FINAL ONLINE SUMMATIVE ASSESSMENT

PROGRAMME	Bachelor of Commerce in Information and Technology Management
MODULE	Informatics 1B
YEAR	One (1)
INTAKE	January 2023 Semester 2
DATE	03 November 2023
TOTAL MARKS	100

SECTION A **[40 MARKS]**

Read the following extract and answer ALL the questions in this section.

A data file is any file that you store on your computer. By this definition, a word processing document, a spread sheet, an image and a text file can all be described as data files, simply because they store data; for example, the word processor document and the text file will store text, and the spread sheet will typically store facts and figures. When it comes to storing data from your applications, you may use data files. Data files are essentially ordinary text files which store data in ways which make it a little easy for your application to retrieve and manipulate. Often you will want to store data permanently on a storage device in such a way that the data is not lost when the program exits.

Source: Informatics 1B Module Guide

Question 1 **(20 Marks)**

1.1 Explain how a sequential file works. (5 marks)

1.2 Elaborate on the importance of sequential files. (5 marks)

1.3 Provide three uses of sequential files. (6 marks)

1.4 Explain the differences between indexed file and direct access file organization. (4 marks)

Question 2 **(20 Marks)**

"Often you will want to store data permanently on a storage device in such a way that the data is not lost when the program exits". Explain FIVE (5) key differences between databases and traditional file systems.

SECTION B **[60 MARKS]**

Answer ALL the questions in this section - *[Include a screenshot of the output for each program]*

Question 3 **(20 Marks)**

3.1 Write a complete Java program called List_Q3 for the LinkedList pseudocode below: (10 marks)

1.Create mylist
2. add(2*3)
3. addLast(10-6)
4. addFirst(100)
5. add(1,'#')
6. Print mylist
7. remove(2)
8. removeFirst()
9. removeLast
10. Print mylist

3.2 Write a complete Java program called Display that includes a String array called fruit [ ]. The array fruit [ ] must store 5 names of fruit and this should be output using a loop structure. Any five names of fruit must be stored in the array. (10 marks)

Question 4 **(20 Marks)**

4.1 Write a Java program called Stack_Q4 for the following Stack pseudocode and show the output for the remaining elements in the Stack.: (10 marks)

Plan:

1. Create stack st
2. Add the element "This is the" to the stack
3. Add the element "final summative" to the stack
4. Add the element "for Informatics 1B" to the stack
5. Print stack st
6. Remove the last item in the stack
7. Print stack st

4.2 Write a Java program called Queue_Q4 for the following plan: (10 marks)

Plan:

1. Create queue Q1
2. Add(45)
3. Add(30)
4. Remove()
5. Add(201)
6. Print Peek()
7. Remove()
8. Add(1001)
9. Print queue

Question 5 **(20 Marks)**

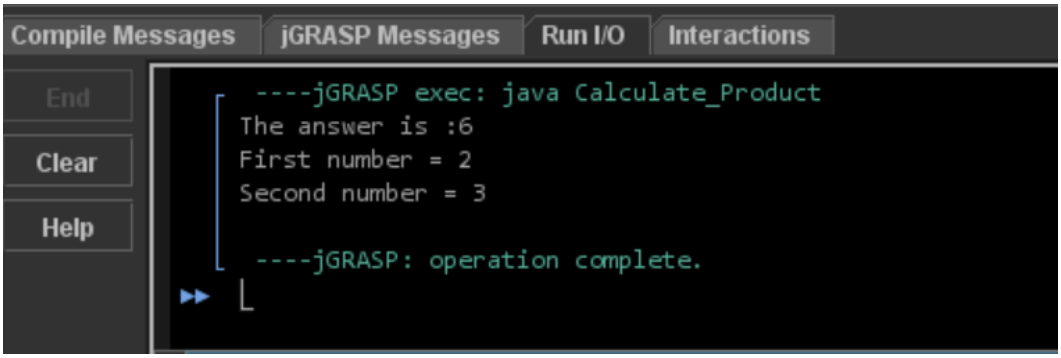
Create a constructor class **Multiply** that has public integer variables **num1 and num2**. Include a **default constructor** and a method **Product** that accepts the two integer parameters, calculates and outputs the multiplication.

In your main class **Calculate_Product** include a main method that prompts the user to enter 2 integer values and create a **reference called total** for the constructor Multiply. Output the values entered by the user and the product of the values in the command line window.

Example:

Input = 2, 3

Output example:



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