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University Examinations 2013/2014

FIRST YEAR, SECOND SEMESTER END OF SEMESTER EXAMINATION FOR THE DEGREE
OF BACHELOR OF SCIENCE IN COMPUTER TECHNOLOGY

BIT 2104: INTRODUCTION TO COMPUTER PROGRAMMING AND ALGORITHMS

DATE: APRIL 2014   **TIME: 2 HOURS**

INSTRUCTIONS: *Answer question **one** and any other **two** questions*

QUESTION ONE – 30 MARKS

a. Define the following terms as used in programming.   (3 marks)
   i.   Compilation
   ii.   Feasibility
   iii.   Testing

b. Explain the difference between the prefix and postfix forms of the ++ operator.   (2 marks)

c. With the aid of a diagram explain the two problem solving strategies citing one advantage and one disadvantage of each strategy.   (4 marks)

d. Jane is a student who has approached you to help her write an algorithm for the following problems. The program will prompt the user to enter two numbers X and Y. Divide X by Y. However, if the value of Y is 0, the program should display an error message "Error"Division by zero" otherwise it should be able to print the output.
   Required:

   i.   Use a pseudo code   (4 marks)
   ii.   Use a flow chart   (4 marks)

e. What would the equivalent code, using a while loop, be for the following code.   (3 marks)
   for (I(= 0; i<10; i = I +1)
   printf(" i is %d/n",i);

f. Write a C program that reads in five elements of an array then display them.   (4 marks)

g. Figure 1 shows the playground of a certain institution. Use it to answer the question that follows:

Using a function for wash of the parts marked X, Y, and Z, write a C program to calculate the total area covered by the playground. Take pie to be 3.14. (6 marks)

QUESTION TWO – 20 MARKS

a. Classify the following programming languages as either 4GL or 5GL,LISP, Visual basic, Mercury, Delphi Pascal. (4 marks)

b. Explain the meaning of the line#include<stdio.h> at the top of a C source file for? (2 marks)

c. State the output of the following code: (3 marks)
```
Int i;
For (i = 0;<3;I = i + 1)
        print f("a\n");
        print f("b\n");
        print f("c\n");
```

d. Some programmers produce rough & ready solutions at a Keyboard, and continue to amend the programs until eventually the program appears to do what was expected. Explain four reasons why this is not recommended in programming. (4 marks)

e. A small tutorial college would like to computerize its records and Payroll Processing Application. A consultant has been hired to oversee the implementation of the project. He suggests that the college needs to perform a feasibility study which will cover hardware and software, staffing and operating costs, impact of the new system on employment and the level of skills required for this new system. Identify four broad types of a feasibility assessment covered in the above study. (4 marks)

f. Predict the output of the following code.
```
#include<stdio.h>
        main ()
        {
            Int x = 3;
            {
        While (x <33)
        x = x+1;
                    }
        print f("%d".x);
```

QUESTION THREE – 20 MARKS
a. State three importance of using functions in a program. (3 marks)

b. Explain three functions of a compiler. (3 marks)

c. Explain the importance of indentation and how carefully does the compiler pay attention to it? (4 marks)

d. Correct errors, if any in the following C program. (5 marks)
```
1. #include <stadi.h>
2. Main ()
3. {
4. intA;B;C;
5. Product = a*b*c
```

6. [romt("the product is ;"product)
7. }

QUESTION FOUR – 20 MARKS

a. Project management is a very important stage during program development. State three undesirable effects that may result due to lack of managing resources. (3 marks)

b) With reference to programming, distinguish between the following terms as used in programming.

      i. Source program and Object code (2 marks)
     ii. Linker and loader (2 marks)

c) An organization has decided to develop a system to facilitate the invoicing of its sales to clients. It expects the invoices to be generated from the purchase orders of customers after the goods have been confirmed to be available. The sales manager considers this system to be crucial for its future success because it deals directly with customers and is anxious to ensure that it works well. Identify and explain four areas of testing for the information system that will be necessary to facilitate a good system. (8 marks)

d) Using switch structure, write a C program to accept the choice representing the meal and display the appropriate meaning for the choice entered. The program should be able to prompt a user to enter a choice the outputs a remark based on the choice entered. (5 marks)

Choice	Meal
1	Pilau plain
2	Githeri beef
3	Chapatti chicken
4	Chips liver
5	Rice beans
All other cases	Un appropriate selection

QUESTION FIVE – 20 MARKS

a. State two advantages and two disadvantages of low level languages (4 marks)

b. A student intended to create a program to capture the following details. Student's national ID, name, fees payable and the number of meals per day the student has paid for. For each of the items state a corresponding data type. (4 marks)

c. What is the output of the following section. (2 marks)
```
int a,b:
for (a =0;a<3;a++)
for(b =0;b<=3;b++)
printf("%d"b);
```