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SUBJECT	Information Technology Practical Exam	DATE	July 2017
GRADE	11	MARKS	120
EXAMINER	Mrs Kench	MODERATOR	
NAME		DURATION	3 hours
USER NAME			
PASSWOD			

COGNITIVE LEVELS			
LOW ORDER	29 %	MIDDLE ORDER	40 %
		HIGH ORDER	31 %

STUDENT'S RESULT	
COMMENT	
TEACHER'S SIGNATURE	
PARENT'S SIGNATURE	

SECTION A: SQL**40 MARKS**

The files required for this question can be found in the folder named **Section A**. Please complete your work in this folder.

The IT Manager at St Benedict's has stored the details of every item printed at St Benedict's over a period of time. Each time a print job is sent to a printer on the network, the details of that job are stored. This includes the date, the full name of the person who printed, the email address of the user, the name, model and serial number of the printer, the total number of pages for this print job, the total number of colour pages, the number of copies, cost, duplex (two-sided), client (the name of the computer used to print), the size of the file and whether job actually printed.

Table design:**PrintLogs**

PrintLogs	
Field Name	Data Type
Date	Date/Time
FullName	Short Text
Email	Short Text
PrinterName	Short Text
PrinterModel	Short Text
PrinterSerialNo	Short Text
TotalPages	Number
TotalColorPages	Number
Copies	Number
Cost	Currency
Duplex	Yes/No
Client	Short Text
SizeKB	Number
Printed	Yes/No

A sample of the first 15 rows of the table is shown on the following page.

Page Size: 20 Total Rows: 2642 Page: 1 of 133 Matching Rows:														
#	Date	FullName	Email	PrinterName	PrinterModel	PrinterSerialNo	TotalPages	TotalColorPages	Copies	Cost	Duplex	Client	SizeKB	Printed
1	2017-05-25 10:32:00.0	Alessandro Aldrigh...	Alessandro.Aldrighetti@student.stbenedi...	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB28	74.0	☒
2	2017-05-23 08:49:00.0	Rourke Amiss	Rourke.Amiss@student.stbenedicts.co.za	hslabxerox7120	Xerox WorkCentre 7120	3320218828	22	22	1.0	17.1600	☒	HSLAB17	12644.0	☒
3	2017-05-24 09:48:00.0	Blade Amiss	Blade.Amiss@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB7	39.0	☐
4	2017-05-24 09:49:00.0	Blade Amiss	Blade.Amiss@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB7	40.0	☐
5	2017-05-24 09:49:00.0	Blade Amiss	Blade.Amiss@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB7	40.0	☒
6	2017-05-25 08:10:00.0	Blade Amiss	Blade.Amiss@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB7	58.0	☒
7	2017-05-25 10:16:00.0	Kian Anderson	Kian.Anderson@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB15	73.0	☐
8	2017-05-25 10:20:00.0	Kian Anderson	Kian.Anderson@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB15	74.0	☒
9	2017-05-25 08:42:00.0	Nicholas Baart	Nicholas.Baart@student.stbenedicts.co.za	hslabxerox7120	Xerox WorkCentre 7120	3320218828	2	2	1.0	1.5600	☒	HSLAB11	1612.0	☒
10	2017-05-23 14:32:00.0	Luke Bennetts	Luke.Bennetts@student.stbenedicts.co.za	hslabxerox7120	Xerox WorkCentre 7120	3320218828	20	20	1.0	16.0000	☐	HSLAB12	14342.0	☒
11	2017-05-24 09:44:00.0	Basti Bollo	Basti.Bollo@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB11	36.0	☒
12	2017-05-24 09:50:00.0	Basti Bollo	Basti.Bollo@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB11	40.0	☒
13	2017-05-24 09:51:00.0	Basti Bollo	Basti.Bollo@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB11	43.0	☒
14	2017-05-24 09:51:00.0	Basti Bollo	Basti.Bollo@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB11	43.0	☒
15	2017-05-25 08:16:00.0	Basti Bollo	Basti.Bollo@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB11	87.0	☒
16	2017-05-26 12:36:00.0	Luke Randonne	Luke.Randonne@student.stbenedicts.co.za	hp lj p2050 jhslab	HP LaserJet P2055dn	CNCKF11815	1	0	1.0	0.3500	☐	JHSLAB19	77.0	☒

QUESTION 1**40 MARKS**

- 1.1 Display all the full name of the users sorted alphabetically by first name. Display each name only once. (4)
- 1.2 List full name, email address and printer model of all the students who have printed to the Xerox WorkCentre 7120. A student can be identified by the word "student" in the email address. (5)
- 1.3 The serial number of the HP LaserJet P2055dn has been incorrectly entered. Write a SQL statement to change the number from CNCKF11815 to CNCKF11851. (3)
- 1.4 Count the number of print jobs that were back to back (duplex). Rename the field as Total. (4)
- 1.5 Create a code for each printer using the first two characters of the printer name and the last three characters of the printer serial number and a random digit between 1 and 9. (6)
- 1.6 Determine the average cost to print at the either the high school computer labs. Namely the Xerox WorkCentre 7120 or the HP LaserJet P2055dn. Round the average to 2 decimal places. (6)
- 1.7 The IT Manager is trying to work out what time of the day is the busiest for all the printers. Write a SQL statement to show the number of print jobs sent to the printer in each hour of the day. Your output should be as follows. Rename you fields as shown in the output. (5)

Hour	Count
5	23
6	63
7	268
8	399
9	446
10	268
11	309
12	335
13	199
14	187
15	116
16	26
17	1
19	2

- 1.8 Determine the total number of pages printed by each user. Rename the calculated field as Total. Display the records in descending order of the total number of pages printed. A sample of the output is shown below: (7)

FullName	Total
Frank D. McCoy	3447
Nathan Benecke	2719
Margarita Nichas	2543
Carla Esterhuizen	2328
Ute Smith	1614
Mia Angelova	1296
Janet Chalmers	1095
David Edwards	870
Gary Cimme	852

SECTION B**OOP****80 MARKS**

The logs have been summarised to include the full name of the user, their email address and the total number of pages they have printed. Each line of the text file is a print log entry. A sample of the text file is shown below. Note that the text file includes teachers and students.

*You have been provided with the file **Logs.txt** in the **Section B** folder. The file contains a collection of names, email address and total number of pages separated by a comma. The example below shows the first 20 lines of the sample:*

Logs.txt

```
Frank D. McCoy,McCoyF@stbenedicts.co.za,3447
Nathan Benecke,BeneckeN@stbenedicts.co.za,2719
Margarita Nichas,NichasM@stbenedicts.co.za,2543
Carla Esterhuizen,EsterhuizenC@stbenedicts.co.za,2328
Ute Smith,SmithU@stbenedicts.co.za,1614
Mia Angelova,AngelovaM@stbenedicts.co.za,1296
Janet Chalmers,ChalmersJ@stbenedicts.co.za,1095
David Edwards,edwardsd@stbenedicts.co.za,870
Gary Cimme,CimmeG@stbenedicts.co.za,852
Christo Botha,BothaC@stbenedicts.co.za,829
Andre Oosthuysen,OosthuysenA@stbenedicts.co.za,777
Lee-Andre French,FrenchL@stbenedicts.co.za,636
Patrick Du Plooy,DuPlooyP@stbenedicts.co.za,571
Judy Mogg,MoggJ@stbenedicts.co.za,565
Rauri Maarman,MaarmanR@stbenedicts.co.za,481
Caron Hoy,HoyC@stbenedicts.co.za,468
Claudia Carozzo,CarozzoC@stbenedicts.co.za,430
Karen McAnda,McAndaK@stbenedicts.co.za,386
Gwen Cook,CookG@stbenedicts.co.za,364
Ursula Visentin,VisentinU@stbenedicts.co.za,333
```

QUESTION 2**29 MARKS**

- 2.1 Create a class called **Log** with fields to store the name, email address and the total number of pages printed. Use appropriate types for you fields. (4)
- 2.2 Code a parameterised constructor that will assign values to each of the fields. Convert the name field to capital letters. (5)
- 2.3 Code accessor and mutator fields for all the methods. (4)

- 2.4 Code a **toString** method that will return the fields combined as a string separated by tabs in the following format:

Name<tab>email<tab>total

DYLAN GEDDES Dylan.Geddes@alumni.stbenedicts.co.za 8 (4)

- 2.5 Code a method called **getSurname** to return the surname of a name in capital letters using the name field. You may assume that the surname will be after the first space in the name. (4)

- 2.6 Code a method called **changeAlumni** to change the email address of each student by removing the word "student" and replacing it with the word "alumni". You may NOT use the replace method. You may use indexOf, the Scanner class or the split method.

For example Matteo.Panter@student.stbenedicts.co.za must become Matteo.Panter@alumni.stbenedicts.co.za. (8)

QUESTION 3

45 MARKS

- 3.1 Code a class called **LogArray** to store 200 logs in an array called **logArray** and a variable to record the number of **Log** objects in the array. (4)
- 3.2 Code a constructor to instantiate the array of logs using the text file **Log.txt**. Display an error message if you cannot find the file. (8)
- 3.3 Code a **toString** method to display each log, in the format of the **toString** of the **Log** class. Each log entry must appear on a new line. (5)
- 3.4 Code a method called **changeEmails** to change the email addresses of the student users. (4)
- 3.5 Code a method called **sort** to sort the array of log elements according to the surname of the user. (8)
- 3.6 Code a method to efficiently **search** for a log entry given the surname. Return the position of the log entry in the array if the surname is found, otherwise the -1 if it is not found. (8)
- 3.7 Code a method called **scienceTotal** to determine the total amount printed by the Science department. The surnames of the members of the Science department are: ESTERHUIZEN, MCCOY, VISENTIN, ANGELOVA and DU PLOOY. Use the search method in 3.6 to help you. Marks will be awarded for efficiency of code. (8)

QUESTION 4

6 MARKS

- 4.1 Code a class called **LogUI**. (1)
- 4.2 Add code to instantiate a **LogArray** object. (1)
- 4.3 Add code to display all the log entries. (1)
- 4.4 Add code to change the email address of the students to alumni and display the array. (1)
- 4.5 Add code to sort and then display the log entries. (1)
- 4.6 Add code to calculate and display the total amount printed by the science department. (1)