



eduresourceza.com

ST BENEDICT'S COLLEGE



SUBJECT
GRADE
EXAMINER
NAME
CLASS

Information Technology

11

Mrs Kench

DATE

MARKS

MODERATOR

DURATION

November 2014

120

3 Hours and 30min printing

COGNITIVE LEVELS

LOW ORDER

29 %

**MIDDLE
ORDER**

40 %

HIGH ORDER

31 %

INSTRUCTIONS
COMMENT

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

QUESTION 1

SQL

40 MARKS

A school has recorded the details of learners at a school called ExcelHigh. The data is stored in a database called ExcelHigh. The following details are stored about each learner in the table called Learners.

Create table statement of Learners

```
CREATE TABLE `learners`
(
  `ID` VARCHAR(6),
  `PName` VARCHAR(35),
  `PGrade` INTEGER,
  `PClass` VARCHAR(1),
  `PHouse` VARCHAR(1),
  `PDOB` DATETIME,
  `PGender` VARCHAR(1)
);
```

Sample Data of Learners

ID	PName	PGrade	PClass	PHouse	PDate of Birth	PGender
241	Bibis, Joshua	12 R	M		1994-01-20 00:00:00.0	M
242	Gouveia, Tarquin	12 D	L		1995-09-13 00:00:00.0	M
244	Sabljak, Pavan	12 E	C		1994-11-09 00:00:00.0	M
246	Govender, Sheldon	12 E	U		1994-10-04 00:00:00.0	M
247	Ismail, Joash	12 A	C		1994-06-18 00:00:00.0	M
249	Sheik-Amod, Zohair	12 R	U		1994-01-12 00:00:00.0	M
250	Mains-Sheard, Kevin	12 D	M		1994-07-30 00:00:00.0	M
255	Mthimkulu, Richard	12 E	L		1994-08-22 00:00:00.0	M
256	Passos, Khumo	12 R	U		1994-06-12 00:00:00.0	M
257	Pillay, Dean	12 E	M		1994-04-29 00:00:00.0	M
258	Styane, Cailyn	12 A	M		1994-05-08 00:00:00.0	F
259	Vigliotta, Caitlin	12 D	U		1994-05-30 00:00:00.0	F
260	Da Silva, Cherry	12 A	L		1994-08-10 00:00:00.0	F
262	Glen, Artur	12 A	L		1993-05-06 00:00:00.0	M
263	Shaik, Yaron	12 A	C		1994-09-30 00:00:00.0	M
264	Hurwitz, Kyle	12 E	M		1994-10-29 00:00:00.0	M

Perform the following SQL queries using the database and copy your queries to the file called AnswerSheet. Ensure your name is included in the file AnswerSheet.

- 1.1 The secretary needs to list the pupils to create class lists. Sort all the pupil according to grade, class and then surname. (4)

select * from pupils
order by PGrade, PClass, PName;

- 1.2 The ID field is no longer suitable. Change the ID to be the year of the learners date of birth the second and third letter of their name. (4)

UPDATE learners
SET ID = concat(year(PDOB), MID(PNAME,2,2));

- 1.3 Insert a learner using your name and date of birth in Grade 11 R house M. Do not insert data for the ID field. (4)

INSERT INTO excelhigh.learners (`PName`, `PGrade`, `PClass`, `PHouse`, `PDOB`, `PGender`)
VALUES ('Smith, Fred', 11, 'R', 'M', '1999-09-13 00:00:00.0', 'M');

- 1.4 Count the number of learners in each grade. Display the grade and the number of learners. (4)

```
SELECT PGrade, COUNT(*) AS NUMINGRADE
FROM Learners
GROUP BY PGrade
```

1.5 List the names of the boys who are in Grade 10 or Grade 11. (5)

```
select Pname
from learners
where PGender = 'M' AND (PGrade=10 OR PGrade =11);
```

1.6 Display the average age of all the female learners in each house. Rename this field AveAge. Display the house and the field AveAge. (7)

```
select PHouse, AVG(year(now()) - year(PDOB)) AS AveAge
from learners
where PGender = 'F'
GROUP BY PHouse;
```

1.7 Display the classes who have more than 25 learners in each class. Display the grade, the class and the number in the class. (7)

```
select PGrade, Pclass, Count(*) as TOTAL
from learners
GROUP BY Pgrade,PClass
HAVING Total > 25;
```

1.8 The database will be rolled over for next year. Write two SQL statements to remove all the Grade 12 learners and then increase the Grade of each learner to the next grade. (5)

```
DELETE FROM Learners
WHERE PGrade = 12
```

```
UPDATE learners
SET PGrade = PGrade + 1
```

SCENARIO

A student has listed all the sources they have used to produce their ORT (One research Task). The sources are chapters in Journals or books which are a compilation of articles. The student needs to code a program to sort the list of sources according to the surname of the author and also use the details of the source to cite the source in their ORT. The sources are stored in a text file named Ref.txt. The text file consists of the author, year, title, journal (or book), city of publication separated by commas. We will consider all journals to be book for simplicity sake. Each entry is a line of text in the text file even though the text appears wrapped in the box below.

Author, Year, Title, Book, City

```

Heron C.M., (2005), Severity of Citrus tristeza virus isolates from Texas, Plant Disease, London
Myers N., (1984), The primary source: tropical forests and our future, All kinds of forests, New York
Myers N., (1985), Tropical deforestation and species extinction: the latest news, Future Life, Brussels
Myers N., (2003), Impact and acceptance of the hotspots strategy, Response to Ovadia and to Brummitt and
Lughadha, Conservation Biology, Washington
Myers N., (2003), Biodiversity hotspots revisited, Bioscience, Paris
Tucker R., (1983), Global deforestation and the 19th century world economy, Duke University
Symposium, Durham
Chang S.S., (2012), Exploring everyday things with R and Ruby, Sebastopol, California.
Primoratz I., (2013), Terrorism: a philosophical investigation, Polity Press, Cambridge.
Goldman J., (2010), Parliamentary sovereignty: contemporary debates, Cambridge Law Journal, Cambridge.
Abbott H.P., (2008), The Cambridge introduction to narrative, Cambridge University Press, Cambridge.
Comfort A., (1997), A good age, In a Good Book, London
Sopensky E., (2002), Chocolate makes money, Business Journal, Frankfurt
Comfort A., (1997), Another age, In another Book, London
Stevens M., (1996), How to be better at giving presentations, Kogan Page, London

```

QUESTION 2

25 MARKS

- 2.1 Create a class called **Source** with string fields to store the author, year, title, book and city. Ensure these fields cannot be accessed outside the class. (4)
- 2.2 Code a parameterised constructor to assign values to the fields. (4)
- 2.3 Code accessor methods for author and year field. (3)
- 2.4 Code a mutator method for the year field. (1)
- 2.5 Code a **toString** method to combine all the fields separated by tabs. The fields must be in the order author, year, title, book and city. For example:
 Comfort A. 1997 A good age In a Good Book London (4)
- 2.6 Code a method called **removeBrackets** to remove the brackets around the year. The will be stored as (2006) and must be altered to 2006. Call this method from the constructor to ensure that date is changed when a Source object is instantiated. (4)
- 2.7 Code a method called **getCitation** to combine the authors surname and the year of a publication in brackets. For example the citation for the book *Comfort A., (1997), Another age, In another Book, London* will become (Comfort, 1997). The surname and year must be separated by a comma. (5)

QUESTION 3**48 MARKS**

- 3.1 Code a class called **SrcArray** to store 150 **Source** objects and a variable to record the number of Source objects in the array. (5)
 - 3.2 Code a constructor to instantiate the array of terms using the text file **Ref.txt**. If the file does not exist then print an error message. (9)
 - 3.3 Code a **toString** to display each source on a separate line. (4)
 - 3.4 Code a method to **sort** the array in alphabetical order of the author's surname. (8)
 - 3.5 Code a method to count all the sources published in Cambridge. Return this number as an integer. (5)
 - 3.6 Code a method called **listCitations** to display each citation one below the other. (4)
 - 3.7 In a Source list, each entry must be unique. Some authors have written more than one article in a year. For example, the author Comfort has written two articles in 1997. The citations must be changed so that they are unique by adding a letter after the year. In the case of the author Comfort, the first article in the array will be cited as (Comfort, 1997a) and the second will be cited as (Comfort, 1997b). Similarly Myers has written two articles in 2003. These need to be changed to (Myers, 2003a) and (Myers, 2003b). Code a method called **checkCitations** to check for duplicate authors in the same year and if found the year must be changed to include a letter of the alphabet starting with the letter 'a'. (10)
- Your sort program may need to be adapted to be able to sort according to author AND THEN year in order to produce consecutive citations for authors who have written more than one article in the same year. (3)

QUESTION 4**7 MARKS**

- 4.1 Code an application class called **SourceUI** to instantiate a **SrcArray** object. (2)
 - 4.2 Add code to display all the Source objects. (1)
 - 4.3 Add code to sort and then display the Source objects. (1)
 - 4.4 Add code to display the citations for each source. (1)
 - 4.5 Add code to display the number of sources published in Cambridge. (1)
 - 4.4 Add code to call the method to adapt the citations and display all the citations. (1)
-