

STATIC ANALYSIS OF A SPRING SYSTEM

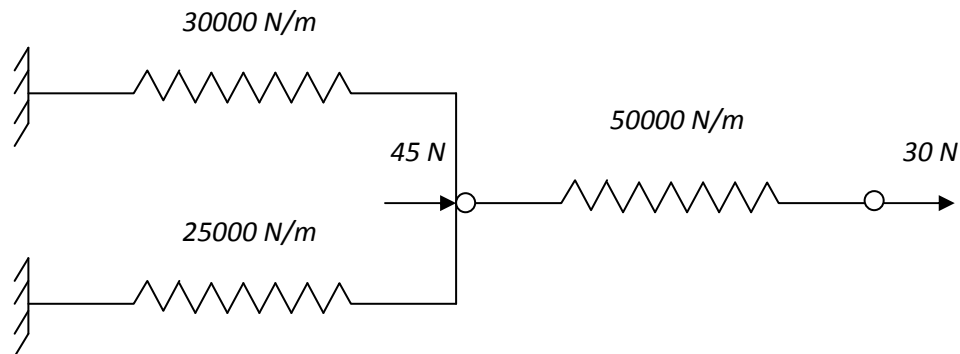


Figure 1

Determine the displacements at nodes of the spring system shown in Figure1

PROCEDURE

STEP

1. Create four points at $(0, 1, 0)$, $(0, -1, 0)$, $(2, 0, 0)$ and $(4, 0, 0)$

Commands : POINT, ADD

Menu : Geometry → Key point → Create → By X/Y/Z

Parameters : (To be filled by the user)

Coordinate Data	0/0/0
Coordinate Type	0
Entity ID	

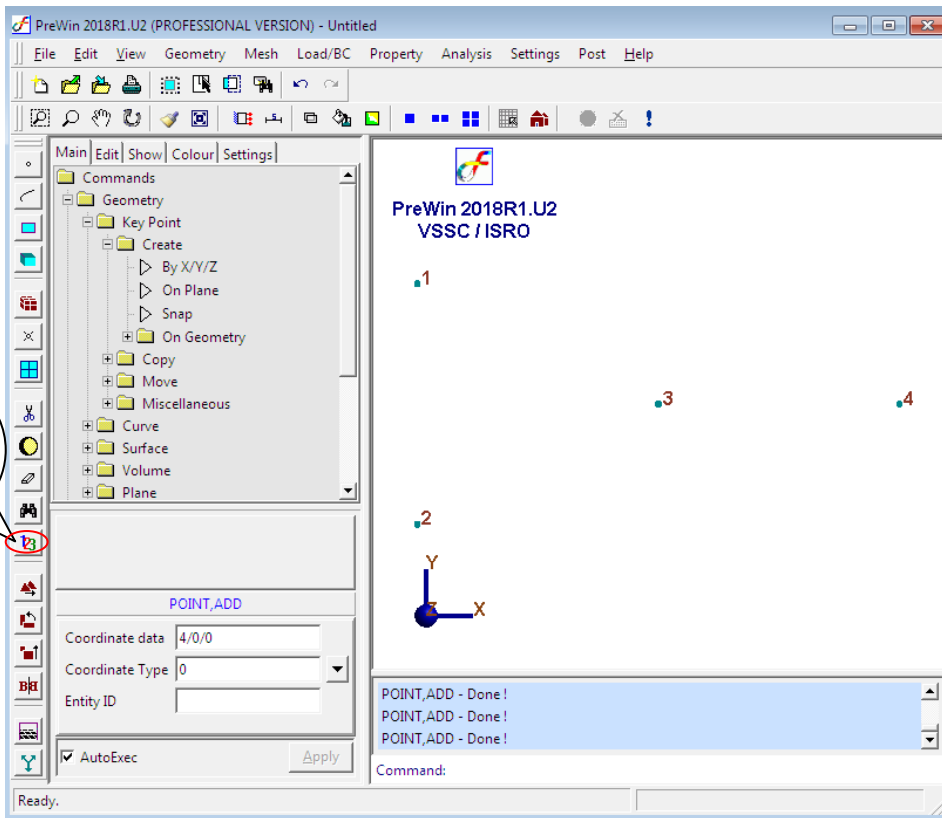
Similarly create the other points.

Note:

Click "**Apply**" button or press *ctrl+enter* key after completing each step. "Done" message appears on message box for every step executed successfully.

At the end of the above operations, your screen should look like this

Click here for labelling



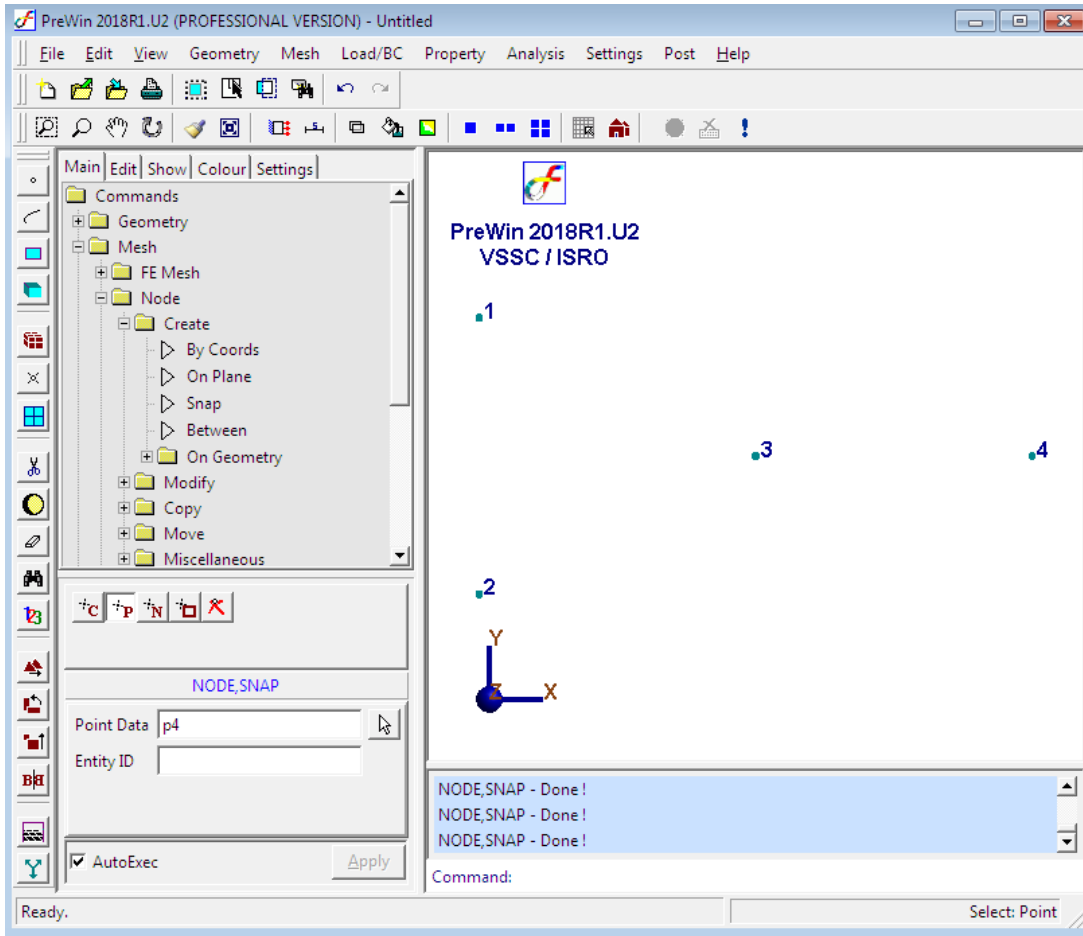
2. Create nodes

- Commands : NODE, SNAP
- Menu : Mesh → Node → Create → Snap
- Parameters :

Point Data	P1
Entity ID	1

Similarly create the other nodes.

At the end of the operation/s your screen should look like this.

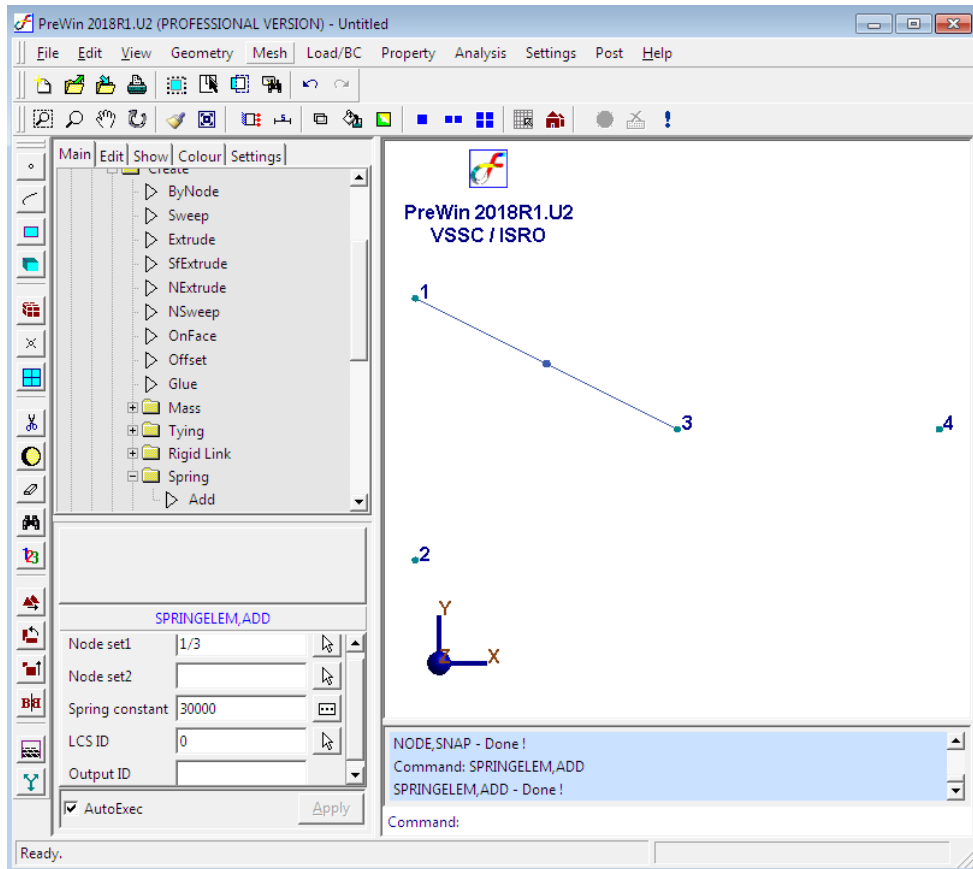


3. Create spring elements

- a) Commands : SPRINGELEM, ADD
- Menu : Mesh → Element → Create → Spring → Add
- Parameters :

Node Set 1	1/3
Node Set 2	
Spring Constant	30000
LCS ID	0
Output ID	1

At the end of the operation/s your screen should look like this.



Similarly create the other two spring elements.

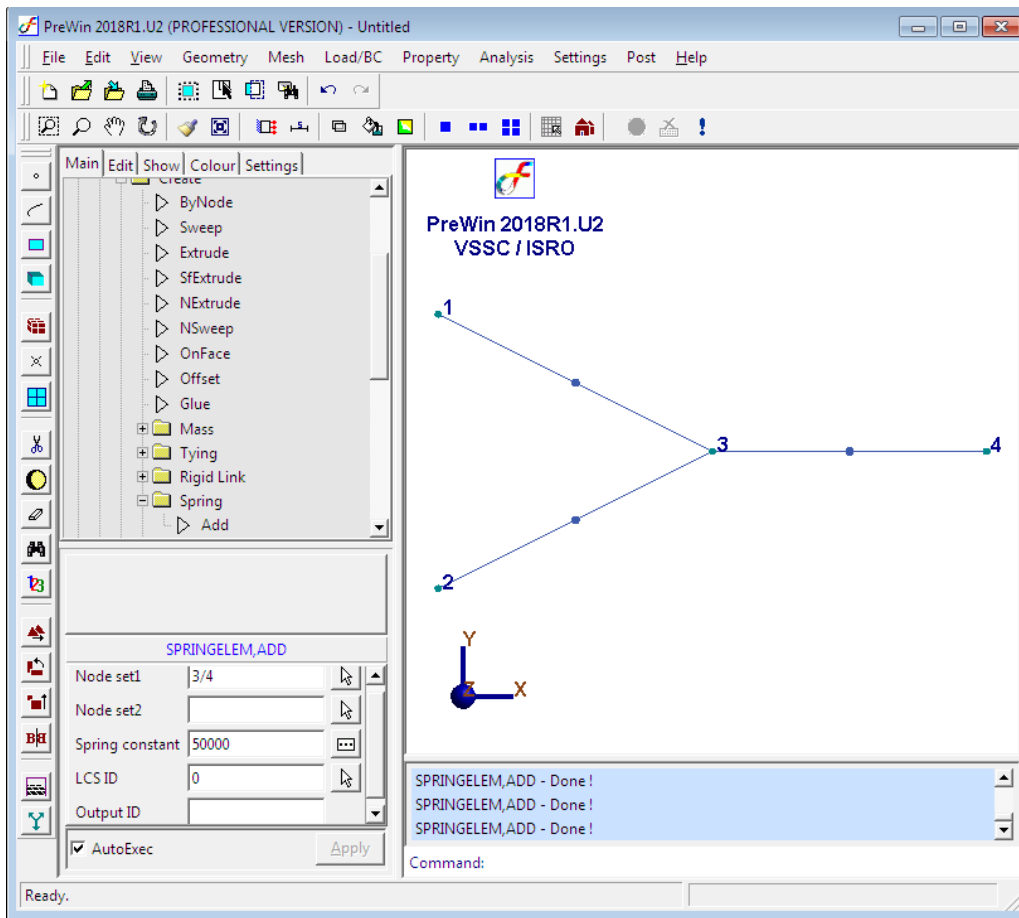
- b) Commands : SPRINGELEM, ADD
 Menu : Mesh → Element → Create → Spring → Add
 Parameters :

Node Set 1	2/3
Node Set 2	
Spring Constant	25000
LCS ID	0
Output ID	2

- c) Commands : SPRINGELEM, ADD
 Menu : Mesh → Element → Create → Spring → Add

Parameters :

Node Set 1	3/4
Node Set 2	
Spring Constant	50000
LCS ID	0
Output ID	1



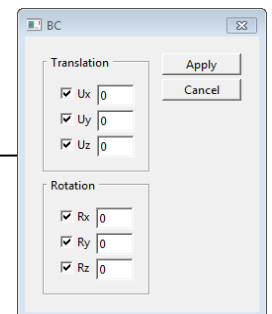
4. Specify displacement boundary conditions

Commands : BC,ADD

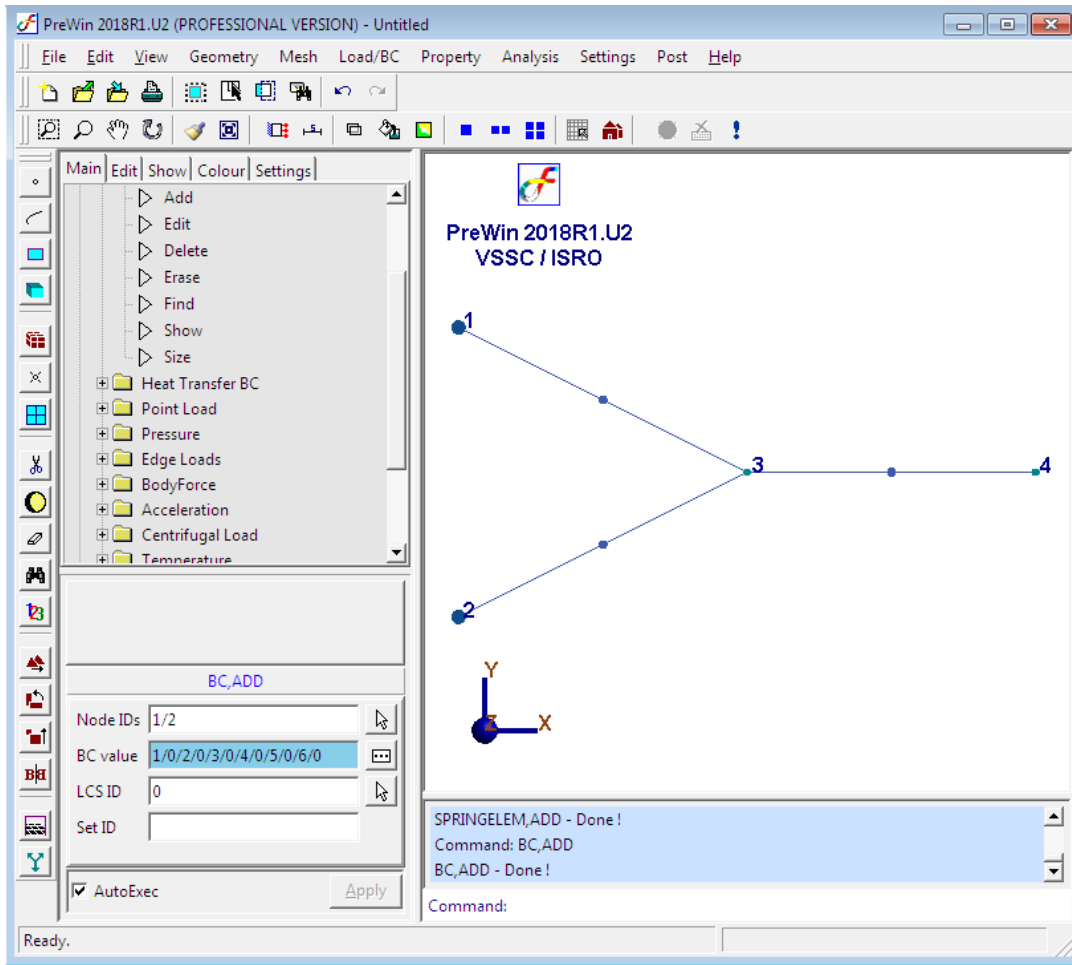
Menu : Load/BC → Displacement BC → Add

Parameters :

Node IDs	1/2
BC Value	1/0/2/0/3/0/4/0/5/0/6/0
LCS ID	0



At the end of the operation/s your screen should look like this.



5. Specify point load

- a) Command : FORCE, ADD
 Menu : Load/BC → Point Load → Add
 Parameters :

Node IDs	3
Data	45
Component	F _x
LCS ID	0
Set ID	

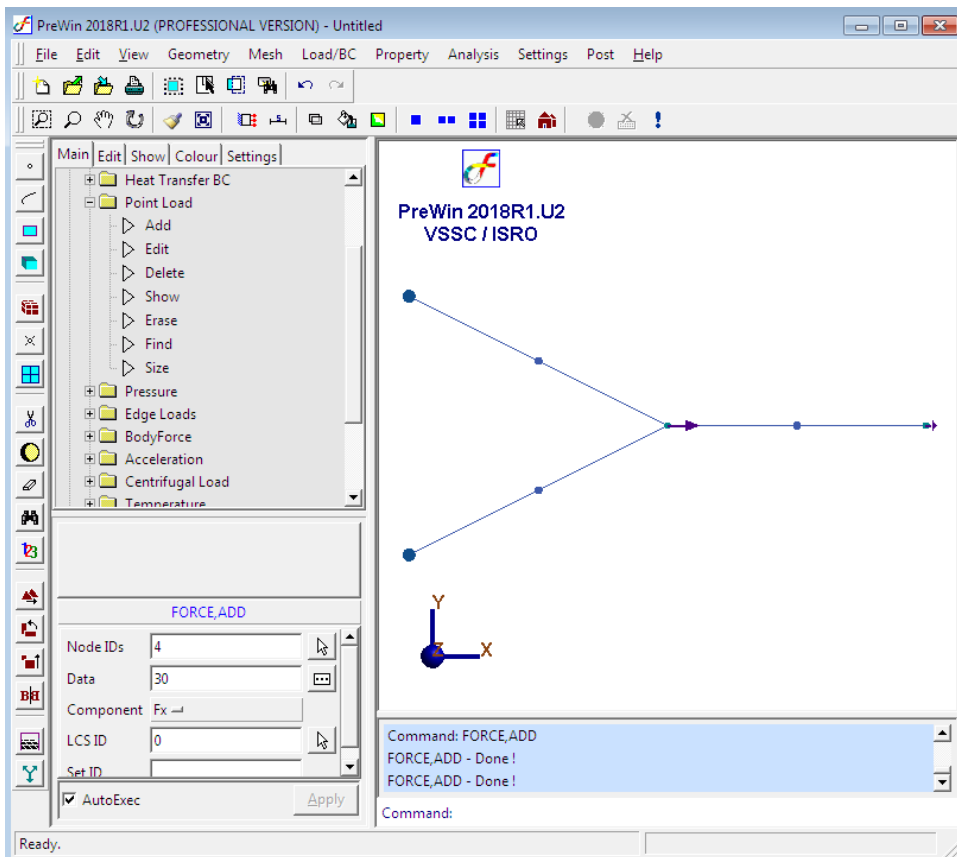
Similarly create the other load at node 4

- b) Command : FORCE, ADD
 Menu : Load/BC → Point Load → Add

Parameters :

Node IDs	4
Data	30
Component	F _x
LCS ID	0
Set ID	

At the end of the operation/s your screen should look like this.



6. Set the analysis type

Command : ANTYPE, SET
Menu : Analysis → Analysis Type
Parameters :

Analysis Type	Static
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7. Set the analysis

options

Command : ANOPTION, SET
Menu : Analysis → Analysis Options
Parameters :

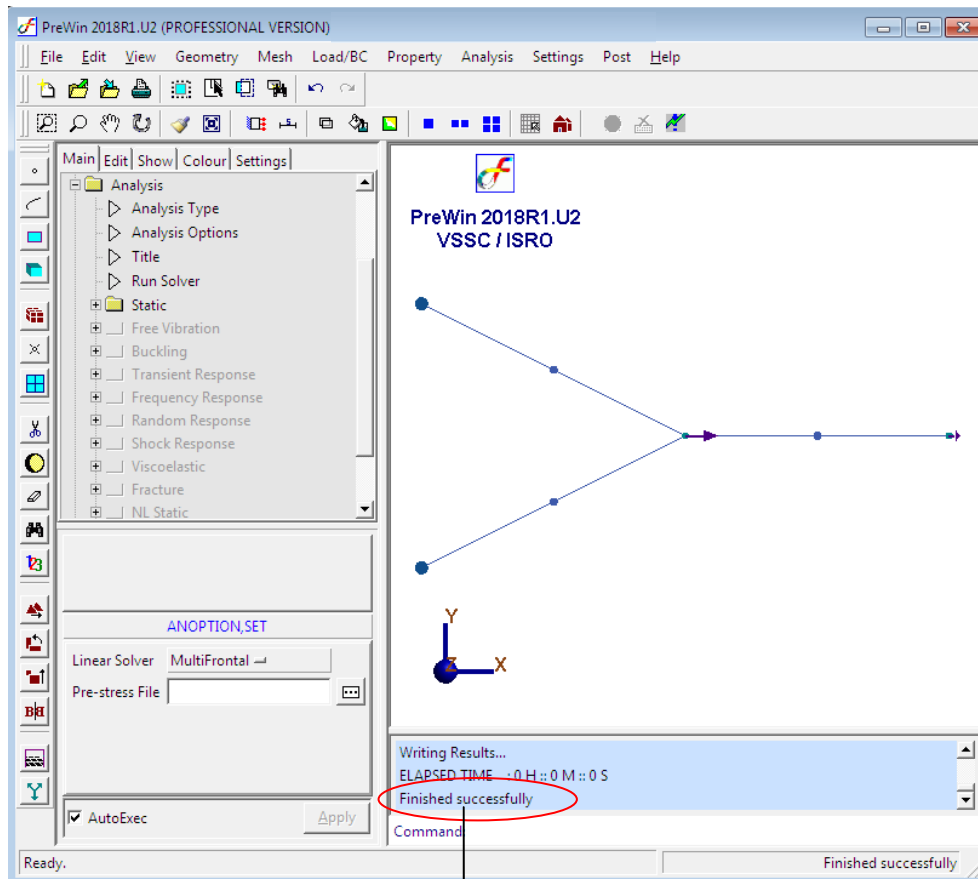
Linear Solver	Multi Frontal
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8. Save the project model

Menu : File → Save

9. Submit the job into FEAST

Menu : Analysis → Run solver



Message box

Note:

"Finished successfully" message appears on message box after executing is completed.

10. Perform post processing

i) Deformed shape

Command : POST, DISPDEFORM

Menu : Post → Deformed shape

Parameters :

Scale factor	1
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At the end of the operation/s your screen should look like this.

