Computer Implementation in R

- R is a system for statistical computation and graphics.
- R consists of

  a language and

  a run-time environment with graphics, a debugger, and access to certain system functions.
- R can run programs stored in script files.
- R is freely available from

  `http://www.r-project.org/`
- R is being developed for Unix and Windows
- R has many specific purpose modules (”add-on packages”). Our implementation uses add-on packages `graph` and `ggm`

RGui

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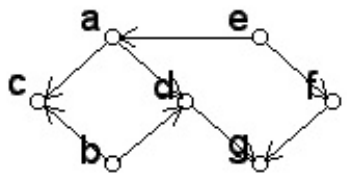
R Console

```
> source("imset.R")
> D=DAG(a~e,c~a+b,d~a+b,f~e,g~d+f)
> drawGraph(D,xy)
>
```

R Graphics: Device 2 (ACTIVE)



R 1.8.1 - A Language and Environment

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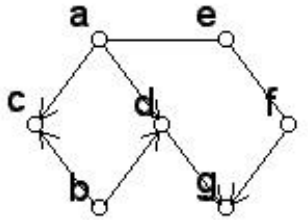
R Console

```
> source("imset.R")
> D=DAG(a~e,c~a+b,d~a+b,f~e,g~d+f)
> drawGraph(D,xy)
> E=essentialGraph(D)
> drawGraph(E,xy)
>
```

R Graphics: Device 2 (ACTIVE)



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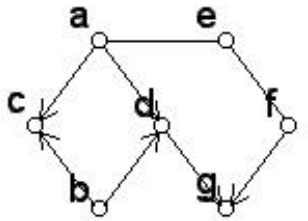
R Console

```
> source("imset.R")
> D=DAG(a~e,c~a+b,d~a+b,f~e,g~d+f)
> drawGraph(D,xy)
> E=essentialGraph(D)
> drawGraph(E,xy)
> I=imset(E)
> printImset(I)
{ a b c d e f g } = 1
{ } = 1
{ a e } = -1
{ e f } = -1
{ e } = 1
{ a b } = 2
{ a b c } = -1
{ b } = -1
{ a b d } = -1
{ d f } = 1
{ d f g } = -1
>
```

R Graphics: Device 2 (ACTIVE)



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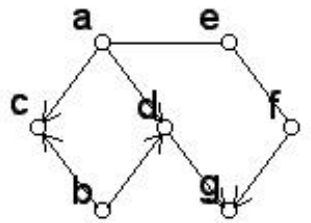
```
> RC=reconstrComps(I)
> RC
[[1]]
[1] "a" "b" "c"

[[2]]
[1] "d" "f" "g"

[[3]]
[1] "e" "f"

[[4]]
[1] "a" "b" "d"

[[5]]
[1] "a" "e"

[[6]]
[1] "b"

>
```



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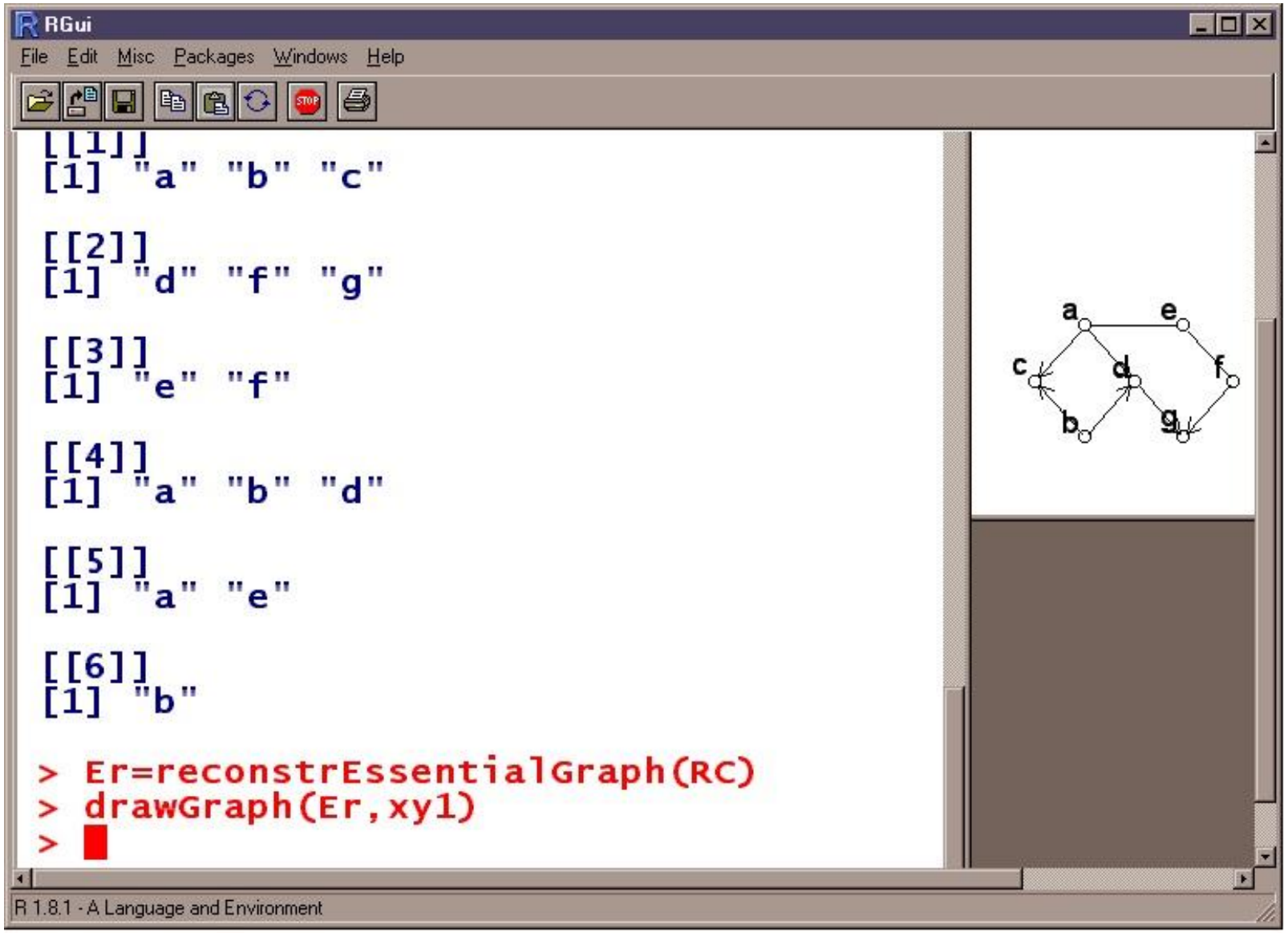
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[[1]]
[1] "a" "b" "c"
[[2]]
[1] "d" "f" "g"
[[3]]
[1] "e" "f"
[[4]]
[1] "a" "b" "d"
[[5]]
[1] "a" "e"
[[6]]
[1] "b"
> Er=reconstrEssentialGraph(RC)
> drawGraph(Er,xy1)
>
a
e
c
d
f
b
g
R 1.8.1 - A Language and Environment