

Quiz – Data Structures & Practices  
Topic: Hash-tables and Dictionaries

You are required to attempt all questions...

Answers need to be succinct, in your own words, and neat...

1. Consider the following partial table of an ordered library catalogue:

Author_ID	Book_ID	Author_Name	Book
LBa_001	Ba001_How	Lisa Feldman Barrett	How Emotions are Made
ADa_001	Da001_Sel	Antonio Damasio	Self Comes to Mind
EBI_012	BI012_Mal	Enid Blyton	Malory Towers
MMi_009	Mi009_Emo	Marvin Minsky	Emotion Machine
VRa_001	Ra001_Pha	Vilayanur Ramachandran	Phantoms in the Brain
JRo_015	Ro015_Fan	Joanne Rowling	Fantastic Beasts and Where to Find Them
JRo_015	Ro015_Qui	Joanne Rowling	Quidditch Through the Ages
PWo_015	Wo015_Pot	Pelham Grenville Wodehouse	The Pothunters
PWo_015	Wo015_Wod	Pelham Grenville Wodehouse	Wodehouse at the Wicket

**Note:**

- It is known that most user queries involve the Author\_Name and/or Book\_Name.
  - Typing the first three characters <xxx> of a search value for either of the attributes, on the library exploration portal, is sufficient to retrieve a set of records that begin with <xxx>.
  - Clearly state all assumptions.
- a) Use extendible hashing with bucket size 4 to design an effective access strategy for the above? [3 points]
- b) Use linear hashing with bucket size 4 to design an effective access strategy for the table provided? [3 points]
- c) For the record <MMi\_009, Mi009\_Soc, Marvin Minsky, Society of Mind>:  
Trace the insertion into the structures of Q.a and Q.b. Compare between the two placements. [1 + 1 + 2 points]