V. Angelique

# Computer Science Marking scheme, 2014

**SECTION A: Attempt all questions from this section.(55 marks)**

1. Gives 3 examples of an audio port connects audio devices to the computer **(3marks)**
   Line In
   Microphone
   Line Out
   Gameport/MIDI

2. List the motherboard form factors **(3marks)**
   **AT** Advance Technology (older model )
   **ATX** Advance Technology Extended (most popular type of computer case use today)
   **BTX** Balance Technology Extended (newest form factor known as the cooling case)
   **SFF** Small Form Factor
   **ITX** Type of case found on a lot of mini and micro computers

3. Tick in the cell where the device matches with the device type as shown here below **(4 marks)**

| No | DIVICES | INPUT DIVICES | OUTPUT DIVICES | STORAGE DIVICES |
|----|---------|---------------|----------------|-----------------|
| 1 | Touchpads | ✓ | | |
| 2 | Light Pen | ✓ | | |
| 3 | Scanner | ✓ | | |
| 4 | Electronic Whiteboard | ✓ | | |
| 5 | RAID | | | ✓ |
| 6 | Speaker(s) | | ✓ | |
| 7 | Monitor | | ✓ | |
| 8 | PC Card | | | ✓ |

4. Write an algorithm that ask the user to enter two numbers and it display the product of that number if is null , negative or positive **(6marks)**
   Var a : integer
   Var b : integer
   Start

```
Write("enter the first number ")
Read (a)
Write("enter the second number ")
Read (b)
If (a<0 and b>0)
Write("the product is negative ")
else If (a>0 and b=0)
Write("the product is null")
else If ( a<0 and b<0)
Write("the product is positive ")
else If (a>0 and b>0)
Write("the product is positive ")
else If ( a=0 and b=0)
Write("the product is null")
End if
End
```

5. What is a loop?**(2marks)**

A loop helps to repeat instruction or block of instructions. It assists in the algorithm where you want to carry out an activity for a certain number of times

6. Write an algorithm which use **while** loop and displays numbers from 1 to 5

**(4marks)**

```
Var A : integer
Start
A<-1
while (A≤5)
  Write (A)
  A<- A+1
End while
```

7. Distinguish seek time from data rate                    **(3marks)**

**Data rate**- The data rate is the number of bytes per second that the drive can deliver to the CPU. Rates between 5 and 40 megabytes per second are common.

**Seek time**- The seek time is the amount of time between when the CPU requests a file and when the first byte of the file is sent to the CPU. Times between 10 and 20 milliseconds are common.

8. .Consider the following program
   a. what is the output ?(**2marks**)
   b. A Explain why that output (**3marks**)

```c
#include <stdio.h>
int g = 20;
int main () {
int g = 10;
printf ("value of g = %d\n", g);
return 0;
}
```
The output is 10
The local variable inside a function take preference.

9. What is data structure? (**2marks**)
   a. By example how the data structure are declared (**3marks**)
   
   A data structure is a group of data elements grouped together under one name.
   
   Examples

```c
struct product {
int weight;
float price;
} ; in
product apple;
product banana, melon;
```

OR
```c
struct product {
int weight;
float price;
} apple, banana, melon;
```

10. Which of the following is not derived data type in c?(**2 marks**)

(A) Function

(B) Pointer

(C) Enumeration

(D) Array

(E) All are derived data type

Answer C

11. Which of the following is integral data type? **(2 marks)**

(A) void

(B) char

(C) float

(D) double

(E) None of these

Answer B

12. Explain the importance of                                        **(3 marks)**
    a. In **a plug and play system**, a device manager first performs a scan on different hardware buses, such as Peripheral Component Interconnect (PCI) or Universal Serial Bus (USB), to detect installed devices, then searches for the appropriate drivers.
    b. **SHELL** is a piece of software that provides an interface for users of an operating system which provides access to the services of a kernel.

13. What is a Protocol **(2 marks)**
    A protocol is a set of rules that governs the communications between computers on a network. In order for two computers to talk to each other, they must be speaking the same language.

14. Describe 4 advantages of using relations database system in tables **(4 marks)**
    - Relational databases bring tables together.
    - Structured query language is easy to understand.
    - Security of data
    - Sharing data
    - No duplicate data

15. How is managed the memory in multi-process system **(2 marks)**
    The memory management is managed according to three schemes namely: fixed partition memory, variable partition memory, and variable partition allocation with compaction

16. Describer the Trash can icon in the Linux                        **(3 marks)**

    The trash can icon on the desktop contains files and folders which you have deleted using the File Manager or an application run from the desktop. It is a special folder in which it is still possible to move back the deleted items to another folder so as to "undelete" them.

17. Multiply $(1000.10)_2$ by $(10.1)_2 = 10101.010$ **(2 marks)**

18.    Swapping means exchanging the values of one variable with another variable, write a
       C function that swap two numbers and display the values of that number before swap
       and after swap

```c
void swap(int x, int y)
{
int temp;
temp = x; /* save the value of x */
x = y; /* put y into x */
y = temp; /* put x into y */
return;
}
#include <stdio.h>
/* function declaration */
void swap(int x, int y);
int main ()
{
/* local variable definition */
int a = 100;
int b = 200;
printf("Before swap, value of a : %d\n", a );
printf("Before swap, value of b : %d\n", b );
/* calling a function to swap the values */
swap(a, b);
printf("After swap, value of a : %d\n", a );
printf("After swap, value of b : %d\n", b );
return 0;
}
```

19. Create a table of your choice with at least 4 different attributes in SQL.(2Marks)
    CREATE TABLE phonebook(
    phone VARCHAR(32),
    firstname VARCHAR(32),
    lastname VARCHAR(32),
    address VARCHAR(64));

Given the table "Employee" below:

| Name | Phone | Address | Salary | Evaluation |
|---|---|---|---|---|
| Kanamugire | 08564433 | Kacyiru | 185000 | 0.75 |
| Rurangwa | 51231578 | Nyamata | 123000 | 0.90 |
| Bahizi | 03314563 | Rwamagana | 230000 | 0.80 |
| Giraneza | 08567838 | Remera | 197000 | 0.85 |

## Write SQL statements for:

a. Inserting a new employee into the table                    (2 Marks)

b. Updating the table to give a salary increase of 20% to those employees whose evaluation is above or equal to 0.80                    (2 Marks)

c. Destroying table name " "Employee" " (2Marks)

d. List the names, salary and address of employees whose evaluation are less than 0.8 or greater than 0.85  (2Marks)

ANSWER

  A.  Insert into employee values

  (`hamadi`,`0788564323`,`,`kamonyi`,`250000`,`0.1`);

  B.  Update employee set salary=salary+salary*0.2 as kaka where evaluation >=0.8;

  C.  Drop table employee;

  D.     SELECT Name,salary, Address FROM employee
WHERE evaluation NOT BETWEEN 0.8 AND 0.85 ; difine the bit        (2 marks)

A **bit** is the smallest unit of information that a computer can process.

a. Find binary equivalent of (353.45)10 = ~~0110000 1111001~~ (10110000 01, 0111001)2  (2 marks)

b. Convert (7834.523)10 to octal system. = ~~(7232.413615)8~~ (17232.413)8  (2 marks)

c. convert (56734.5275)10 into hexadecimal =(DD9E.870A3D)  (2 marks)

d. Represent "-18" in signed magnitude form  (2 marks)

**we know (18)10 = (10010)2**

**To represent a –ve sign, 1 is used at the main scale bit. (-18)= (110010)**

20. Write a C++ program that decrease the number from 10 to 0 number and when it reach to number 4 it skip that iteration , using for loop.

```
#include <iostream>
using namespace std;
int main ()
{
for (int n=10; n>0; n--) {
if (n==4) continue;
cout << n << ", ";
}
cout << "FIRE!\n";
return 0;
}
```

21. a. What are the use of RDBMS in the database  (8 marks)
   Retrieving of information stored in the database.
   Inserting of new information into the database.
   Deleting of information from the database.
   Modification of data stored in the database.
   Creating a database ,
   Managing of information stored in the database,
   maintain of information stored in the database,
   Read of information stored in the database.
   b. what is a projection in SQL  (2 marks)
   A projection is an instruction for selecting a set of columns in a table

**SECTION C:  Attempt any one question from this section**  **(15 marks)**

22. What are work of the following code

**LS** – list files in the current directory.

**CD** – change working directory. If your current path is /
  home/username/Trash for instance, typing "cd" will bring you back to
  /home/username.

**CP** – invoked such as "cp currentFile newFile", and is used to copy files. .

**RM**– invoked such as "rm myFile"; it is used to delete files permanently.

**PWD** – prints the working (current) directory.

**CAT** – concatenate files (can be used to join them together).

**IP CONFIG**display the current TCP/IP Network configuration and controls the DNS resolver cache

**PING** verifies IP level connectivity to another TCP/IP Computer .ping is the primary TCP/IP Command used to troubleshoot connectivity.

**CHKDSK**Checks a disk and displays a status report.

**COMP**Compares the contents of two files or sets of files

**ERASE** Deletes one or more files.

**DELTREE** Deletes a directory and all the subdirectories and files within it.

**DIR** Displays a list of files and subdirectories in a directory

**RESTORE** Restores files that were backed up by using the BACKUP command.

**UNDELETE** Restores files previously deleted with the DEL command.

23.   a. Enumerate the procedures followed to create a new project In VISUAL BASICS
   **(6 marks)**

   The procedure for creating a new project in VB is

   -start,

   -All programs,

   -VB6.0,

   -Ms VB6.0,

   -New

   -standard EXE,

   -open

b. Write a VB Program **(9 marks)**

- If a user check the first option(Option1), The program should display the addition of the numbers entered in the Text1 and Text2 in the Text3 if a user click to a button compute
- If a user check the second option(Option2), The program should display the multiplication of the

numbers entered in the Text1 and Text2 in the Text3 if a user click to a button compute

- If a user check the third option(Option3), The program should display the subtraction of the number entered in the Text1 by Text2 in the Text3 if a user click to a button compute
- If a user check the fourth option(Option4), The program should display the division of the number entered in the Text1 by Text2 in the Text3 if a user click to a button compute
- The program should nothing display in the Text1, Text2 and Text3 if a user click to a button Clear.
- Remember the program should closed

Example: Assume that a user checked the following program



Private Sub Command1_Click()

Dim A, B As Integer

A = Text1    A = Val (Text1.text

B = Text2 $=$ B = Val(Text2.text)

If Option1.Value = True Then

Text3 = A + B     text3.text = A + B

Else

If Option2.Value = True Then

Text3 = A * B     text3.text = A * B

Else

If Option3.Value = True Then

Text3 = A - B     text3.text = A - B

Else

Text3 = A / B     text3.text = A/B

End If

End If

End If

End Sub

Private Sub Command2_Click()

Text1.Text = ""

Text2.Text = ""

Text3.Text = ""

End Sub

Private Sub Command3_Click()

End

End Sub