

LEOPOLDTAKAWIRA HIGH SCHOOL ADVANCED LEVEL

PROGRAMMING

COMPUTER SCIENCE

6023/2

L6 Paper 2 PRACTICAL

ADDITIONAL MATERIAL:

CD/ FLASH DRIVE

TIME: 1:30

SEMINAR QUESTIONS

INSTRUCTIONS TO CANDIDATES

This is a purely practical examination. All answers should be printed. Handwritten answers will not be accepted.

ANSWER ALL QUESTIONS

The number of marks are given in [] at the end of each question.

Each answer sheet should include the following information in the header section

- your full name and class

All answers should be correctly and clearly numbered

MARKS WILL NOT BE ALLOCATED FOR WRONGLY NUMBERED QUESTIONS

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1(a) Write an algorithm of a program that accepts 50 numbers through the keyboard and outputs the smallest, highest and average of all the numbers entered.

[10]

(b) Convert the above algorithm in (a) into a program. Use a text editor or IDE environment to produce the code.

[11]

c) Write a program code that will use a loop to create the array given below and accept its values.

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]
9	12	15	17	4	5	8	9

[9]

(2) Factorial is a mathematical function which is defined as follows:

Factorial of $n = n * \text{factorial of } n - 1$ If $n > 1$ Otherwise factorial of 0 = 1

This function is defined for all positive integers, i.e. whole numbers greater or equal to zero. Factorial (n) = $n * \text{factorial } (n - 1)$ where $x > 0$ 1 where $x = 0$ Code a recursive function which returns the factorial, given a positive integer argument.

[10]

3. Write a function that calculates the sum of all even numbers between 1 and 100 using a loop.

[10]

The following is an array named Exams that stores 5 examination marks. Index positions are in square brackets below the array elements.

Exams 50 60 30 43 19

[0] [1] [2] [3] [4]

(a) Produce a binary tree of the array elements.

[5]

(b) Assuming that the element 50 is completely deleted and removed from the tree structure drawn in (a), draw the new binary tree structure after 50 has been removed.

[2]