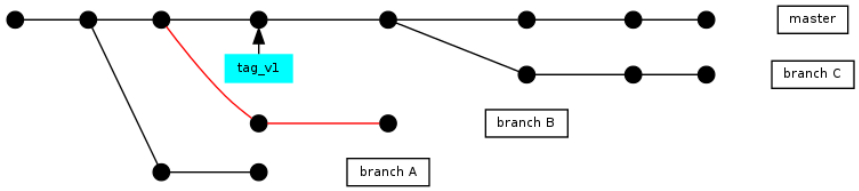
```
digraph g{
    rankdir="LR";
    node[width=0.15, height=0.15, shape=point, group=main];
    edge[arrowhead=none];
    1 -> 2 -> 3 -> 4 -> 5 -> 6 -> 7 -> 8;
    node[group=branches];
    2 ->  9 -> 10;
    5 -> 11 -> 12[color="red1"];
}
```



Group seems to be well suited for making graphs with branches

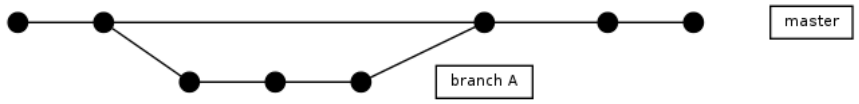
```
digraph g{
    rankdir="LR";
    edge[arrowhead=none];
    // ranksep=0.30;  // this influences the length of edges
    //splines=ortho;

    node[width=0.15, height=0.15, shape=point, group=master];
    1 -> 2 -> 3 -> 4 -> 5 -> 6 -> 7 -> 8;
    lmaster[shape="box", label="master", fontsize=8.0];
    8 -> lmaster[style="invisible"];

    tag_v1[shape="box", group="", color="cyan", fontsize=8.0, style=filled];
```

```
    // to place the tag vertically above 4, I need to define it so that it
    // ends up in the same hierarchy level as 4, e.g. by declaring it
    // above 5 using  tag -> 5
    tag_v1 -> 5[weight=1, style=invisible];
    tag_v1 -> 4[arrowhead="", constraint=false];
    //tag_v1 -> 5[style=invisible];

    node[group=branchA];
    2 ->  a1 -> a2;
    lbrancha[shape="box", label="branch A", fontsize=8.0];
    a2 -> lbrancha[style="invisible"];

    node[group=branchB]
    3 -> b1 -> b2[color="red1"];
    lbranchb[shape="box", label="branch B", fontsize=8.0];
    b2 -> lbranchb[style="invisible"];

    node[group=branchC, weight=2];
    5 -> c1 -> c2 -> c3;
    lbranchc[shape="box", label="branch C", fontsize=8.0];
    c3 -> lbranchc[style="invisible"];
}
```



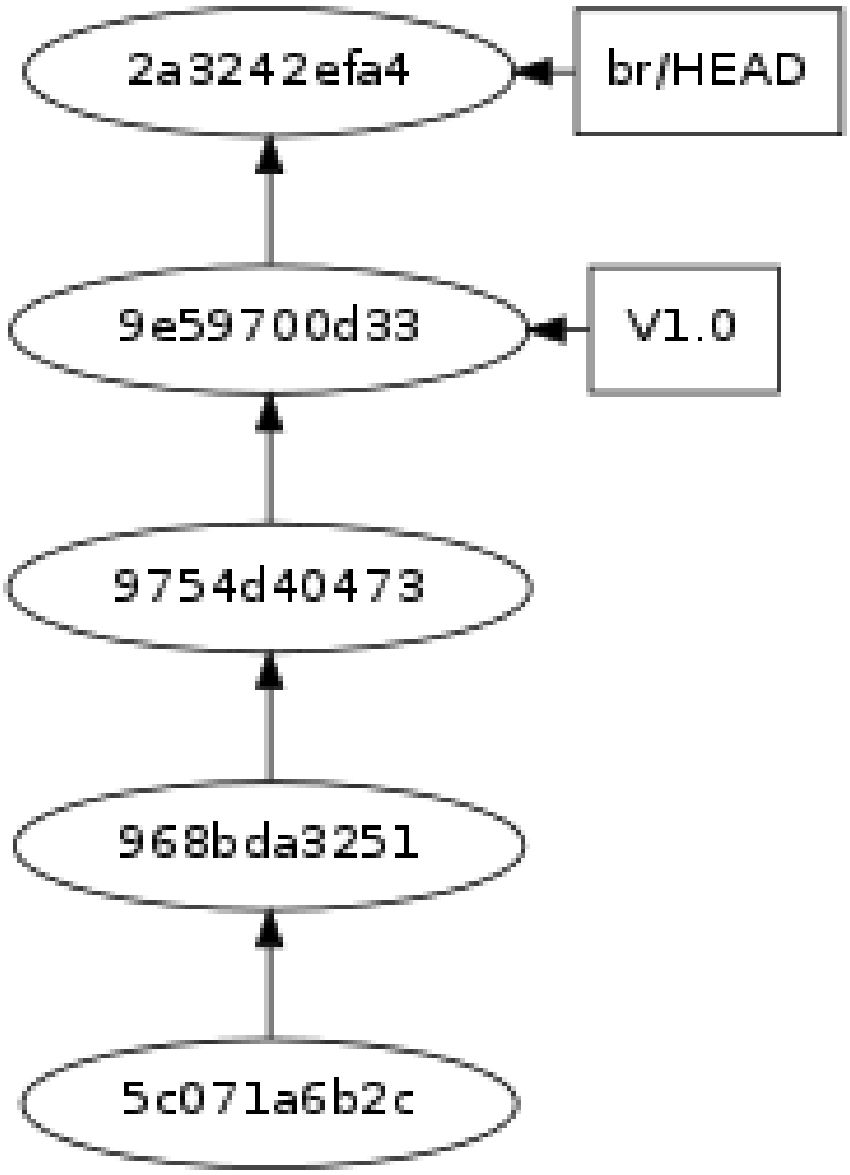

```
digraph G {
rankdir=LR;
edge[arrowhead=none];
node[width=0.15, height=0.15, shape=point];
node[group=master];
1 -> 2 -> 3 -> 4 -> 5;
lmaster[shape="box", label="master", fontsize=8.0];
5 -> lmaster[style="invisible"];

node[group=branch];
2 -> b1 -> b2 -> b3 -> 3;
```

```
lbrancha[shape="box", label="branch A", fontsize=8.0];
b3 -> lbrancha[style="invisible"];
}
```



5.2 subgraph

```
digraph G
{
    graph[size="4,2.66"]
    //graph[size="8.00,5.00"]
    rankdir=BT;
    subgraph commits
    {
"5c071a6b2c" -> "968bda3251" -> "9754d40473" -> "9e59700d33" -> "2a3242efa4";
    }
    subgraph annotations1
    {
rank="same";
"V1.0" [shape=box];
"V1.0" -> "9e59700d33" [weight=0];
    }
    subgraph annotations2
    {
rank="same";
"br/HEAD" [shape=box];
"br/HEAD" -> "2a3242efa4" [weight=0];
    }
}
```




```
digraph G
{
  rankdir=BT;
  subgraph master
  {
    "comm1" -> "comm2" -> "comm3" -> "comm4";
```

```
  }
  subgraph branch1
  {
    rank=same;
    "comm3" -> "br-com1" -> "br-com2";
  }
}
```