451/2
COMPUTER STUDIES
Paper 2
PRACTICAL
Oct./Nov. 2003
2 ½ hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL
Kenya Certificate of Secondary Education
COMPUTER STUDIES
Paper 2
(PRACTICAL)
2 ½ hours

INSTRUCTIONS TO CANDIDATES:

1. *Type your name and index number at the right hand corner of each printout.*
2. *Write your name and index number on the diskette.*
3. *Write the name and version of the software used for each question attempted in the answer sheet.*
4. *Passwords **should not be used** while saving in the diskette.*
5. *Answer question 1 and **either** question 2 **or** 3.*
6. *All questions carry equal marks.*
7. *All answers **must** be saved in your diskette.*
8. *Make a printout of the answers on the answer sheets provided.*
9. *Hand in all the **printouts** and the **diskette**.*

This paper consists of 4 printed pages

Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing.

1 (A) Type the following passage using a word processing package and save it as Recur_1. Answer the questions that follow. Where necessary, use the numbering facility in the package. (31 marks)

RECURSION

An object is said to be recursive if it partially consists (or is defined in terms) of itself. Recursion is encountered not only in mathematics, but also in daily life. Who hasn't seen an advertising picture which contains itself?

Recursion is a particularly powerful means in mathematical definitions. A few familiar examples are those of natural numbers, tree structures and of certain functions.

(a) Natural numbers:

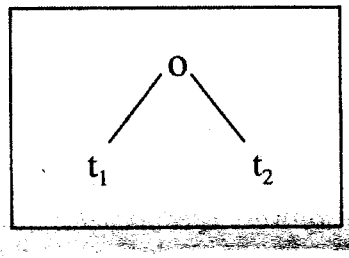
(i) 1 is a natural number.

(ii) the successor of a natural number is a natural number.

(b) Tree structures:

(i) O is a tree (called the empty tree).

(ii) if t_1 and t_2 are trees, then the following diagram is a tree drawn upside down.



(c) The factorial function n! (for non-negative integers).

(i) $0! = 1$.

(ii) if $n > 0$, then $n! = n \cdot (n-1)!$.

The power of recursion evidently lies in the possibility of defining an infinite set of objects by a finite statement. In the same manner, an infinite number of computations can be described by a finite recursive program, even if this program contains no explicit repetitions. Recursive algorithms, however are primarily appropriate when the problem to be solved or the function to be computed or the data structure to be processed are already defined in recursive terms. In general, a recursive program can be expressed as a composition Q of base statements Si (not containing P and P itself)

$P \equiv Q\ [Si, P]$.

The necessary and sufficient tool for expressing programs recursively is the procedure or subroutine for it allows a statement to be given a name by which this statement may be invoked.

(B) Required to:

(i) Centre and double underline the title. (3 marks)

(ii) Convert the 3rd paragraph starting from "The power of recursion .... and P itself" to two columns and justify them. (6 marks)

(iii) Insert your name into the passage as a footer so as to appear as © your name. (4 marks)

(iv) Convert the first two paragraphs into hanging paragraphs. (4 marks)

(v) Save the document as Recur_2. (1 mark)

(vi) Print the documents Recur_1 and Recur_2. (1 mark)

2 A filling station sells super, regular, diesel, kerosene, engine oil and gear box oil. In the month of January, the total sales in thousands of litres were: 107, 363, 605, 267, 68, 64 respectively. Given that the expected % growth rate in sales per month is 11·9%, 14·0%, 15·5%, 12·3%, 7·9% and 6·3% respectively,

(a) Enter the details into a worksheet and forecast the sales for the first half of the year. (23 marks)

(b) Using a formula, compute the average and total sales for each month. (6 marks)

(c) Using a formula, calculate the average and total sales for each product for the first half of the year. (6 marks)

(d) Use expressions to display the highest and lowest growth rates. (4 marks)

(e) Save the worksheet as "forecast". ($\frac{1}{2}$ mark)

(f) Create a bar graph that displays the total sales for all the products for the first half of the year. Save as "bargraph". ($8\frac{1}{2}$ marks)

(g) Print the documents "forecast" and "bargraph" (2 marks)

3 (a) Create a database file named Employee to store the following data: (20 marks)

Employee Number	Surname	First name	Wage $	Department
2548	Ali	Juma	110·00	Purchases
2569	Mwadime	Jane	125·00	Sales
2573	Munyao	Stephen	156·00	Machine shop
2580	Kyalo	John	170·00	Sales
2588	Nyambura	Janet	122·50	Security
2591	Wanyama	Fredrick	150·00	Metal stores
2593	Nyaga	Njogu	123·75	Machine shop
2618	Mang'oli	Lydia	178·30	Sales
2625	Kuria	Vincent	205·00	Costing
2633	Chebii	Annie	168·75	Liquid stores
2655	Ochieng'	Ochieng'	155·00	Security
2672	Cheptoo	Catherine	171·00	Metal stores
2679	Mueni	Judy	190·00	Liquid stores
2703	Lerionka	Joseph	215·00	Purchases
2709	Abdi	Hussein	157·50	Metal stores

(b) Create another set of values for each record containing the product of wages $ multiplied by 82·50. Label this column "Amount in shillings". Save the database as "Newdata". (7 marks)

(c) Query the Newdata database so as to display the:

Employee Number, Surname, Department and Amount in shillings for all employees whose first name starts with "J". Save the query as "QueryJ". (10 marks)

(d) Generate a report from newdata that displays the Employee Number, Surname, Department and Wages $ and display the total of wages $ paid at the bottom of the report. Save the report as "Report total". (10 marks)

(e) Print Newdata, QueryJ and Report total. (3 marks)