RICHFIELD

FACULTY OF INFORMATION TECHNOLOGY

PROGRAMMING 741 C#

1ST SEMESTER ASSIGNMENT

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

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

Date Submitted: _____

ASSESSMENT CRITERIA	MARK ALLOCATION	EXAMINER MARKS	MODERATOR MARKS
MARKS FOR CONTENT			
QUESTION ONE	30		
QUESTION TWO	30		
QUESTION THREE	30		
TOTAL	90		
MARKS FOR TECHNICAL ASPECTS			
Code Layout, Structure and Comments	10		
TOTAL MARKS FOR ASSIGNMENT	100		
Examiner's Comments:			
Moderator's Comments:			
Signature of Examiner:		**Signature of Moderator:**	

ASSIGNMENT INSTRUCTIONS

1. All assignment must be typed, not handwritten.
2. Every assignment should include the cover page, table of contents and a reference list or bibliography at the end of the document
3. A minimum of five current sources (references) should be used in all assignments and these should reflect in both in-text citations as well as the reference list or bibliography
4. In-text citations and a reference list or bibliography must be provided. Use the Harvard Style for both in-text citations and the reference list or bibliography
5. Assignments submitted without citations and accompanying reference lists will be penalised.
6. Students are not allowed to share assignments with fellow students. Any shared assignments will attract stiff penalties.
7. The use of, and copying of content from websites such as chegg.com, studocu.com, transtutors.com, sparknotes.com or any other assignment-assistance websites is strictly prohibited. This also applies to Wiki sites, blogs and YouTube.
8. Any pictures and diagrams used in the Assignment should be properly labelled and referenced.
9. Correct formatting as indicated on the Cover Page should be followed (font-size 12, font-style Calibri, line spacing of 1.0 and margins justified)
10. All Assignments must be saved in PDF using the correct naming-convention before uploading on Moodle. Eg StudentNumber_CourseCode_Assignment (402999999_WBT512A_Assignment).

QUESTION 1 **(30 MARKS)**

Create a C# console application with the following guidelines.

Context: The application that you will be creating will allow the users to enter their various Motor Vehicle arrangements(to buy or hire) and have their expenses calculated.

The program should complete the following objectives.

The application must first obtain the users monthly gross income. And then their monthly tax deductions by subtracting the 2 then you will get the users net income. Next the application must gather the users expenditures for the motor vehicle: fuel, insurance, parking fees and maintenance costs, all of the expenses needs to be stored in an array.

Once the program has collected the above information from the user, the user needs to choose between buying or hiring a Motor Vehicle. If the user chooses hiring the program should ask the user for hiring cost per month, the program should display the users gross income, the net income and the amount left after all expenses are paid in this case hiring is also an expense

If the user chooses to buy the motor vehicle(assuming they obtained a loan from the bank) they need to enter the following information(purchase price of the motor vehicle, total deposit, interest rate in percentage, number of months to repay between 120 and 240 months) the application should then calculate the monthly motor vehicle loan repayment on the motor vehicle based on the values the user entered. If the motor vehicle loan is more than a third of the user gross income the program should prompt the user approval is unlikely.

The application should display the user's gross income, the net income and the amount left after all expenses are paid in this case the motor vehicle loan is part of the expenses. Create an abstract class expense from which motor vehicle loan etc can be derived. Store expenses in an array

YOU ARE REQUIRED TO USE CLASSES AND INHERITANCE.

QUESTION 2 (30 MARKS)

Create a C# Console application named Events, that will calculate a Tribonacci number. That is the user will input the nth number in a Tribonacci sequence then a method will return a value for that nth number in the Tribonacci sequence. In this case you need to use an asynchronous delegate with a callback method. This technique is very effective since calculating Tribonacci numbers can be quite large given the input value.

While your Tribonacci method is doing its calculation, have your main thread print out every second the Thread id for the main Thread and also print out the text on the console “continuing to do work”. Also check if it belongs to a Thread pool.

Bonus marks will be given for creative functionality beyond the above project specifications

QUESTION 3 (30 MARKS)

Zanempilo is a student at Richfield, lives in Durban and goes to his hometown from time to time. He is very keen on cricket, but is busy during weekdays and plays cricket only during weekends and on holidays. Zanempilo plays in Durban every Saturday, when he is not working, and he is not travelling to his hometown and also during two-thirds of the holiday. He travels to his hometown h times a year, where he plays cricket with his old friends on Sunday. Zanempilo is not working three-quarters of the weekends, during which he is in Durban. Furthermore, during leap years Zanempilo plays 20% more cricket than usual.

We accept that the year has exactly 48 weekends, suitable for volleyball.

Write a C# program that calculates how many times Zanempilo has played volleyball through the year.

Round the result down to the nearest whole number(e.g 2.15->2; 9.95 ->9)