THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

136/2

COMPUTER SCIENCE 2
(PRACTICAL)
(For Both Schools and Private Candidates)

Time: 3 Hours **Friday, 22nd February 2013 a.m.**

Instructions

1. This paper consists of **three (3)** questions.
2. Answer any **two (2)** questions including question **one (1)**.
3. Each question carries **twenty five (25)** marks.
4. Submit printed codes and screenshots together with the softcopy of your work(s).
5. Save your work on the desktop in the folder named by your **Examination Number**.
6. Save your work by using the 1997-2003 version of the MS Office software you are using.
7. Check whether the **printed** work(s) are similar to the **softcopy** saved in the folder.
8. Cellular phones are **not** allowed in the examination room.
9. Type your **Examination Number** on every page of your softcopy work(s).

1. (a) Write a C++ program that reads an integer value from the user. A program should check and display a message whether the entered integer value is a perfect number or not. (HINT: A perfect number is one whose sum of its factors excluding the number itself is equal to a number itself. E.g. 6 is a perfect number as sum of its factors 1 + 2 +3 = 6). Test the program and provide the screenshot of the test results.

   (b) Write a switch-case C++ program which can help user to convert temperature values from Fahrenheit to Centigrade and vice versa by entering the following options:

   First option: Changes Fahrenheit to Centigrade.

   Second option: Changes Centigrade to Fahrenheit.

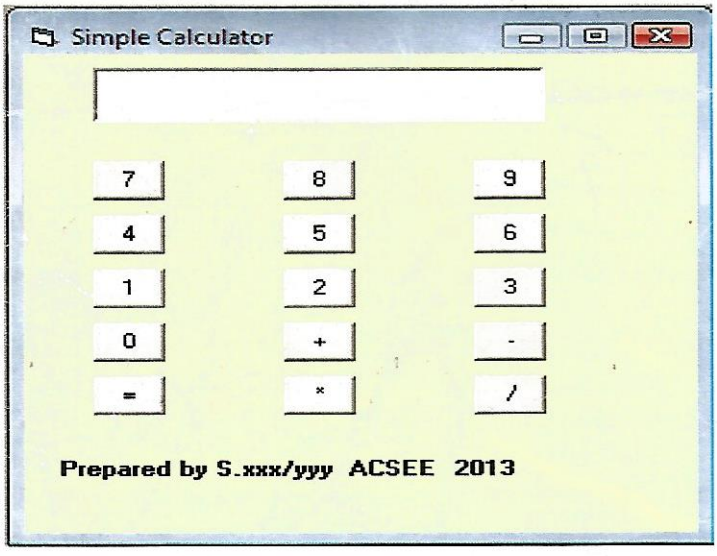
   The program should prompt the user to enter the value to be converted. Test the program and provide the screenshot of the test results.

   Note: Use the following formula in developing your program

   (i) From Fahrenheit (F) to Centigrade(C) use $C = \frac{5}{9}(F - 32)$.

   (ii) From Centigrade (C) to Fahrenheit (F) use $F = \frac{9}{5}C + 32$.

2. (a) (i) Design a simple calculator using Microsoft Visual Basic program as shown in the snapshot below:



   Write Visual Basic codes (program) which should ask the user to enter the first number through a message box after clicking any operator, and prompts a user to enter the second number after clicking the **ok** button in the message box. The program should display the answer in the text box after clicking a command button **ok** appeared in the message box which asks a user to enter the second number.

   Perform all necessary formatting as directed below:

   - All command buttons should be of equal size.
   - Vertical and horizontal spacing of command buttons should be equal.

- The width and height of the command button should be 500 and 350 respectively.
- Set #H80000018 or Tool/Tip as the background color of the form.

(ii) Substitute S.xxx/yyy which appeared in the simple calculator interface with your **Examination Number**.

(iii) Write Visual Basic codes in such a way that when a user clicks any number, the number clicked should appear in the text box.

(b) (i) Design a Visual Basic page (user interface) which consists of two labels, textbox, ListBox with Vertical scroll bar and three command buttons. Name the controls as directed below:

Control	**Name**
Label1	Enter Number
Label2	List of Factors
Command1	Find Factors
Command2	Reset
Command3	Cancel

Align labels in the first column, text and ListBox in the second column and Command buttons in the third column.

Scroll descriptions:

- The maximum scroll is 200.
- Minimum scroll is 100.

(ii) Write Visual Basic codes which will help a user to find factors of a number entered in the textbox. The factors should be displayed in the ListBox which contain a scroll bar. When a user clicks a reset command button the number entered by a user should be 0 and the interface should disappear when a user clicks a cancel button.

3. (a) Use HTML codes to create a page below. Set #F5DEB3 as the background color and activate a search textbox so that a user can search student Id/student name through Google search engine.

Student Details

Search

Student Id:

Student Name:

Gender: Male Female

Subject: Science

Submit

Science
Art
Business

Note: Use a table aligned at center with border 0 to create a page in 3(a).

(b) Alpha Training College offers three Courses. A student sits for three exams every semester, each exam marked out of 100. The following is sample data collected from the college database.

Exams offered:

Examination code	Examination Name	Course code	Exams record No
01	Opener	D-SECT	1
02	Midterm	D-INT	2
03	Endterm	D-ACCT	3

Exams performance:

Exam record No	Student ID	Exam code	Semester	Score
1	SECT-01	01	2	75
3	ACCT-04	01	2	65
6	INT-03	01	2	68
2	INT-03	02	2	80
4	SECT-01	02	2	70
5	ACCT-04	02	2	60
7	SECT-01	03	2	78
8	INT-03	03	2	74
9	ACCT-04	03	2	66

Courses:

Course	Course Description	Tuition fees
D-SECT	Dip. in Secretarial	Tsh. 150000
D-INT	Dip. in IT	Tsh. 200000
D-ACCT	Dip. in Accounting	Tsh. 160000

(i) Create a database file called Alpha College and save it.
(ii) Create a table structure for each of the three tables, setting most appropriate field as the primary key and choose the appropriate data type for each field.
(iii) Relate three tables as required to have one to many relationships.