Tshwane University of Technology
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INSTRUCTIONS TO CANDIDATES

This paper is a practical paper. The students are required to use a note pad that must be uploaded into a folder which is saved as **student number**. Send the folder to the lecturer's computer or upload it to **ec**. Name the notepad as **DSO23BT_EX213**. Write your details at beginning of your note pad and list your questions appropriately. The database to be used is **Student** and will be distributed to the students' computer for them to upload it to their computer's hard drive. Answer ALL the questions.

REQUIREMENTS: Never tear any page from this question paper. Complete this cover page before you start answering the questions.

Time : 240 Minutes/ 4 Hours

Total Marks : 100

Final Marks : 100

Total Pages : 5 including this page

Annexure : 1 pages

Examiner : Mr M.C PHIRI
: Mr K. MOGAPI

Moderator : Mr T.E MADZUNYE

Sign below to confirm that you understand the instructions above.

SIGNATURE

Tshwane University of Technology

DEPARTMENT Of SOFTWARE ENGINEERING

NOVEMBER 2013

SUBJECT CODE : DSO23BT/SFW20BT

SUBJECT NAME : DEVELOPMENT SOFTWARE IIB/
SOFTWARE SKILL IIB

COURSE NAME : SOFTWARE ENGINEERING/
FINANCIAL INFORMATION SYSTEMS

LECTURER'S NAME	
COMPUTER #	
VENUE	

STUDENT NUMBER								

SURNAME	INITIALS

Q1	Q2	Q3	Q4	Q5	Total
22	26	19	25	08	100

%

Question 1 [22]

Create a PL/SQL programming block that accept a cell phone number from the user. Test the first 3 digits to allocate it to the correct service provider. The block must use user-defined exceptions to trap errors (**e_invalid_phone** exception will be raised if an invalid phone number is entered and **e_more_digits** will be raised if the phone number entered has more or less 10 digits.
Use the following cell phone digits to allocate the service providers. Format the cell phone number for output purpose except for a cell phone number with few or more digits entered.

Cell phone code	Service Provider
081 or 061	8ta
082 or 072 or 079	Vodacom
074 or 084	CellC
073 or 078 or 083	MTN

Your output must resemble the one below:

Example 1: (invalid number)
Enter value for cellphone_no: 0891234567
089 123 4567 is an invalid cellphone number

Example 2: (too many or too little cell phone numbers)
Enter value for cellphone_no: 08213454568
08213454568 is more than or less than 10 digits enter correct digits

Example 3: (correct answer or answers)
Enter value for cellphone_no: 0812341526
081 234 1526 belongs to 8ta

Enter value for cellphone_no: 0842345610
084 234 5610 belongs to CellC

Question 2 [26]

2.1. Write a PL/SQL block that access the database using the staff number entered by the user to calculate and display the lecturer's information and the number of subjects he/she is lecturing. An predefined exception must be raised when a staff number entered has no subjects.
The staff number variable used above must be used as a parameter of the cursor **lecture_subjects_cursor** which display the subject code and names of the subject lectured by the above lecturer. (18)

Enter value for employee_no: 800700
800700 is not lecturing any subject.

Enter value for employee_no: 622300
Pretorius CM(622300) lectures 2 subjects which is/are :
DS2 Development Software 2
DS3 Development Software 3

2.2. Write a PL/SQL block that create an implicit cursor that uses and SQL sub-query to list all the subjects that are lectured by more that one lecturer. The block must display the subject code, subject name and lecturer name(which is initials and surname). Sort in ascending order of subject code. (08)

CODE	SUBJECT NAME	LECTURER NAME
*******	**********	**********
DS2	Development Software 2	CM Pretorius
DS2	Development Software 2	HG Erasmus
IS1	Information Systems 1	NL Mhlanga
IS1	Information Systems 1	PJ Venter
POI	Priciples Of Information Systems	G Olivier
POI	Priciples Of Information Systems	PJ Venter

Question 3 [19]

Write a PL/SQL block that create a record **student_reg_record** that contains the following fields: Student no, surname, initials, sex, subject_tot(store total subject registered by student) and total_cost(stores the total fees for subjects registered by the student). Create an explicit cursor **student_subject_cursor** that uses the above records to display the information of all students that have registered subjects worth more than R3000.00. The sex field is a single character field that contains either **M** or **F** then for all **M** values store **Male** into a variable and the same applies to **F** the variable must accept **Female**

Example output:

```
Students whose subject fees are above R3000.00
==========================================

97003455 Smuts JH is a Male student who have registered for 6 subject(s) at a total cost of R7,900.00
96445566 Sleepy AL is a Female student who have registered for 6 subject(s) at a total cost of R8,400.00
```

Question 4 [26]

4.1. Write a PL/SQL block that create a FUNCTION **average_marks** that accepts a student no parameter and return the calculated average mark from the final marks of all the subjects registered by the student.

4.2. Write a PL/SQL block that create a PROCEDURE **subject_list** that calls the above function to bring along the returned average mark. The procedure must displace the student's personal details as below and must use an implicit cursor **student_subj_list_cursor** to display all the subjects he/she has registered for including their final marks. Then lastly display the received average below the list of subjects.

Example:

```
AL SLEEPY(96445566) has written exam on the following subjects:
---------------------------------------------------------------------------------------

DS2  Development Software 2    49
IS1  Information Systems 1     71
SP1  Systems Programming 1     57
FS1  Financial Skills 1        76
QT1  Quantitative Techniques 1 54
OR3  Operational Research 3    53

Average mark is 60
```

Question 5 **[08]**

Write a PL/SQL block that create a PROCEDURE **prerequisite_subject** that accepts a prerequisite subject as a parameter and then uses an explicit cursor **subject_list** to display the subjects whose prerequisite has been accepted. Do not hard code the value but enter it as a substitution value of the parameter.

Example 1

```
SQL> exec prerequisite_subject('DS1');
DEVELOPMENT SOFTWARE 1 is the prerequisite of :
--------------------------------------------------------------------------------
DS2    Development Software 2
```

Example 2

```
SQL> exec prerequisite_subject('IS1');
INFORMATION SYSTEMS 1 is the prerequisite of :
--------------------------------------------------------------------------------
IS2    Information Systems 2
SP1    Systems Programming 1
```

STUDENT DATABASE STRUCTURE