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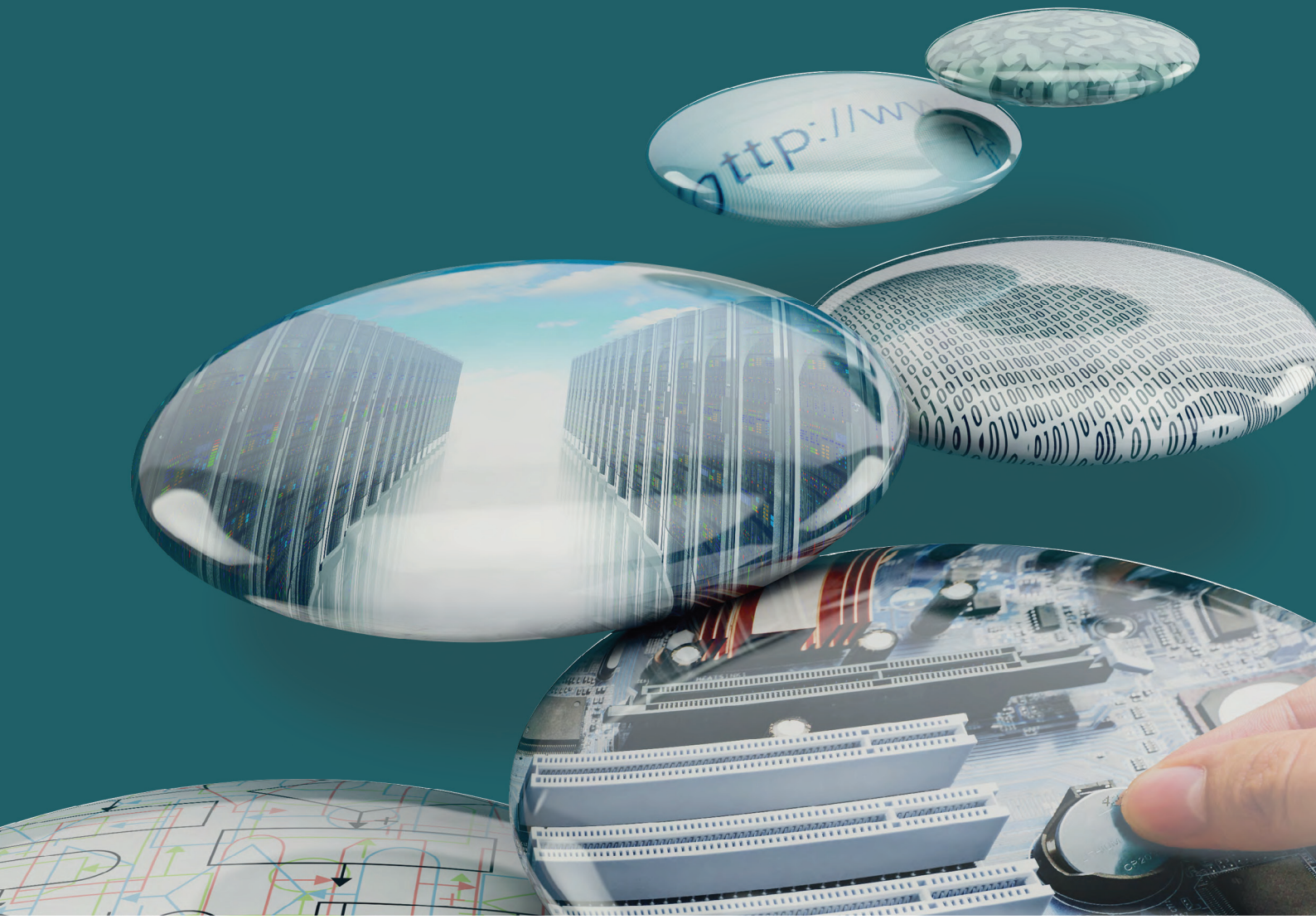
Topic Exploration Pack

H046/H446

COMPUTER SCIENCE

Theme: Databases

September 2015



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This activity offers an opportunity for English skills development.

Databases

Introduction

It is important that students are aware of the widespread use of databases from those providing mobile contacts to those used by large multinational businesses and government departments.

Databases are persistent organised stores of data. A key element in this definition is the organisation of data. Data in databases is stored in records and the data in a record is organised by attributes or fields. A record organises the data by an attribute, for example to store data for an address book the attributes might be first_name, second_name, address1, postcode, telephone, etc. The data in a record is accessed through its attribute.

It is important that students have a thorough knowledge of the main database concepts related to key fields, entity relationship diagrams, normalisation, referential integrity and SQL.

Many students will have used flat-file approaches to storing data, for example within spreadsheets and need to extend their knowledge to using fully relational, multi-table databases.

Practical experience of creating and using a multi-table database is an excellent way to deliver these skills.

Suggested activities

Using a simple scenario, for example a fancy dress hire shop, students can practice normalisation and entity relationship modelling and set up a three- or four-table database becoming familiar with the concepts of tables, attributes and referential integrity. They can then interrogate this database to become familiar with the concepts of queries and reports. Following up this by writing SQL queries to manipulate the data will give them an opportunity to use and gain experience with SQL commands.

Support material

A fancy dress hire shop keeps records in a large book. A typical entry might be the following:

Date out	Date in	Customer surname	Customer initial	Title	Phone number	Item	Category	Daily hire charge Band	Hire charge	paid
01/10/14	03/10/14	Person	A	Ms	0123412 3412	Witches costume	Halloween	D	£12.00,	yes

Activities

Task 1

Normalise the data structure into 3NF for this scenario and create an entity relationship diagram to represent the data structure for a suitable relational database.

Task 2

Set up the data tables and fields and populate the table with 20 records. Make sure there are a range of categories, that the same costume has been hired more than once for at least one item and that at least one customer hires more than one costume. Identify suitable primary and foreign keys and enforce referential integrity.

Task 3

Create a query using the built-in editor and a report to summarise the costumes on hire and not returned for a particular date.

Task 4

Using SQL, create a query to identify the costumes hired from a particular category and when they were hired and returned.

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