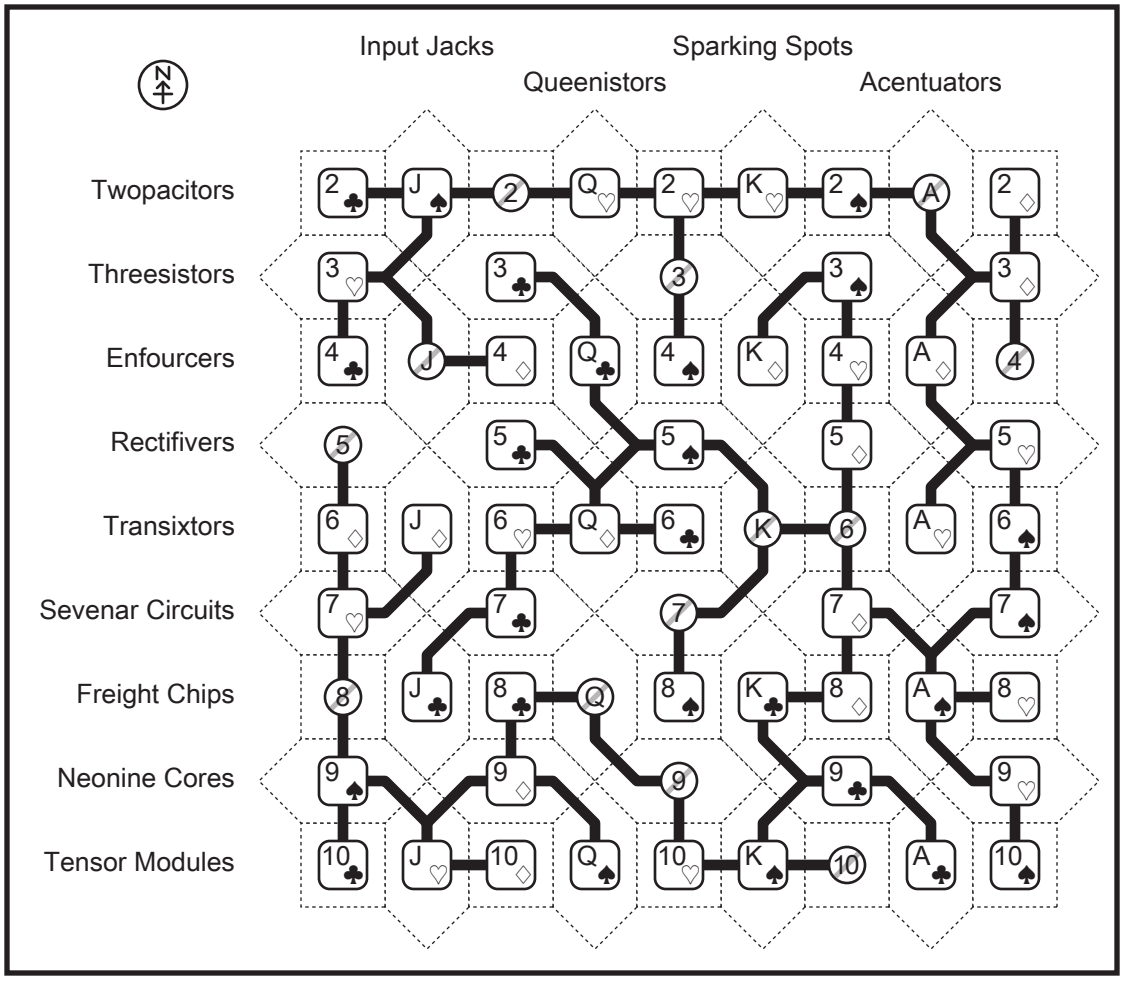
Doctor When's Recruiting Test

A Puzzle written for the Spring 2010 Equinox Party and "Doctor When" by Wei-Hwa Huang

Congratulations! You've all been selected as candidates to be Doctor When's assistants in preparation for his unveiling of his time machine, scheduled to happen this fall, six months from now, on September 17th and 24th.

Unfortunately, Doctor When is a bit reclusive and is still very busy getting things ready, so he's not here. Instead, we're going to have to run this little recruiting test.

The goal of this test is see how well you can build a proper circuitboard for Doctor When's chronomentometer. Now, Doctor When is an electronics genius, so he doesn't go for the standard electronic parts. Instead, you'll have to learn to use parts that he has designed himself!



To the right is an example of a completed circuit board.

There are 52 different parts in thirteen different types; the types are seen in the diagram. Each type comes in four brands: Spartan (♠), Hartley (♡), Dimension (♢), or Cluster (♣). There are five designated slots for each type; one slot will be a blank "empty node." The five slots of the same type are always in the same row or column as indicated.

Note that in addition to figuring out where each part goes, you will have to wire the proper parts together. Wires always cross between touching parts, but only along an edge -- a connection between two nodes is called a "hop." All the parts have to be connected, and there CANNOT be any loops (that causes what Doctor When calls a "short circuit" -- I know, that's a technical term, you probably haven't heard it before).

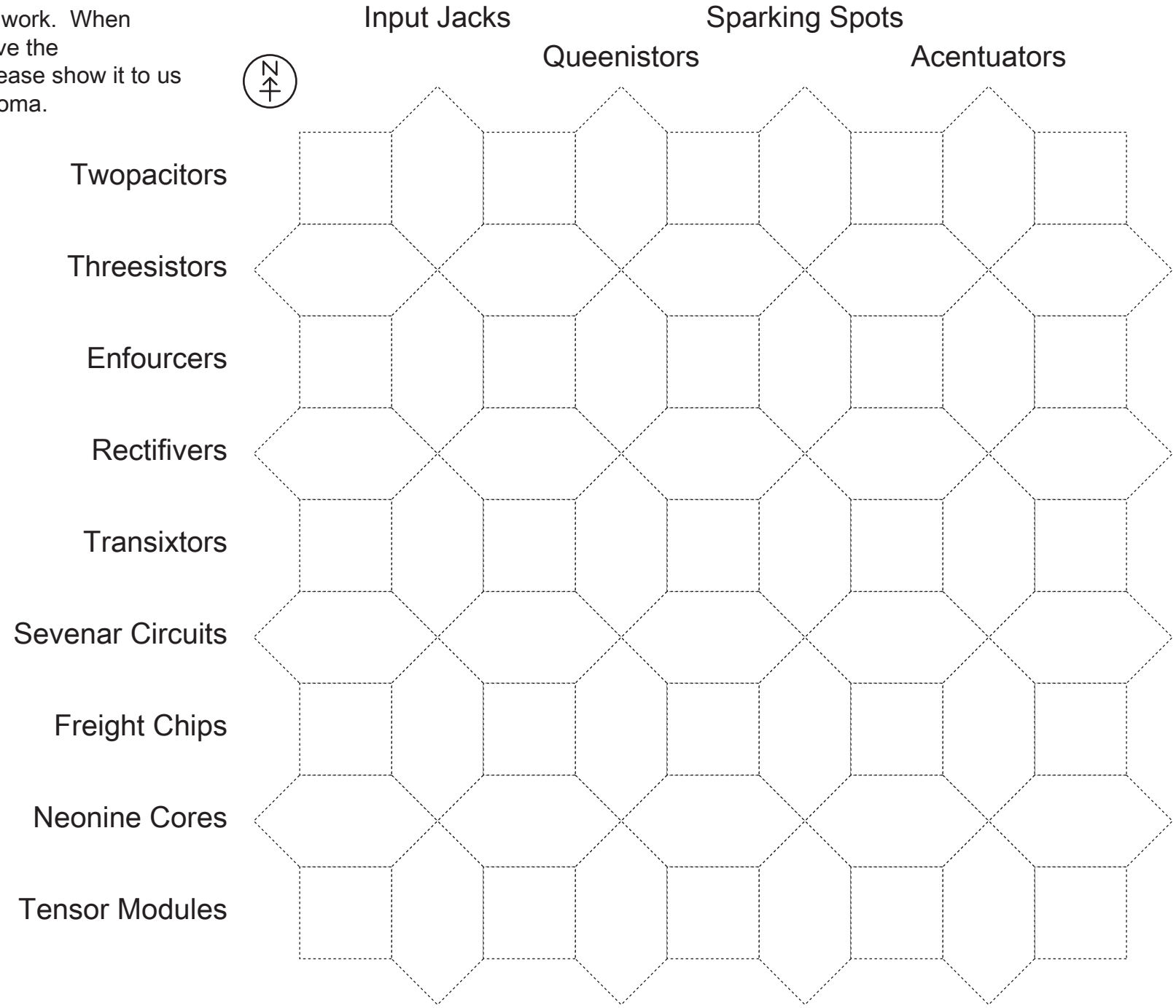
Now, although the example is a COMPLETED circuit board, it is not the CORRECT circuit board. The good Doctor is busily trying to give us a list of necessary constraints for the correct circuit board. Note that there is a compass rose in the upper-left of the diagram. Some constraints may make use of that.

You should have two more sheets of paper; one is a worksheet for you to build your circuit board, the other is the first batch of constraints. In a few minutes, we'll be sending out some more tests from Doctor When; submit the correct answer for those tests and you'll get more constraints. Finish building the board and we'll definitely consider you for the assistant position!

By the way, don't worry if you can't pass the tests, we have plenty of positions available!
Check our website out at http://doctorwhen.com/ for more information.

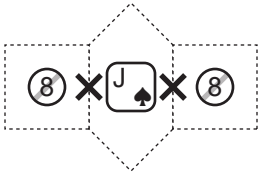
Circuit Board Diagram

Use this for your work. When you think you have the correct circuit, please show it to us for your final diploma.

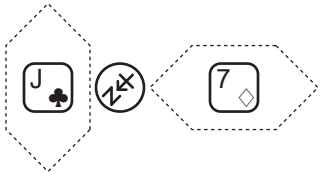


Constraints, part 0

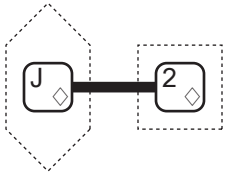
The diagrams to the left of each constraint depict that constraint in graphical form. There is no extra information in them.



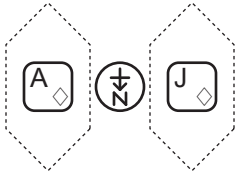
0. The Spartan Input Jack should be **next to** the empty Freight Chip node, but there should be no direct connection between them.



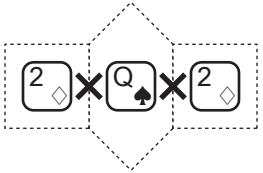
1. The Cluster Input Jack should be **directly northeast** of the Dimension Sevenar Circuit.



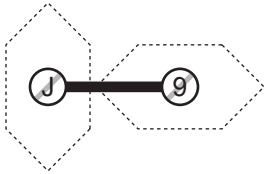
2. The Dimension Input Jack should be **one hop away** from the Dimension Twopacitor.



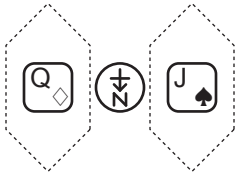
3. The Dimension Acentuator should be **directly east** of the Dimension Input Jack.



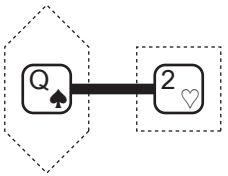
4. The Spartan Queenistor should be **next to** the Dimension Twopacitor, but there should be no direct connection between them.



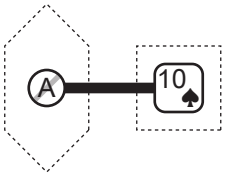
5. The empty Input Jack node should be **one hop away** from the empty Neonine Core node.



6. The Dimension Queenistor should be **directly east** of the Spartan Input Jack.

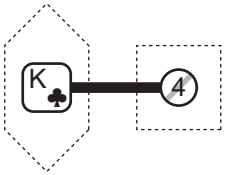


7. The Spartan Queenistor should be **one hop away** from the Hartley Twopacitor.

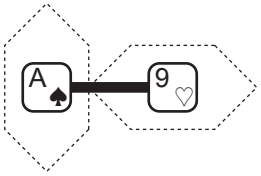


8. The empty Acentuator node should be **one hop away** from the Spartan Tensor Module.

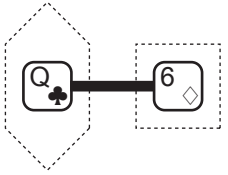
9. The Spartan Tensor Module should be **directly south** of the empty Enfourcer node.



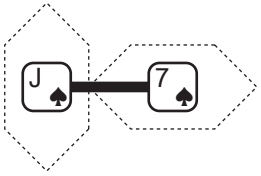
10. The Cluster Sparking Spot should be **one hop away** from the empty Enfourcer node.



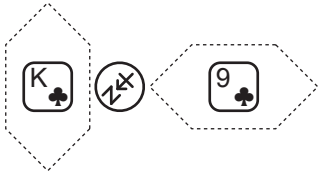
11. The Spartan Acentuator should be **one hop away** from the Hartley Neonine Core.



12. The Cluster Queenistor should be **one hop away** from the Dimension Transixtor.



13. The Spartan Input Jack should be **one hop away** from the Spartan Sevenar Circuit.



14. The Cluster Sparking Spot should be **directly northeast** of the Cluster Neonine Core.

Test 1, page 1

This crossword puzzle uses a grid with 365 white squares and has non-standard numbering.
Well, actually, it has very standard numbering; it's just not a *crossword* standard.
You'll find that Thursdays will give you a 31-letter message, submit the answer to that message.

Across
1. Type of string
2. Silverfish genus
9. It comes before neptunium and plutonium
16. Washington-based private equity firm
23. Track 2 on Kinky's *Reina*
20. What the devil is in

6. Government savings?
13. Somewhat
20. Exterminate
27. Type of reasoning

6. Worcestershire ingredient
13. Cherish
20. Inferior imitator
27. Misery

3. McIlhenny brand
10. Of the wife
17. Transfigure
24. Made more solid, with "out"

1. Mythological founders of Thebes (not Sparta)
8. Goat-horned Japanese mythical creature
15. Trainspotter, but for highways
22. UPN/CW Sitcom produced by Will Smith
29. Cardiff-based soccer org.

5. Visible part of the ear
12. Robert Urich character
19. Eroded
26. ?S?'s field of study

Down
1. Venison taste
2. Intelligible
3. Rub out
4. Alternative to ortho- or meta-
5. Thoroughly
7. Horse-donkey hybrid

1. Novice
2. Touched down
4. Daughter of George and Martha Moppet
5. "It's not a mistake"
6. Slot machine symbols
7. Above

1. Biting
2. Retainer of an Anglo-Saxon lord
4. Its CEO is Andrea Jung
5. Portable harp
6. A deck has four of them
7. Neighbor of Sonoma and Solano

1. Go up a mountain
2. Having shoes on
3. Gang's hood
4. Eddie's character in *Beverly Hills Cop*
5. Speaker brand
6. They can be liberal or martial

1. House material for the first pig
2. Bowman's partner in *2001*
3. "... than never to have loved ___"
4. Undo the Undo
6. Abraham's grandson
7. Tatooine has two

1. Northeast Egypt
3. Type of collar or circus
4. Ethereal
5. "Speed is of the essence" initialism
6. Qualified
7. Pull in a fish

Test 1, page 2

Across
3. Craftsman
10. Miami-based sports team
17. Clerical assistant
24. A jump-less throw of the basketball
31. Not as dense

7. Moon of Uranus
14. A pianist tickles them
21. Unspecified person
28. A match, for example

4. Thomas was one
11. Roofed porch
18. Won at the polls
25. *Bram ___ Dracula*

2. Having the most soot
9. Classical hymn
16. Sleeveless shirt
23. Electra's brother
30. Gave a response

6. Clumsy boxer, in slang
13. Where well water comes from
20. Table sugar
27. Paul Desmond's 5/4 piece outside of the Brubeck quartet

4. Jabber
11. Wallachia is here
18. Extend above
25. INXS and Styx

Down
1. 1% of *The Divine Comedy*
2. Where one often finds Alaska on a map
3. Gather
4. Competition or clan
5. It's between a walk and a canter
6. Unfortunate things

1. The fulcrum is often one
2. What the nose senses
3. Not as common
5. Hagman's co-star
6. To destroy (uncommon spelling)
7. Fail to forget, or fail to hit

2. Wise one
3. Peruse a publication
4. Class of the cassowary
5. Pummel or hide
6. Subject of "The White Stuff"
7. Relieve of a job

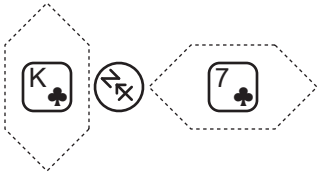
1. Recovery programs have 12 of them
2. He takes a part
3. The lion's is everything
4. Bring to a point
5. Annoys
7. Blackthorn

1. Moxie
2. French river
4. Gets with difficulty
5. Alternative to truth
6. What one remembers
7. Shade of light blue

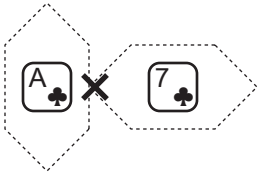
2. Untouchables' Ness
3. It occurs about a week after springs
4. Experts
5. Fox News political analyst Karl
6. Visa alternative
7. Strumpet or crumpet

Constraints, part 1

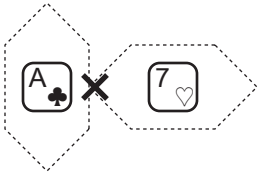
You should receive this list after passing Test 1.



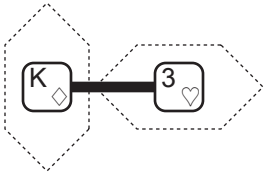
15. The Cluster Sparking Spot should be **directly northwest** of the Cluster Sevenar Circuit.



16. The Cluster Acentuator should be **next to** the Cluster Sevenar Circuit, but there should be no direct connection between them.

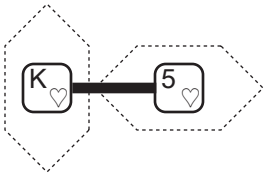


17. The Cluster Acentuator should be **next to** the Hartley Sevenar Circuit, but there should be no direct connection between them.

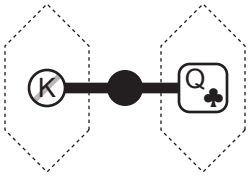


18. The Dimension Sparking Spot should be **one hop away** from the Hartley Threesistor.

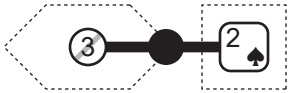
19. The Spartan Tensor Module should be **directly south** of the empty Threesistor node.



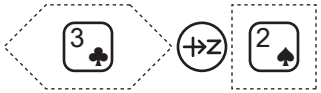
20. The Hartley Sparking Spot should be **one hop away** from the Hartley Rectifiver.



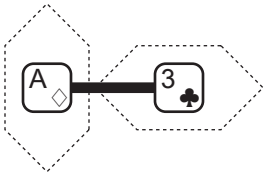
21. The empty Sparking Spot node should be **two hops away** from the Cluster Queenistor.



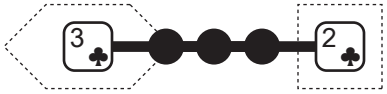
22. The empty Threesistor node should be **two hops away** from the Spartan Twopacitor.



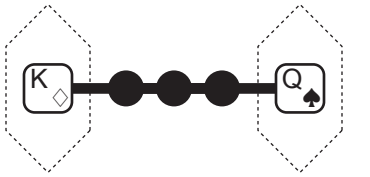
23. The Cluster Threesistor should be **directly south** of the Spartan Twopacitor.



24. The Dimension Acentuator should be **one hop away** from the Cluster Threesistor.

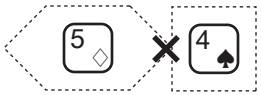


25. The Cluster Threesistor should be **four hops away** from the Cluster Twopacitor.

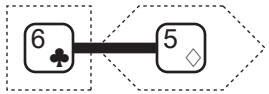


26. The Dimension Sparking Spot should be **four hops away** from the Spartan Queenistor.

27. The Dimension Rectifiver should be **directly southwest** of the Dimension Threesistor.



28. The Dimension Rectifiver should be **next to** the Spartan Enfourcer, but there should be no direct connection between them.



29. The Cluster Transixtor should be **one hop away** from the Dimension Rectifiver.

Test 2

Example Puzzle:

A ► CCDMR
B ► ♦
C ► EKL
D ► ♦EI
E ► ♦♦AEN
G ► ♦
H ► E
I ► AN
J ► A
K ► ♦I
L ► U
M ► O
N ► ♦DG
O ► N
P ► A
Q ► U
R ► T
S ► P
T ► ♦
U ► BE

Example Answer:

A ► ♦♦LMNNS
B ► EER
D ► O
E ► ♦♦♦AADNPRRTZ
F ► EE
G ► A
I ► EP
L ► ELO
M ► AB
N ► ♦AGI
O ► ♦MNRV
P ► AEIL
R ► AEEO
S ► EOT
T ► ♦EO
V ► E
Z ► ♦

A ► ♦IMNNNNNNPT
B ► AM
C ► AA
D ► EE
E ► ♦ENRRRRRR
G ► R
I ► CDNNRT
L ► AV
M ► AAAAAEI
N ► ♦♦♦♦♦♦ADELMT
O ► LMNN
P ► EIT
R ► EIIMMNOW
S ► PUU
T ► ♦AEM
U ► BP
V ► E
W ► OOO

A ► R
C ► K
D ► A
E ► ♦♦♦KPRU
G ► S
H ► ♦EI
I ► LLNV
J ► E
K ► ♦IY
L ► ♦♦DIL
N ► EG
O ► CN
P ► EEHOP
R ► ♦EU
S ► ♦EPST
T ► HHO
U ► ST
V ► I
Y ► L

A ► DKLMNNRRTV
B ► L
C ► AH
D ► ♦♦OS
E ► ♦♦AG
F ► L
G ► O
H ► EOQ
I ► ♦Z
K ► E
L ► AIO
M ► ♦I
N ► ♦AACD
O ► ♦DNOORRR
P ► H
Q ► U
R ► DMNTY
S ► ATU
T ► EHOOSY
U ► AN
V ► A
Y ► ♦P
Z ► AZ

A ► IMN
C ► EIKR
E ► ♦♦♦CMTY
G ► ♦H
H ► ♦AI
I ► CGLNNR
K ► I
L ► EILU
M ► AE
N ► ♦AGS
O ► LQ
P ► IO
Q ► U
R ► ♦EO
S ► ♦
T ► ♦
U ► CE
W ► R
Y ► E

A ► ♦DINNNNRWY
B ► ER
D ► S
E ► ILRRRT
G ► ♦♦E
H ► AEL
I ► KNNSSS
K ► M
L ► IW
M ► AAAIO
N ► ♦♦AEGGINNT
O ► EN
R ► ♦♦AGNO
S ► BHIMS
T ► AHH
W ► ♦AA
Y ► ♦

A ► ♦ELMNT
C ► H
D ► R
E ► ♦♦GLLRSTWW
F ► R
G ► GI
H ► A
I ► CE
J ► E
L ► ♦♦♦ALL
M ► ♦IU
N ► DE
O ► MNY
P ► E
R ► ♦EEO
S ► AEST
T ► EOO
U ► E
W ► ♦A
Y ► A

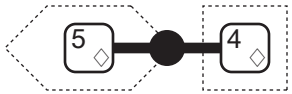
A ► ♦♦CCCDGIRRU
B ► U
C ► HHLR
D ► E
E ► ♦K
G ► O
H ► EINO
I ► BLS
K ► AA
L ► AU
M ► O
N ► O
O ► ♦♦♦♦♦♦MR
R ► AAAIOOOO
S ► KT
T ► HRRY
U ► RST
Y ► R

A ► NNSTT
B ► E
C ► AIK
D ► AE
E ► AELLNNNRVX
F ► I
G ► L
H ► ♦E
I ► CCLNS
K ► E
L ► ♦AAFILLU
M ► ♦
N ► ♦♦DIIOU
O ► M
P ► EE
R ► ♦
S ► ♦HHT
T ► ♦DEES
U ► TT
V ► E
X ► ♦

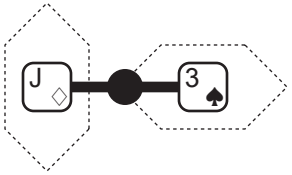
A ► CCDLRRSS
B ► AI
C ► KKT
D ► IOW
E ► AANRRRRRS
G ► ER
H ► EEO
I ► AS
J ► A
K ► SS
L ► EL
N ► SS
O ► BCENRU
P ► ♦EH
Q ► U
R ► ♦BGHOOSST
S ► ♦♦♦♦♦♦♦AOTU
T ► EEO
U ► APP
W ► E

Constraints, part 2

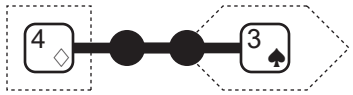
You should receive this list after passing Test 2.



30. The Dimension Rectifiver should be **two hops away** from the Dimension Enfourcer.

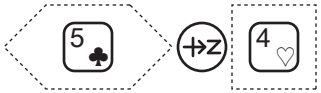


31. The Dimension Input Jack should be **two hops away** from the Spartan Threesistor.

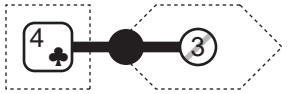


32. The Dimension Enfourcer should be **three hops away** from the Spartan Threesistor.

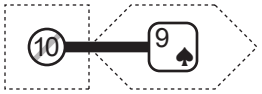
33. The Dimension Transixtor should be **two hops away** from the Cluster Rectifiver.



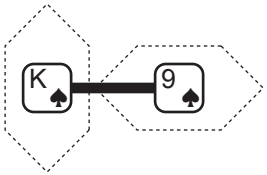
34. The Cluster Rectifiver should be **directly south** of the Hartley Enfourcer.



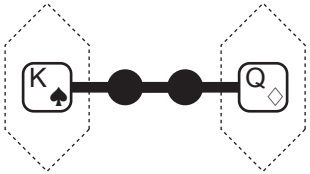
35. The Cluster Enfourcer should be **two hops away** from the empty Threesistor node.



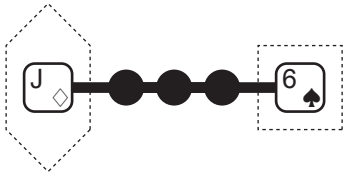
36. The empty Tensor Module node should be **one hop away** from the Spartan Neonine Core.



37. The Spartan Sparking Spot should be **one hop away** from the Spartan Neonine Core.

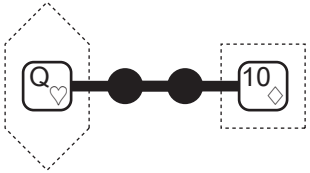


38. The Spartan Sparking Spot should be **three hops away** from the Dimension Queenistor.



39. The Dimension Input Jack should be **four hops away** from the Spartan Transixtor.

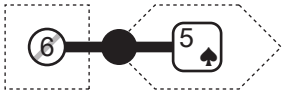
40. The Cluster Tensor Module should be **directly south** of the Spartan Transixtor.



41. The Hartley Queenistor should be **three hops away** from the Dimension Tensor Module.

42. The Cluster Tensor Module should be **four nodes away** from the Spartan Transixtor.

43. The Hartley Freight Chip should be **directly south** of the Dimension Transixtor.



44. The empty Transixtor node should be **two hops away** from the Spartan Rectifiver.

Test 3

Twenty-eight surnames of actors and actresses are hidden in the grid, one in each row and one in each column. The letters in each name are scrambled and can appear in any order, BUT each letter in the grid can belong to at most one name.

When you are done, there is a two-part secret message for you to discover. The unused letters will spell out the first part of the secret message. To discover the second part of the secret message, you must pair up the names in a natural way to find fourteen intersections in the grid. Those intersections will spell out the second part of the secret message.

Y W T L U L S I O I C H S F

H E T A G H L Y L E N G A R

A R T A E E E R S W H A E T

O A D O B L L T A Y L I F T

E R A L F T C F I V S O R D

R Y I S S O T I N E M O A O

R R M S N Y U U N E N N Y O

B N N M R A E E R A A M V D

Y T U R T A N N W G E M R O

R E P E G O M C A E R T O X

E R U A E F H R T R T E K C

M I V S E R A E T E E A K R

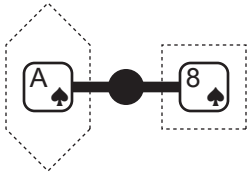
O W C E N L R M S L D L S W

H E G Z E R C A G R S E N W

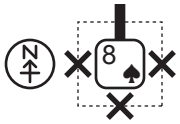
Constraints, part 3

You should receive this list after passing Test 3.

45. The Dimension Freight Chip should be **directly south** of the Spartan Rectifiver.



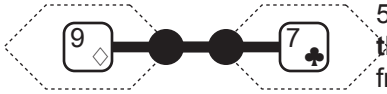
46. The Spartan Acentuator should be **two hops away** from the Spartan Freight Chip.



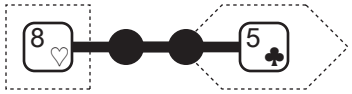
47. The Spartan Freight Chip should have **only one connection,** and that connection should go **north**.

48. The Spartan Acentuator should be **two hops away** from the Dimension Neonine Core.

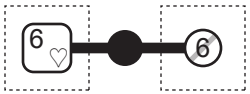
49. The Hartley Tensor Module should be **two hops away** from the Hartley Neonine Core.



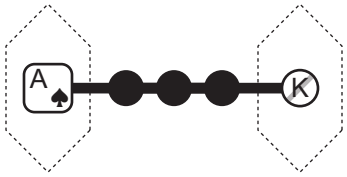
50. The Dimension Neonine Core should be **three hops away** from the Cluster Sevenar Circuit.



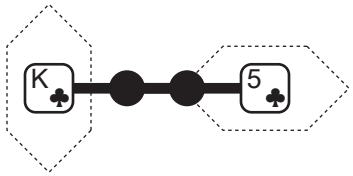
51. The Hartley Freight Chip should be **three hops away** from the Cluster Rectifiver.



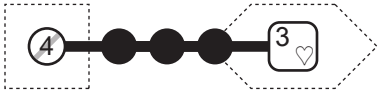
52. The Hartley Transixtor should be **two hops away** from the empty Transixtor node.



53. The Spartan Acentuator should be **four hops away** from the empty Sparking Spot node.

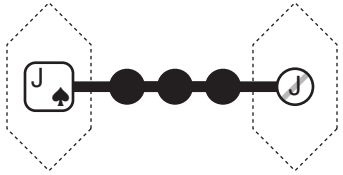


54. The Cluster Sparking Spot should be **three hops away** from the Cluster Rectifiver.



55. The empty Enfourcer node should be **four hops away** from the Hartley Threesistor.

56. The Dimension Freight Chip should be **four hops away** from the Hartley Transixtor.



57. The Spartan Input Jack should be **four hops away** from the empty Input Jack node.

58. The Cluster Neonine Core should be **four hops away** from the Cluster Transixtor.

59. The empty Freight Chip node should be **three hops away** from the Cluster Transixtor.

Diploma

Congratulations! You have passed all the tests, built a successful circuit, and are well-worthy of being Doctor When's assistant.
We have one final bonus test for you. Each pair of nodes in the following list encodes a letter, which you'll need your chronomentometer to decode. Decode the message and it will tell you what we think about your application to join the Doctor When team.