

AQA Computer Science A-Level
4.2.6 Hash tables
Past Paper Mark Scheme

Additional Specimen Paper 1 Mark Scheme

05	1	Mark is for AO2 (apply) Katherine Hepburn;	1
05	2	Mark is for AO2 (apply) 52;	1
05	3	All marks AO1 (knowledge) Hashing algorithm is applied to the key; The result is an index of where to store the value in an array; It is possible that the hashing algorithm might generate the same key for two different values (this is called a collision); in which case a collision handling method (A. example of collision handling method) is used;	4
05	4	All marks AO1 (knowledge) A larger hash table is created; Each value in the existing table is inserted into the new table; In a position determined by a new hashing algorithm; A. In a position determined by the same algorithm but with larger table size;	3
05	5	Mark for AO1 (understanding) By making the value be a data structure (A. any suitable example of data structure) that allows more than one catalogue number to be stored (this is necessary because it is not possible to have multiple instances of a key in a dictionary)	1

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9	(g)	(i)	<p>So that searching, adding and deleting can be done efficiently // To speed up searching, adding and deleting; A just one of searching, adding, deleting NE organise efficiently NE easily for efficiently</p>	1
	(g)	(ii)	<p>Alternative 1 (context-specific): A function/calculation that computes a record position/address; within a specified range; from a key field value; A an example of a hashing function e.g. calculate an integer from certain letters in a field for one mark</p> <p>Alternative 2 (generic): A function (A algorithm) H, applied to a key k; which generates a hash value ($H(k)$) (of range smaller than the domain of values of k);</p> <p>MAX 2</p>	2
	(g)	(iii)	<p>What is (1 mark): When more than one key value maps to the same record position/address // when two keys compute the same hash value; A "two records", "two items" or "two pieces of data" for "two keys" but R "two files" – both in this question part only</p> <p>How dealt with (1 mark): Store the record in the next available location in the file // store a pointer (in each file location) that points to a list of records that have all collided at the file location; A idea that each storage location could store more than one record e.g. five records per location, if explained. A example of what "next available" might be A key is rehashed</p> <p>A table for file</p>	2