

## **Ranking of Objects based upon paired comparisons**

APL workspace used:  
 HP-UX: rank  
 Macintosh: rank

Load the workspace **rank**, for ranking objects given a preference graph.

- a. Randomly generate a preference graph with 6 objects. What is the random number seed which was used? \_\_\_\_\_ (This can be used to regenerate the same "random" problem again, if necessary!)
- b. Explain how the score for object #1 was computed.
- c. What is a ranking of the 6 objects according to their scores?  
 \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_
- d. Is this a single (unique) ranking of the 6 objects according to their score, or are there "ties" in scores? \_\_\_\_\_  
 If not unique, what is another ranking which can be obtained by this method?  
 \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_
- e. Calculate the number of discrepancies in the ranking which you have stated in (c). \_\_\_\_  
 List the discrepancies, e.g. *A ranks higher than B, but B is preferred to A*  
 # \_\_\_\_ ranks higher than # \_\_\_\_ , but # \_\_\_\_ is preferred to # \_\_\_\_  
 # \_\_\_\_ ranks higher than # \_\_\_\_ , but # \_\_\_\_ is preferred to # \_\_\_\_  
 # \_\_\_\_ ranks higher than # \_\_\_\_ , but # \_\_\_\_ is preferred to # \_\_\_\_  
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- f. Select "evaluate ranking" from the menu in order to evaluate the number of discrepancies: # discrepancies = \_\_\_\_  
 Does this agree with the number you calculated in (e)? **(Yes)(No)**
- g. By examination of the preference graph, find a Hamiltonian path through the graph, i.e., a path of directed arcs through all the 6 nodes:  
 \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_  
 Is there more than one such path? **(Yes)(No)** If so, find another:  
 \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_ > \_\_\_\_
- h. Select "evaluate ranking" from the menu in order to evaluate the number of discrepancies in the first path you selected in (g). \_\_\_\_  
 Does this ranking have more or fewer discrepancies than the ranking you found in (d)? **(More)(Fewer)**

