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ST BENEDICT'S COLLEGE



SUBJECT
GRADE
EXAMINER
NAME
CLASS

Information Technology
11
Mrs Kench

DATE
MARKS
MODERATOR
DURATION

July 2014
120
3 Hours and 30min printing

COGNITIVE LEVELS

LOW ORDER

29 %

**MIDDLE
ORDER**

41 %

HIGH ORDER

30 %

INSTRUCTIONS
COMMENT

**TEACHER'S
SIGNATURE**
**PARENT'S
SIGNATURE**

QUESTION 1

SQL

40 MARKS

An aspiring cook is trying to keep track of all the recipes in his recipe books.

He has a small collection of books and each book has many recipes which all consist of a variety of ingredients. Each book has an ID, title, author, price and the date it was published. Each book consists of many recipes. Each recipe has many ingredients. The table **tblIngRec** records the many-to-many relationship between the ingredients and recipes.

Design view of tblBook

Field Name	Data Type
BookID	AutoNumber
Title	Short Text
Author	Short Text
Price	Number
DatePublished	Date/Time

Data view of tblBook

BookID	Title	Author	Price	DatePublished
1	Real Meal Revolution	Tim Noakes	350	2013-11-05
2	No Fat	Skinny Lizzy	200	2010-01-01
3	Dieters Dream	Anna REXIC	150	1999-03-25
4	Cupcakes Galore	Fancy Pants	199	2005-10-30
5	Braaimaster Handbook	Keppel Simple	400	1997-05-10
6	One pot wonders	Isa idiot	50	2008-09-18

Design view of tblRecipe

Field Name	Data Type
RecipeID	AutoNumber
RecipeName	Short Text
BookID	Number

Data view of tblRecipe

RecipeID	RecipeName	BookID
1	Choc Chip Delight	4
2	Brownies	4
3	Lamb Chops	5
4	Fillet Steak	5
5	Caulimash	1
6	Granola	1
7	Why bother Cappuccino	2
8	Fat free brownies	3
9	Egg white shake	2
10	Scrambled eggs with no egg	3
11	Salmon tart	1

Design view of tblIngredient

tblIngredient	
Field Name	Data Type
IngredientID	AutoNumber
IngName	Short Text

Data view of tblIngredient

tblIngredient	
IngredientID	IngName
1	Egg
2	Egg white
3	Egg yolk
4	Cheese
5	Chocolate
6	Butter
7	Milk
8	Flour
9	Cauliflower
10	Lamb Chops

Design view of tblIngRec

tblIngRec	
Field Name	Data Type
RecID	Number
IngID	Number
Quantity	Short Text
Calories	Number

Data view of tblIngRec

tblIngRec			
RecID	IngID	Quantity	Calories
1	4		250
1	5	500 ml	100
1	8	250 ml	200
2	3	3	150
2	5	100 ml	600

- 1.1 List all the ingredients that contain egg in alphabetical order. (3)
- 1.2 The books have increased by 20%. Write a SQL statement to add 20% to the price of each book. (3)
- 1.3 Add a new book called 'One pot wonders' written by 'Isa idiot' on sale at R50. (2)
- 1.4 Each author needs to renew their contract on the 31st December. Create a query to determine the number of days and months until they must renew their contract. Display the result as "You have xx days and yy months until renewal". Name this new field as Message.

Your output should appear as:

Message	
You have 26 days and 1 months until renewal	
You have 30 days and 11 months until renewal	
You have 6 days and 9 months until renewal	
You have 1 days and 2 months until renewal	
You have 21 days and 7 months until renewal	
You have 13 days and 3 months until renewal	(4)

- 1.5 List all the recipe names with each book title together with their ingredients. Display the book title, the recipe name and the ingredients. Display the results sorted according to title, recipe name and the name of the ingredients name. (6)
- 1.6 List all the recipes whose total calorie count of all the ingredients is greater than 1000. (8)
- 1.7 Find the books whose price is above average. (4)
- 1.8 Count the number of recipes in each recipe book. Rename this field NumRecipes. (6)
- 1.9 A decision has been made to only offer vegetarian ingredients. Delete Lamb chops and Fillet Steak from the ingredients table. (4)

SCENARIO

A chef has created a text file with each recipe, the number of calories in each recipe followed by a list of ingredients for the recipe listed on a line. The first two fields are separated by a “#” character and the list of ingredients are separated by a comma. The file is named **Recipe.txt**.

Recipe#Calories#list of ingredients separated by a comma

```
Fillet Steak#900#Fillet Steak,Salt,Olive oil,Steak and chops spice
Lamb Chop supreme#1025#Lamb Chops,Olive Oil,Rosemary,Salt,Lemon
Brownies#3587#Chocolate,Egg yolk,Flour,Butter,Vanilla essence
Choc Chip Delight#500#Chocolate,Egg,Flour,Butter,Baking powder
Fat free brownies#25#Chocolate,Egg white
Scrambled eggs with no eggs#678#Egg white,Salt
Egg white shake#20#Egg white,Milk,Vanilla essence
Why bother Cappuccino#2#Coffee,Milk,Hot water
Caulimash#367#Butter,Cauliflower,Milk
Granola#800#Almond flakes,Cranberries,Walnuts
Salmon tart#421#Cheese,Egg,Salmon
```

QUESTION 2

21 MARKS

- 2.1 Create a class called **Ingredients** with a single array of strings called **ingStr** to store the names of 20 ingredients and a variable called **size** to record the number of ingredients in the array. (3)
- 2.2 Code a constructor to instantiate the elements of the array given a single string parameter. For example the string “Fillet Steak,Salt,Olive oil,Steak and chops spice” must be used to instantiate the array called **ingStr** and determine the number of elements in the array and store the result in the variable called **size**. (8)
- 2.3 Code a **getIngredients** method to return the list of ingredients separated by a tab. (4)
- 2.4 Code a **sort** method to sort the ingredients alphabetically. (6)

QUESTION 3**18 MARKS**

- 3.1 Code a class called **Recipe** to store the name of the recipe, the number of calories in the recipe and the array of ingredients. (3)
- 3.2 Code a constructor to instantiate the field's name, number of calories and the array of ingredients. The ingredients will be sent as a String. (3)
- 3.3 Add a **mutator** method to return the **name** of a recipe. (2)
- 3.4 Code a **toString** that will return the recipe name, the number of calories (followed by the word calories) and the list of ingredients on a separate line underneath recipe name. For example:
- ```
Granola 800 calories
Almond flakes Cranberries Walnuts
```
- (4)
- 3.5 Code a method called **convert** to convert the number of calories to kilojoules using the formula: **1 cal = 4.184 kJ**. Round the result to two decimal places and return the result followed by "kJ". (6)

**QUESTION 4****19 MARKS**

- 4.1 Code a class called **RecipeArray** to store 20 recipes and a variable to record the number of Recipe objects in the array. (3)
- 4.2 Code a constructor to instantiate the array of recipes using the text file **Recipe.txt**. (8)
- 4.3 Code a **toString** to display each recipe along with the number of calories and ingredients separated by a blank line. (3)
- 4.4 Code a method called **listKJ** to display each recipe name followed by the number of kilojoules in that recipe. List each recipe on a new line. (5)

**QUESTION 5****5 MARKS**

- 5.1 Code an application class called **RecipeUI** to instantiate a **RecipeArray** object. (2)
- 5.2 Add code to display all the recipes and their ingredients. (1)
- 5.3 Code to display each recipe together with the number of kilojoules in each recipe. (2)

**QUESTION 6****17 MARKS**

- 6.1 Often recipes contain ingredients that cannot be consumed by people who are intolerant or allergic to a particular ingredient. Add code to the solution to input the name of the ingredient and then display a list of recipes that the user contain the ingredient. Use Object Oriented Programming principles to decide where to place your code. Marks will be awarded for the elegance of your solution. (17)