

# NETSOLVE

Available on the PCs in E-7. You can access the program from Start > Programs > Accessories > Command Prompt. Then just type net8087 to start and quit to exit the package. The following is a sample session. (Online help is available within NETSOLVE.) To exit the command environment, use quit.

The package works on directed or undirected networks.

Nodes: can have names, supply

Edges: can have from, to, cost, lower, upper (capacity)

**>net8087**

Netsolve -- Version 1.3.2 -- January 1995

>help

GENERAL INFORMATION

The following commands provide information about NETSOLVE:

ALIAS : Lists aliases for NETSOLVE keywords  
COMMANDS : Lists the available commands  
HELP "COMMAND" : Provides information on specific commands  
STATUS : Lists NETSOLVE system parameters

All descriptions of command syntax use

" ... " to denote a user-supplied expression  
< ... > to denote an optional expression  
< ... >\* when an expression can be repeated

A NETSOLVE session is ended by the QUIT command.

>commands

NETSOLVE COMMANDS:

EDITING:	ADD DELETE	APPEND LIST	CHANGE	CREATE
SYSTEM:	CLEAR NFORMAT	DECIMALS PATH	DEFAULT QUIT	EFORMAT
INFORMATION:	ALIAS	COMMANDS	HELP	STATUS
INPUT/OUTPUT:	GET SAVE	JOURNAL TERMINAL	MERGE	NOTE
ALGORITHMS:	ASSIGN MINFLOW TSP	LPATH MST	MATCH SPATH	MAXFLOW TRANS

```
>help create
CREATE
```

Used to enter a new network from the terminal. In an undirected network, each edge need only be entered once. When using the interactive mode, the user will be prompted for the network name and orientation. In the extended command line mode, the user can specify certain node and edge formats which give the order in which node and edge data will be entered.

ALIAS: CR

SYNTAX: CREATE

```
CREATE "NETNAME" "TYPE" <NF=(<"NFMT">*)> <EF=(<"EFMT">*)>
"NETNAME" : Name of new network (at most 8 characters)
"TYPE"    : Selected from DIR,UNDIR
"NFMT"    : Selected from NAME,SUPPLY (must include NAME)
"EFMT"    : Selected from COST,FROM,LOWER,TO,UPPER (must
            include FROM,TO)
```

EXAMPLES: CREATE

```
CREATE RAILNET DIR
CREATE RAILNET UNDIR EF=(FROM TO COST)
```

```
>create
```

```
Enter name of network: sample1
Directed or undirected? (D/U): d
Any node data? (Y/N): n
Any edge data? (Y/N): y
Enter edge data in order: FROM, TO, COST, LOWER, UPPER. (Null line to end)
```

Required data:	FROM	TO	
Optional data:	COST	LOWER	UPPER
Default value:	1.00	0.00	999999.00

(Unspecified values receive defaults)

```
a b 7
b d 4
d f 7
e f 8
c e 2
a c 8
b c 3
c b 2
d e 3
e d 4
b e 4
c d 4
```

```
>list n
```

```
NAME
----
A
B
C
D
E
F
```

```

>list e
FROM      TO      COST      LOWER      UPPER
-----
A         B         7.00      0.00      999999.00
A         C         8.00      0.00      999999.00
B         C         3.00      0.00      999999.00
B         D         4.00      0.00      999999.00
B         E         4.00      0.00      999999.00
C         B         2.00      0.00      999999.00
C         D         4.00      0.00      999999.00
C         E         2.00      0.00      999999.00
D         E         3.00      0.00      999999.00
D         F         7.00      0.00      999999.00
E         D         4.00      0.00      999999.00
E         F         8.00      0.00      999999.00

```

```
>ef from to cost
```

```

>list e
FROM      TO      COST
-----
A         B         7.00
A         C         8.00
B         C         3.00
B         D         4.00
B         E         4.00
C         B         2.00
C         D         4.00
C         E         2.00
D         E         3.00
D         F         7.00
E         D         4.00
E         F         8.00

```

```
>help spath
```

SPATH

Calculates a shortest path (with respect to the COST data field) from a source node to a destination node, from a source node to every node in the network, from every node to a destination node, or between all pairs of nodes. The network can be either directed or undirected, but should not contain any directed cycles of negative length. (Such cycles will be automatically detected however.) Sensitivity analysis is also available.

SYNTAX: SPATH "NODENAME1" "NODENAME2"

"NODENAME1" : Name of source node or "\*" indicating all nodes

"NODENAME2" : Name of destination node or "\*" indicating all nodes

DATA FIELDS USED: COST

EXAMPLES: SPATH A B  
 SPATH A \*  
 SPATH \* A  
 SPATH \* \*

```
>spath a f
SHORTEST PATH LENGTH FROM A          TO F          :          18.00
```

EDGES IN THE SHORTEST PATH

FROM	TO	COST
A	B	7.00
B	D	4.00
D	F	7.00

Do you want sensitivity analysis? (Y/N): n

```
>help save
SAVE
```

Used to save the current network in an external data file (qualified by the current path). If no name is specified, the network will be saved under the current network name. Saved networks have type ".NET".

ALIAS: S

SYNTAX: SAVE

SAVE "NETNAME" <"REP">

"NETNAME" : Name under which network is to be saved (at most 8 characters)

"REP" : Either EDGELIST (for edgelist representation) or INTERNAL (for internal representation). If not specified, INTERNAL is assumed.

EXAMPLES: SAVE

SAVE COMNET EDGELIST

```
>save
NETWORK SAVED IN DATASET: sample1.net
```

```
>quit
END OF SESSION - NETSOLVE v1.3.2
```