

## STAT505 Assessment #12

1. J&W Exercise 12.16 (parts b and c only). The data are given in “trackw.dat”. Columns correspond to country, 100m, 200m, 400m, 800m, 1500m, 3000m, and marathon. Note that the data is delimited by tabs.
2. Distances between pairs of five items are given in the following matrix. For example, the distance between the third and second observations is nine, found in the third row, second column.

$$\begin{array}{c} \phantom{1} \phantom{2} \phantom{3} \phantom{4} \phantom{5} \\ 1 \phantom{2} \phantom{3} \phantom{4} \phantom{5} \\ 2 \phantom{3} \phantom{4} \phantom{5} \\ 3 \phantom{4} \phantom{5} \\ 4 \phantom{5} \\ 5 \end{array} \begin{bmatrix} 0 & & & & \\ 4 & 0 & & & \\ 6 & 9 & 0 & & \\ 1 & 7 & 10 & 0 & \\ 6 & 3 & 5 & 8 & 0 \end{bmatrix}$$

- (a) Create clusters using a single linkage hierarchical procedure. Describe the progression from all points as separate clusters to all points in a single cluster. At each step, list the clusters that exist at that stage.
- (b) Create clusters using a complete linkage hierarchical procedure. Describe the progression from all points as separate clusters to all points in a single cluster. At each step, list the clusters that exist at that stage.