Reg. No. : 2000/000752/07

MAIN CAMPUS
292 SMITH STREET
DURBAN
4000

FACULTY OF INFORMATION TECHNOLOGY

BSC IN INFORMATION TECHNOLOGY

3rd YEARS

ACADEMIC YEAR 2022

ASSIGNMENT BOOKLET

Registered with the Department of Education as a Private Higher Education Institution under the Higher Education Act, 1997. Registration Certification No. 2000/HE07/008

NB: **1. Candidates are advised to read the guide lines.**
2. For reference use prescribed, recommended books and other source you may come across.
3. Correct referencing carries 10 Marks.

GUIDELINES

The purpose of an assignment is to ensure that the Learner is able to:

- Use methods of enquiry and research in a disciplined field.
- Interpret and evaluate text.
- Have a sound understanding of key principles and theories, rules and awareness.
- Solve unfamiliar problems using correct procedures as well as investigate and critically analyse information and report thereof.
- Present and communicate information reliably and coherently.

Instructions and guidelines for writing assignments

1. Use the correct cover page provided by the institution.
2. All essay type assignments must include the following:

2.1 Table of contents

2.2 Introduction

2.3 Main body with subheadings

2.4 Conclusions and recommendations

2.5 Bibliography

3. The length of the entire assignment **must** have minimum of 5 pages. Preferably typed with font size 12

3.1 ***The quality of work submitted is more important than the number of assigned pages*.**

4. Copying is a serious offence which attracts a severe penalty and must be avoided at all costs. If any learner transgresses this rule, the lecturer will retain the assignments and ask the affected learners to resubmit a new assignment which will be capped at 50%.
5. Use the Harvard referencing method.

ASSIGNMENT DUE DATES

Module	Due Date	Signature
COMPULSORY MODULES		
IT PROJECT MANAGEMENT 700	01 APRIL 2022	
PROGRAMMING (JAVA) 731 (ITM & SE)	01 APRIL 2022	
CYBER SECURITY 700	13 APRIL 2022	
MOBILE APP DEVELOPMENT 700	13 APRIL 2022	
Elective Module (ITM) • IT STRATEGIC MANAGEMENT 731	06 MAY 2022	
Elective Module (SD) • PROGRAMMING 741	06 MAY 2022	
Elective Module (SE) • SOFTWARE ENGINEERING 700	06 MAY 2022	

RICHFIELD

FACULTY OF INFORMATION TECHNOLOGY

IT PROJECT MANAGENT 700

1ST SEMESTER ASSIGNMENT

Name & Surname: _____ **ITS No:** _____

Qualification: _____ **Semester:** _____ **Module Name:** _____

Submission Date: _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	45		
QUESTION TWO	45		
TOTAL MARKS	**90**		
MARKS FOR TECHNICAL ASPECTS			
1. TABLE OF CONTENTS Accurate numbering according to the numbering in text and page numbers.	2		
2. LAYOUT AND SPELLING Font – Calibri 12 Line Spacing – 1.0 Margin should be justified.	3		
3. REFERENCE According to the Harvard Method	5		
TOTAL MARKS	**10**		
TOTAL MARKS FOR ASSIGNMENT	**100**		
Examiner's Comments:			
Moderator's Comments:			
Signature of Examiner:	**Signature of Moderator:**		

QUESTIONS **[90 MARKS]**

NB: You are required to answer the following two questions. Each question carries *(45 marks)* and your answer for each question should be around *300* words minimum:

QUESTION ONE **(45 MARKS)**

1.1 With the aid of theory and practical examples, identify five common project risk strategies employed to address threats that your project may face. **(45)**

QUESTION TWO **(45 MARKS)**

2.1 "*Projects are often completed late".* With reference to this statement, describe the techniques you would use as a project manager to improve the accuracy and reliability of your project schedule. In responding to the question be sure to: critique project theory based on your experience and understanding. This is important –don't just "regurgitate" the theory. Provide examples, data or other relevant information to support your discussion. Examples can be from work experience, research, and study group experiences.

Your examples should demonstrate the theoretical points you are asserting in the questions. **(45)**

TOTAL MARKS: 100

RICHFIELD

FACULTY OF INFORMATION TECHNOLOGY

SOFTWARE ENGINEERING 700

1ST SEMESTER ASSIGNMENT

Name & Surname: _____ ITS No: _____

Qualification: _____ Semester: _____ Module Name: _____

Submission Date: _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	30		
QUESTION TWO	30		
QUESTION THREE	30		
TOTAL MARKS	90		
MARKS FOR TECHNICAL ASPECTS			
1. TABLE OF CONTENTS	2		
2. LAYOUT AND SPELLING	3		
3. REFERENCE	5		
TOTAL MARKS	10		
TOTAL MARKS FOR ASSIGNMENT	100		
Examiner's Comments:			
Moderator's Comments:			
Signature of Examiner:	Signature of Moderator:		

QUESTIONS **[90 MARKS]**

QUESTION ONE **[30 MARKS]**

1.1 Define coupling and then present a critical essay on the various types of coupling. **Marks will be awarded for personal experiences/practical examples.** **(15)**

1.2 Write an argumentative essay on the role of testing in a software project. The essay should describe testing's purpose and limitations, and touch upon black-box, white-box and acceptance testing, ultrahigh reliability and beta-testing. *(A mere list of definitions will receive little credit.)* **(15)**

QUESTION TWO **[30 MARKS]**

Read the scenario below and answer the following questions:
You are working on an office automation project in the printing industry. The system to be developed is meant to support the work of journal editors. The management objective for this project is to save labour costs; the editors' objective is to improve the quality of their work.
In the development of this project you may opt for two strategies. The first strategy is to start a thorough analysis of the user requirements, after which the system is built according to these requirements. The second strategy starts with less complete requirement analysis phase, after which a pilot version is developed. This pilot version is installed in a few departments. Further development of the system is guided by the gained experience in working with the pilot version.

2.1 What would you do if you were the manager? Discuss possible ramifications of these opposing objectives on the project. **(15)**

2.2 Critically outline the pros and cons of both strategies described above. Which strategy do you favour? Justify your answer with relevant theory. **(15)**

QUESTION THREE **(30 MARKS)**

3.1 Using examples, evaluate the open source model of software development. In your discussion highlight some of its advantages and disadvantages. Furthermore, explain some of the alternatives that also exist. **(15)**

3.2 Discuss and explain the software development life of a software system that can be represented as a series of **cycles** within the Unified Process. **(15)**

TOTAL MARKS: 100

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FACULTY OF INFORMATION TECHNOLOGY

PROGRAMMING 731 (JAVA)

1ST SEMESTER ASSIGNMENT

Name & Surname: _____ **ITS No:** _____

Qualification: _____ **Semester:** _____ **Module Name:** _____

Submission Date: _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	40		
QUESTION TWO	20		
QUESTION THREE	40		
TOTAL MARKS	**100**		
Examiner's Comments:			
Moderator's Comments:			
Signature of Examiner:		**Signature of Moderator:**	

QUESTION ONE **(40 MARKS)**

1. Create a java program that will count all words in a sentence. The program should have a minimum of two classes.

1.1 The first class should be named **class1,** this class will have the following:

- The **main** method (starting point) **(5)**
- The object of **class2** **(5)**
- Should also call the get method **count_words(String str)** **(5)**

1.2 The second class should be named **class2,** this class should have the following:

- A constructor **(5)**
- A get method named count_words(String str) **(10)**

1.3 Construct a flowchart for **class1** and **class2** both combined**.** **(10)**

QUESTION TWO **(20 MARKS)**

Create a Java program that will display the first 40 pentagonal numbers. Hint: A pentagonal number is a figurate number that extends the concept of triangular and square numbers to the pentagon, but, unlike the first two, the patterns involved in the construction of pentagonal numbers are not rotationally symmetrical. **(20)**

Expected Output:

```
1     5     12    22    35    51    70    92    117   145

176   210   247   287   330   376   425   477   532   590

651   715   782   852   925   1001  1080  1162  1247  1335

1426  1520  1617  1717  1820  1926  2035  2147  2262  2380

2501  2625  2752  2882  3015  3151  3290  3432  3577  3725
```

QUESTION THREE **(40 MARKS)**

3.1 Write a Java program that will compute the future investment value at a given interest rate for a specified number of years. The java program should have a minimum of two classes.

3.1.1 classA

- The **main** method (starting point) **(5)**
- The object of **classb** **(5)**
- Should also call the void method named **futureInvestmentValue (double investment Amount, double monthlyInterestRate, int years)** **(15)**

3.1.2 classB

- A get method named count_words(String str) **(15)**

Expected Output:

Input the investment amount: 28000

Input the rate of interest: 7

Input number of years: 6

Years	Future Value
1	30024.12
2	32194.57
3	34521.92
4	37017.51
5	39693.51
6	42562.95

TOTAL MARKS: 100

RICHFIELD

FACULTY OF INFORMATION TECHNOLOGY

IT STRATEGIC MANAGEMENT 731

1ST SEMESTER ASSIGNMENT

Name & Surname: _____ ITS No: _____

Qualification: _____ Semester: _____ Module Name: _____

Submission Date: _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	**40**		
QUESTION TWO	**25**		
QUESTION THREE	**25**		
TOTAL MARKS	**90**		
MARKS FOR TECHNICAL ASPECTS			
1. TABLE OF CONTENTS Accurate numbering according to the numbering in text and page numbers.	2		
2. LAYOUT AND SPELLING Font – Calibri 12 Line Spacing – 1.0 Margin should be justified.	3		
3. REFERENCE According to the Harvard Method	5		
TOTAL MARKS	**10**		
TOTAL MARKS FOR ASSIGNMENT	**100**		
Examiner's Comments:			
Moderator's Comments:			
Signature of Examiner:	**Signature of Moderator:**		

QUESTION ONE **(40 MARKS)**

1.1 Using practical examples, critically evaluate the differences between the following strategies for achieving competitive advantage in a business environment. In your evaluation make sure you use practical examples in South Africa and International to elaborate your comprehension of the following strategies**:**

1.1.1 Cost Leadership Strategy **(10)**
1.1.2 Differentiation Strategy **(10)**
1.1.3 Focus strategy **(10)**

1.2 *"Implementing strategies in an environment characterized by rapid change is a tremendous challenge*."

In view of the above statement, discuss in detail the key drivers which are vital for successful strategy implementation. **(10)**

QUESTION TWO **(25 MARKS)**

Critically discuss the concept of a Strategic Business Unit in a Multi Business organisation focusing on the three levels of Strategy, the Functional Goals and the objectives at each level **(25)**

QUESTION THREE **(25 MARKS)**

One of the methods to conduct an internal audit is through the construction of an Internal Factor Evaluation Matrix (IFE Matrix). An internal audit is whereby the organization checks all the fields of the system to ensure if they are up to date and up to standard, especially before external audits (for publications).

Provide a critical discussion on the Strengths and Weaknesses in any Matrix that can be conducted during the internal audit. **(25)**

TOTAL MARKS: 100

RICHFIELD

FACULTY OF INFORMATION TECHNOLOGY

PROGRAMMING 741

1ST SEMESTER ASSIGNMENT

Name & Surname: _____ ITS No: _____

Qualification: _____ Semester: _____ Module Name: _____

Submission Date: _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	30		
QUESTION TWO	40		
QUESTION THREE	30		
TOTAL MARKS FOR ASSIGNMENT	100		
Examiner's Comments:			
Moderator's Comments:			
Signature of Examiner:		Signature of Moderator:	

QUESTION ONE (30 MARKS)

In the U.S coin system, the penny is the basic coin, and it is equal to cent, a nickel is equivalent to 5 cents, a dime is equivalent to 10 cents, a quarter is equivalent to 25 cents, and half-dollar is equivalent to 50 cents. Design and implement a program that would make use of the functions shown below. Each function has a single **int** formal parameter Amount.

a) HalfDollars (): Compute the maximum number of half-dollars that could be used in making change for Amount.

b) Quarters():Compute the maximum number of quarter that could be used in making change for Amount

c) Dimes ():Compute the maximum number of dimes that could be used in making change for Amount

d) Nickels () : Compute the maximum number of nickels that could be used in making change for Amount

QUESTION TWO (40 MARKS)

2.1 Design and implement a program that computes final averages for a set of grades. The program reads the grades from a user. **(10)**

The format of a grade line is:

N grades1, grades2, ……., grades5

Where N is total number of students and grades is the *i*th score. All scores must be between 0 and 100.

The program reads the grades from the user, calculate and display the average.

The weighted average is computed as:

NB: Your program should validate its input. That is, it should make sure each score is between 0 and 100 and that each student has *n* scores/ grades. If a student's grades are invalid, the program should display an error message. The program should contain modules / functions that handles validating the input.

2.2 Extend 2.1 so that the program also determines a final letter grade. **(10)**
The letter grade ranges are:

AVERAGE	LETTER GRADE
0-59	F
60-69	D
70-79	C
80-89	B
90-100	A

2.3 Extend **2.2** so that the program computes and displays an overall class average, lowest and highest grade. Use functions **getMax** and **getMin** to determine the lowest and the highest grades of students. **(10)**

2.4 Extend **2.3** so that the program prints a distribution chart of grades data using technique similar to that in Figure 1. **(10)**

FIGURE 1: Sample

```
Welcome To The Grade Result:
            Test 1      Test 2      Test  3      Average
Student 1     87          96          70          84.33
Student 2     68          87          90          81.67
Student 3     94          100         90          94.67
Student 4     100         81          82          87.67
Student 5     83          65          85          77.67
Student 6     78          87          65          76.67
Student 7     85          75          83          81.00
Student 8     91          94          100         95.00
Student 9     76          72          84          77.33
Student 10    87          93          73          84.33

Lowest Grade: 65
Highest Grade: 100

Overall Grade Distribution:
   0-9:
10-19:
20-29:
30-39:
40-49:
50-59:
60-69: ***
70-79: ******
80-89: ***********
90-99: *******
  100: ***
```

QUESTION THREE **(30 MARKS)**

3.1 Write a function named "reverse" that takes as its arguments the following:

(a) an array of floating point values; **(15)**

(b) an integer that tells how many floating point values are in the array. **(15)**

The function must reverse the order of the values in the array.

Thus, for example, if the array that's passed to the function looks like this:

0	1	2	3	4
5.8	2.6	9.0	3.4	7.1

then when the function returns, the array will have been modified so that it looks like this:

0	1	2	3	4
7.1	3.4	9.0	2.6	5.8

The function should not return any value.

TOTAL MARKS: 100

RICHFIELD

FACULTY OF INFORMATION TECHNOLOGY

MOBILE APPLICATION DEVELOPMENT 700

1ST SEMESTER ASSIGNMENT

Name & Surname: _____ ITS No: _____

Qualification: _____ Semester: _____ Module Name: _____

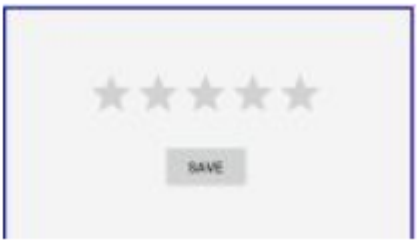
Submission Date _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	45		
QUESTION TWO	45		
TOTAL MARKS	90		
MARKS FOR TECHNICAL ASPECTS			
1. TABLE OF CONTENTS	2		
2. LAYOUT AND SPELLING	3		
3. REFERENCE	5		
TOTAL MARKS	10		
TOTAL MARKS FOR ASSIGNMENT	100		
Examiner's Comments:			
Moderator's Comments:			
Signature of Examiner:		Signature of Moderator:	

QUESTION ONE (45 MARKS)

1. Create a new colour resource to be used as the background for the data entry part of the MainActivity. Search on the web for the color and associated Android color code (color codes always start with a # symbol), and add it to the color.xml file. Set the background of the data entry part of the layout to that color resource.
2. Make the navigation work for all activities in the app. Copy the navigation bar XML code to the layout associated with each activity. Copy the Java code that makes the buttons work to the Java file associated with each activity. You will have to modify that code to reference the activity it is in, rather than MainActivity. Add code to disable the ImageButton associated with the activity that is displayed.
3. Modify the DatePickerDialog layout so that the Cancel/OK buttons are centered. Hint: You'll have to use the gravity attribute in the LinearLayout.
4. Create project called ContractorCalculator.
5. The main activity layout should contain two EditTexts, one button, and eight TextViews
6. The Calculate button should add the labor and material costs from the EditTexts and put the result in the TextView next to SubTotal. Tax should be calculated using a 5% rate (use a constant) and displayed in the TextView next to Tax. The tax and subtotal should be added together and displayed in the TextView next to Total.

7. Create a project called MealRater.
    - The activity layout should contain two EditTexts, one button, and four TextViews
    - One edit text will allow entering the name of the dish and the other the name of the restaurant.
    - The button will open a dialog that will allow the user to rate the meal on a 1 to 5 scale and then display that rating in a TextView.
    -



8. Modify the Contact List app created in **Chapter Navigation AND Interface Design** to do the following:
    - Create a custom dialog to ask users their relationship to the contact. Use radio buttons to present the following choices: Friend, Family, Coworker, and Acquaintance. Add a TextView to display the relationship below the contact's name. Add a button to open the dialog before the relationship TextView. The custom dialog should return the selection when the user taps the OK button on the dialog. It should display Not Set if the user taps the Cancel button.

QUESTION TWO (45 MARKS)

1. Add the choice of a background colour to the settings activity. Create a couple of new color resources in color.xml. Add these choices as a RadioGroup to the settings screen. You will have to modify the layout to place all the RadioGroups in a ScrollView so that you can see them all. Make the choice persist in a SharedPreferences object. Use the following command in the onCreate method of the settings activity to set the chosen background color:

scrollviewobject.setBackgroundResource(R.color.colorresourcename);

2. Create a method in ContactDataSource that will only update the Contact's address. Create a ContactAddress object to pass data to the method.

3. Modify the Contact table to include a field bestFriendForever that is an integer data type. Modify the onUpgrade method of ContactDBHelper to insert this new field without losing the data that is currently in the table.

4. Modify ContractorCalculator to display the tax rate. Use two TextViews: One to display the text "Tax Rate:" and the other to display the current tax rate. Add a button, "Change Rate," that will open a custom dialog that allows the user to enter the tax rate. Save the tax rate in a SharedPreferences object. When the dialog is closed, the new tax rate should be displayed in the TextView. The app should use this rate for calculations until it is changed. The tax rate should be loaded from the SharedPreferences object anytime the app opens.

5. Modify the MealRater app created in Question 1, to include a Save button. The button should save the restaurant name, meal, and rating to a database table. Create a DBMealRaterHelper class to create the database and a MealRaterDataSource class to provide the SQL insert statement for the data.

6. Create an app called MyFinances. The app should allow the storing of financial objects. The financial objects are CDs, Loans, and Checking accounts. CDs should be able to store the account number, initial balance, current balance, and interest rate. Loans should be able to store the account number, initial balance, current balance, payment amount, and interest rate. Checking accounts should be able to store the account number and current balance.

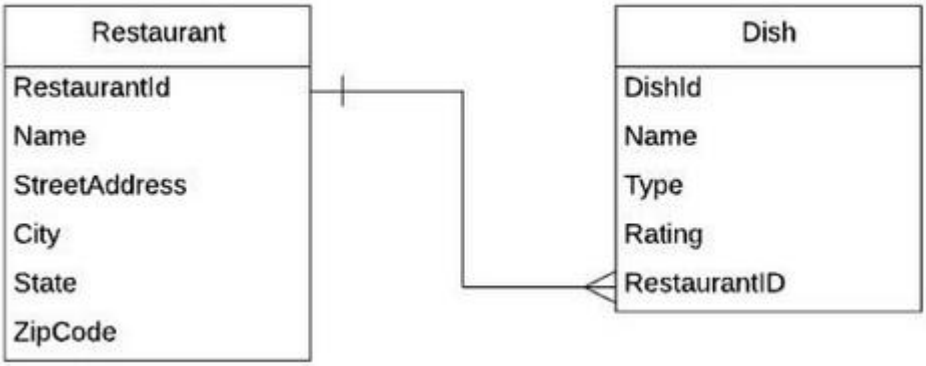
- The user should select the type of account to enter with RadioButtons.
- Selection of the account should enable/disable relevant fields on the data entry activity.
- Store objects using a database table when the user clicks the Save button.
- The Save button should also display a saved message and clear the screen.
- A Cancel button should clear the screen without saving any data.

7. Create an app called HotSpots! The MainActivity should allow the user to save the name and address of a bar or nightclub into a database table. Add a Rate button to the activity. The Rate button will open a custom dialog that will allow the user to rate the establishment on a 1 to 5 scale for each of three dimensions: beer selection, wine selection, and music. Save the ratings in the table and display the average rating on the MainActivity when the dialog is closed. Each rating should be stored individually (a separate field) so they can be adjusted later.

8. Create an app called Super!Market. The MainActivity should allow the user to save the name and address of a supermarket into a database table. Add a Rate button to the activity. The Rate button will open a second activity that will allow the user to rate the establishment on a 1 to 5 scale for each of five dimensions: liquor department, produce department, meat department, cheese selection, and ease of checkout. A Save button will store the ratings in a table and display the average rating on the Rating Activity. Each rating should be stored individually (a separate field) so they can be adjusted later. Add a button to navigate back to the MainActivity.

9. Create an app called RestaurantRater that allows the user to save the name and address of a restaurant into a database table and to save entrée, appetizers, and desserts associated with a

specific restaurant in a second related table. The second table should contain the following fields: name (of dish), type (entrée, dessert, etc.) and a rating on a 1 to 5 scale. The MainActivity should allow the saving of the restaurant and its address and include a button to open a RateDish activity. This button should pass the name of the restaurant (or id) to the activity. This value will be used as the foreign key in the second table.



TOTAL MARKS: 100