Representación Gráfica de una Red Bayesiana utilizando R

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Instalación de las librerias

install.packages("bnlearn") install.packages("qgraph") install.packages("BiocManager") BiocManager::install() BiocManager::install(c("graph", "Rgraphviz"))

Llamado a las librerias ya intaladas

```
require(bnlearn)
```

```
## Loading required package: bnlearn
```

```
require(qgraph)
```

```
## Loading required package: qgraph
```

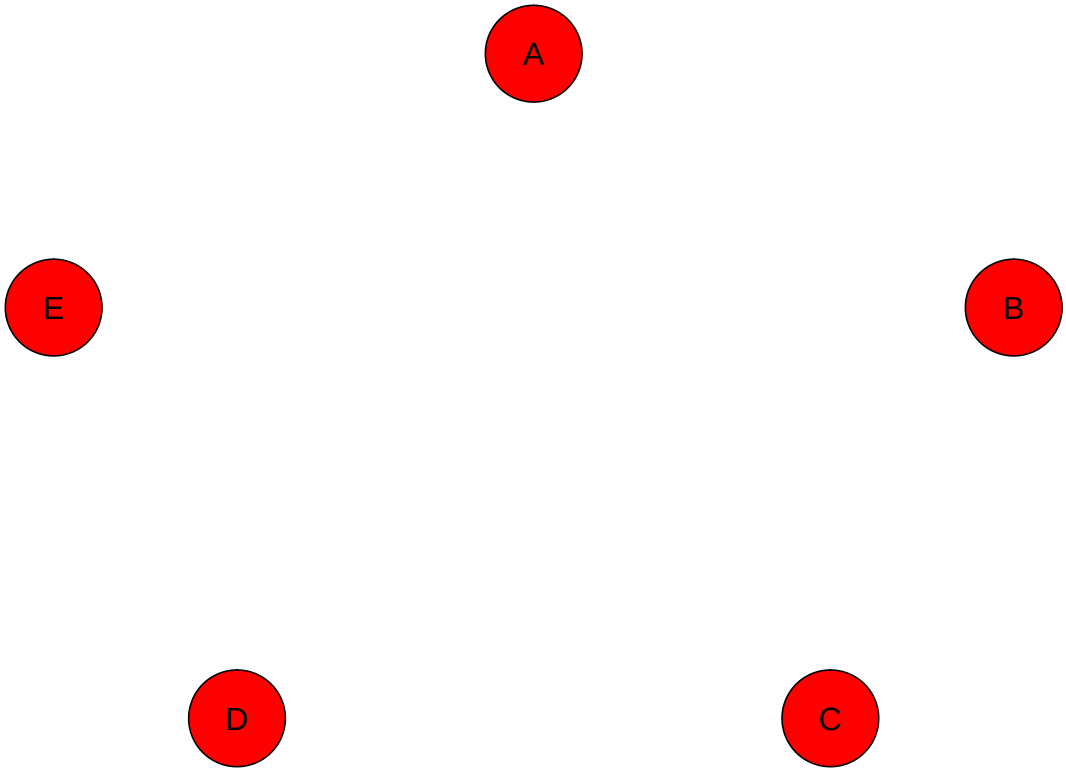
Creación de la estructura de la Red Bayesiana (RB)

```
estr=empty.graph(LETTERS[1:5])
class(estr)
```

```
## [1] "bn"
```

Representación gráfica de la RB y la asignación de aristas (arcos)

```
graf=qgraph(estr, asize=5, color="red")
```




```
graf
```

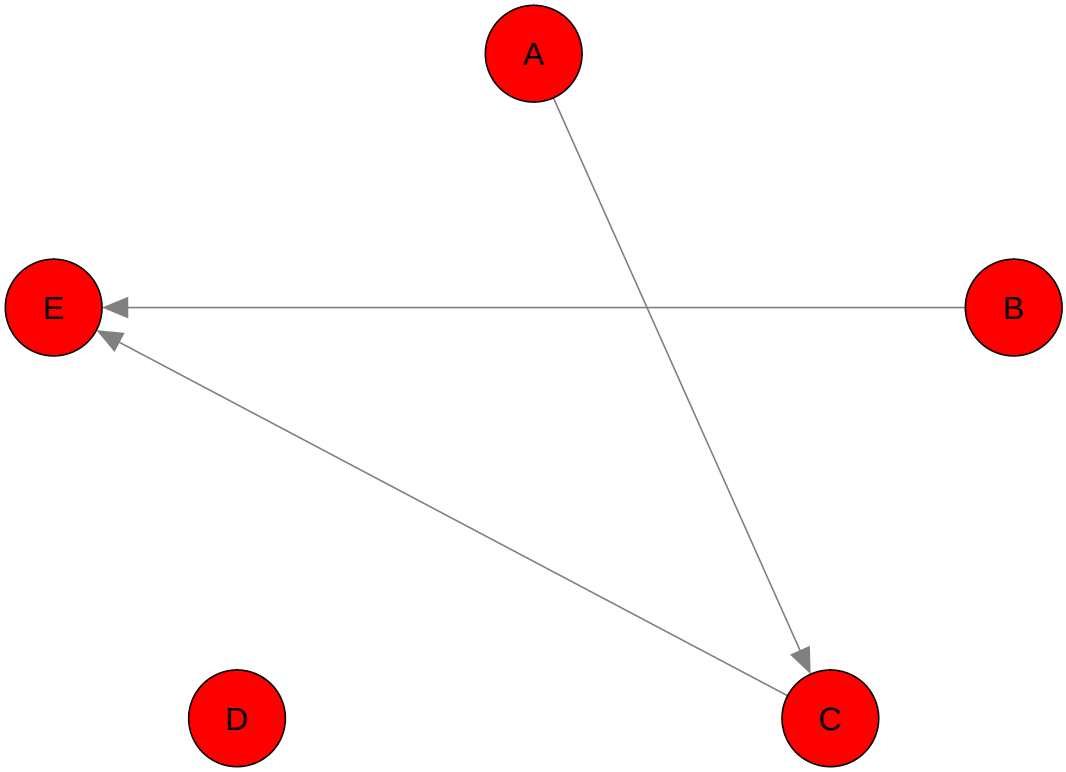
```
## From     To  Weight
##
```

```
arcos=matrix(c("A","C","B","E","C","E"), ncol = 2, byrow = TRUE, dimnames = list(NULL, c("from", "to")))
arcos
```

```
##      from to
## [1,] "A"  "C"
## [2,] "B"  "E"
## [3,] "C"  "E"
```

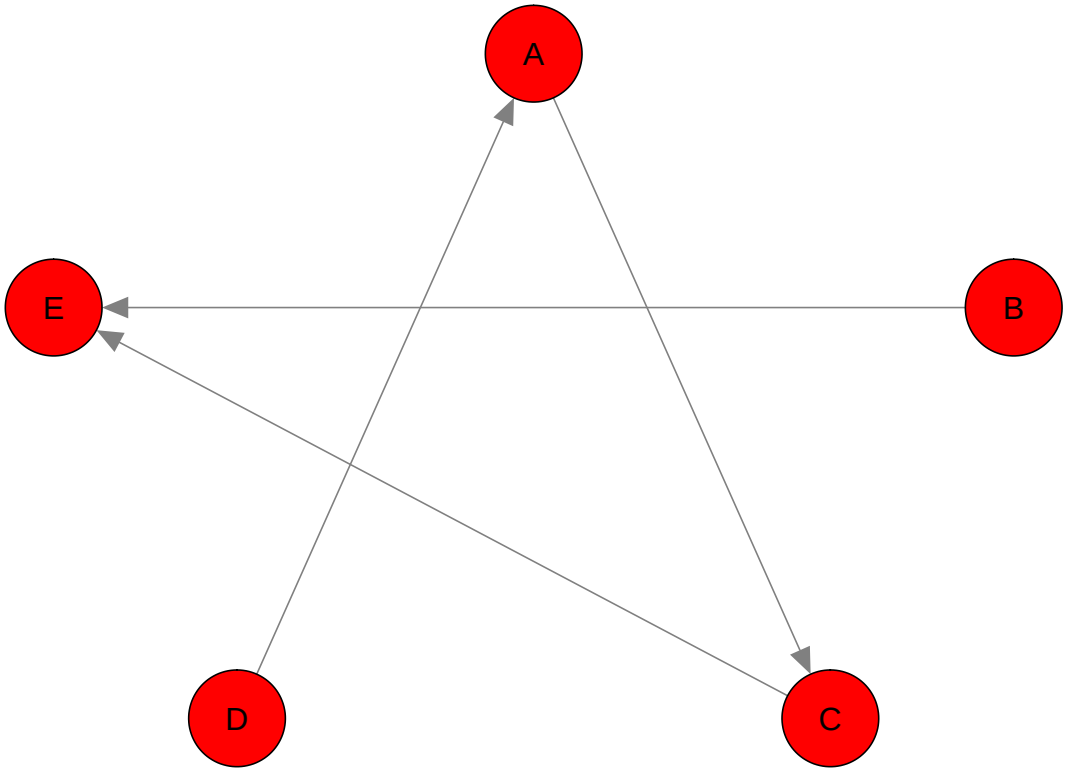
Presentación de la RB con los arcos

```
arcs(estr)=arcos
qgraph(estr, asize=5, color="red", layout=graf$layout)
```

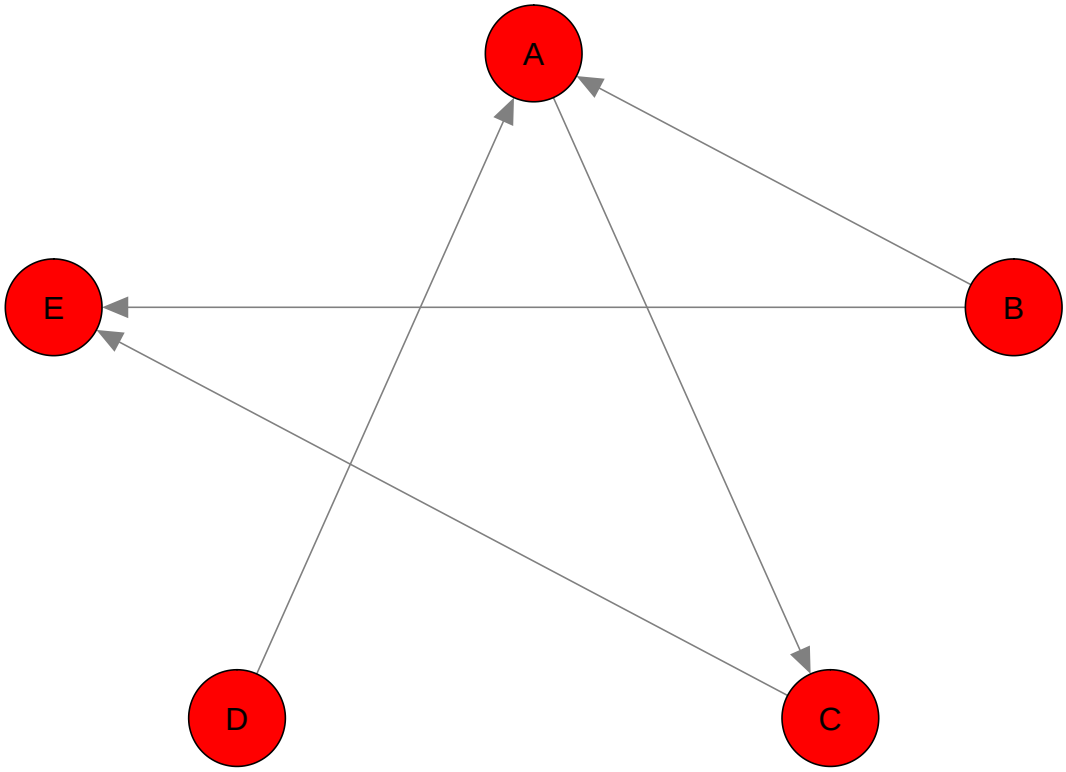


Adición de arcos a la RB

```
estr=set.arc(estr, from="D", to="A")
qgraph(estr, asize=5, color="red", layout=graf$layout)
```



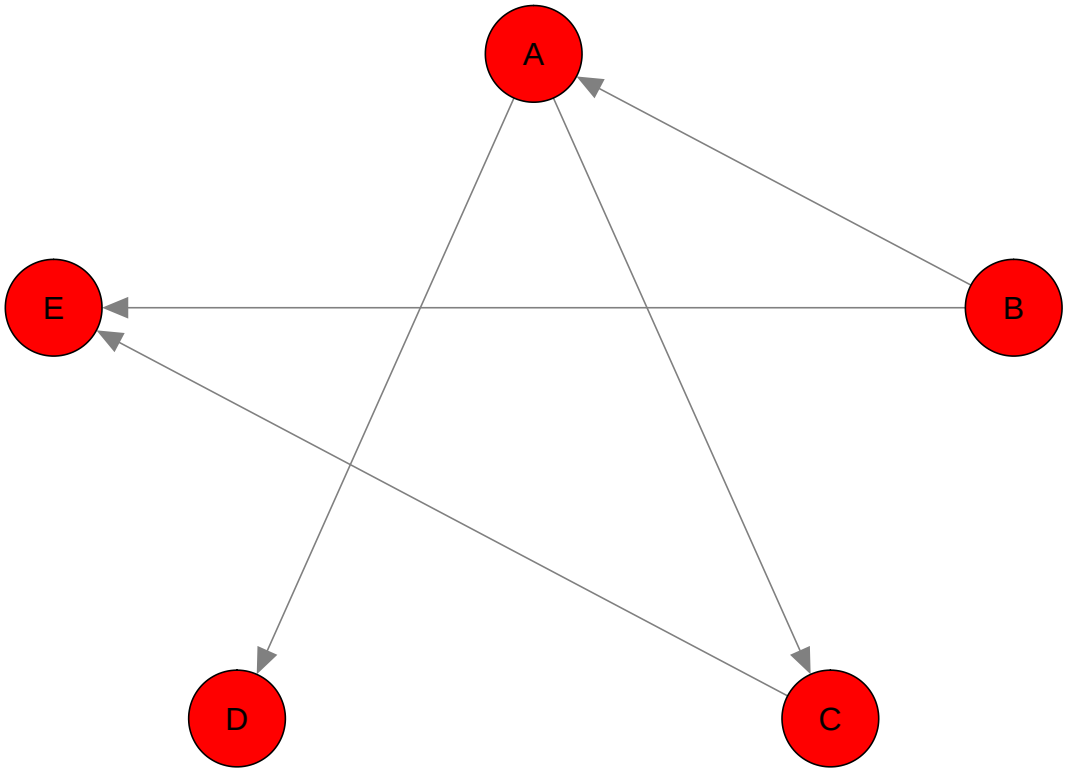

```
estr=set.arc(estr, from="B", to="A")
qgraph(estr, asize=5, color="red", layout=graf$layout)
```



```
arcs(estr)
```

```
##      from to
## [1,] "A"  "C"
## [2,] "B"  "E"
## [3,] "C"  "E"
## [4,] "D"  "A"
## [5,] "B"  "A"
```

```
estr=reverse.arc(estr, from="D", to="A")
qgraph(estr, asize=5, color="red", layout=graf$layout)
```




```
arcs(estr)
```

```
##      from to
## [1,] "A"  "C"
## [2,] "B"  "E"
## [3,] "C"  "E"
## [4,] "B"  "A"
## [5,] "A"  "D"
```

Funciónes de verificación de la estructura de la RB

```
parents(estr, "A")
```

```
## [1] "B"
```

```
narcs(estr)
```

```
## [1] 5
```

```
children(estr, "B")
```

```
## [1] "A" "E"
```

```
ancestors(estr,"D")
```

```
## [1] "A" "B"
```

```
spouses(estr, "C")
```

```
## [1] "B"
```

```
acyclic(estr)
```

```
## [1] TRUE
```