Indian Statistical Institute

Semester-I 2018-2019

M.Tech.(CS) - First Year

Lab Test IVb (30 November, 2018)

Subject: Data and File Structures Laboratory

Total: 60 marks Duration: 4 hrs.

SUPPLEMENTARY EXPLANATION FOR Q1.

Use H to denote the HEAD, and B to denote the BELLY.

Step 1. Insert key element k in $H[k\%m]$. Permit multiple elements in each bin up to the bin capacity. If the bin capacity is exceeded, abort the program with an error message.

Step 2. Move most recently inserted element in each bin of H to the corresponding bin of B. Compulsorily move the remaining elements in each bin of H (in order from most recently inserted to least recently inserted) to the next available empty bin in H in circular order. At the end of this stage, there should be no conflicts within H, and no conflicts within B, but there may be conflicts between H and B.

Step 3. Resolve conflicts between H and B. If both $H[i]$ and $B[i]$ are occupied, move the element from $B[i]$ to the next available slot (say j) in H to the right (in circular order). If this results in a new conflict (between $H[j]$ and $B[j]$), add this to the list of conflicts to be resolved. Repeat until all conflicts between H and B are resolved.

Step 4. Repeat steps 2 and 3 until all elements occupy their own slot in the belly.