Tutorial Letter 104/3/2017

Computer Systems: Fundamental Concepts
COS1521

Semester 1 & 2

School of Computing

IMPORTANT INFORMATION:

This tutorial letter contains amendments for the Tutorial letter 101 for certain assignment questions for assignments 1 and 2 for both semesters. **Please read before starting with your assignments**.

Define tomorrow.

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CONTENTS

1. INTRODUCTION

Dear student,

I am the new lecturer for 2017. I noticed a few discrepancies in the Assignment questions in the Tutorial letter 101 for Assignments 1 and 2 for the first and second semester that have been set by the 2016 lecturer. I do apologise for any inconvenience caused by this. Please feel free to contact me if anything is not clear.

dpleshw@unisa.ac.za

011-670-9109

This tutorial letter contains information and replacement questions for certain assignment questions in the Tut 101 for Assignments 1 and 2 of both semesters. **Only look at the changes for the semester that you are registered for**. Tutorial letters can be downloaded from myUnisa (www.*myunisa*.ac.za).

2.   INFORMATION / CHANGES FOR SEMESTER 1

Semester 1 – Assignment 1

Questions 25 and 28

Please note that the diagram printed at Question 25 of Assignment 1 for semester 1, is meant for Question 28.

Semester 1 – Assignment 2

Please replace the relevant questions for Assignment 2 of semester 1 in the Tut 101 with the following questions when you do your assignment:

Question 4

Which one of the following options is NOT true for DRAM (Dynamic RAM)?

1. DRAM memory cells need to be refreshed periodically.
2. DRAMs are slow, but inexpensive.
3. DRAM technology uses flip-flop gates.
4. DRAM technology uses capacitors, storing energy for data usage.

Question 5

Which of the following is NOT true regarding the TCP/IP protocol suite?

1. TCP/IP is used in the Internet today.
2. In a small Intranet, the TCP/IP protocol can run without the application layer.
3. It is a hierarchical protocol made up of interactive modules.
4. Each layer in the protocol provides a specific function.

Question 16

Consider the following integer numbers. The target number is 150. At the first iteration of the binary search method, *first* = 1, *mid* = 7 and *last* = 13. What would the value of *first*, *mid* and *last* be after two more iterations?

    9 10 14 21 28 48 86 111 125 131 141 150 160

1. 11 12 13
2. 8 10 13
3. 12 12 13
4. 9 10 13

Question 26

Which computer programming paradigm is known for using the concept of inheritance?

1. Declarative programming
2. Object-oriented programming
3. Functional programming
4. Procedural programming

3.   INFORMATION / CHANGES FOR SEMESTER 2

Semester 2– Assignment 1

Please replace the relevant questions for Assignment 1 of semester 2 in the Tut 101 with the following questions when you do your assignment:

Question 1

Which of the following is NOT one of the subsystems of the Neumann model?

1. Memory
2. Arithmetic logic unit
3. File handling system
4. Control unit

Question 2

Which one of the following options includes valid social issues created by Computer Science?

1. Digital divide, privacy and computer crime.
2. Social justice, digital divide and privacy.
3. Dependency, social justice and digital divide.
4. Dependency, copyright and computer crime.

Question 7

Which of the following is FALSE about number systems?

1. While an octal number has base 16, a hexadecimal number has base 8.
2. While a decimal number has base 10, a binary number has base 2.
3. Numbers of base 2, 8 and 16 can easily be converted into numbers of base 10.
4. A fractional part of a decimal number can also be converted to a fractional number in base 2.

Question 16

The 8 bit pattern 11010010 is stored in 2s complement form. Which decimal number does the bit pattern represent?

1. -114
2. 114
3. **-46**
4. 46

Question 20

If the input pattern is 00001111 and the mask to unset bits in the pattern is 10101010, what is the resulting output?

1. **00001010**
2. 11110101
3. 01010101
4. 11101000

Question 26

Calculate the simplest form of the Boolean function x + (x + xy) + y(xy')'.

1. (x + y) +x'y
2. 1
3. 0
4. **x + y**

Question 29

Replace the given function **G = A'C + AB'** with **G= B'C + AB'**, and then continue with the question in the Tutorial letter 101.

Question 30

Use the same Karnaugh graph, but replace the options with the following:

1. A'C'
2. BD'
3. **A'BD'**
4. CD

Semester 2 – Assignment 2

Question 3

Which of the following is NOT true for interrupt-driven I/O processing?

1. The CPU informs the I/O device that a transfer of data is going to happen.
2. The I/O device interrupts the CPU when it is ready.
3. During this time the CPU continues with other tasks and CPU time is thus not wasted.
4. If the I/O device takes too long to interrupt, the CPU tests the status of the I/O device.

Question 18

Which of the following is TRUE regarding sorting algorithms?

1. Quicksort and heap sort are more efficient than bubble sort.
2. Shell sort and bucket sort are less efficient than selection sort.
3. Insertion sort is more efficient than radix sort.
4. Bubble sort is more efficient than merge sort.

Question 27

According to the prescribed textbook, which one of the following programming language is commonly used in the business environment?

1. FORTRAN
2. C++
3. C
4. COBOL

Question 29

Which one of the following diagram types is NOT used in the procedure-oriented analysis of the software life cycle?

1. Entity-relationship diagrams
2. Use-case diagrams
3. Data flow diagrams
4. State diagrams

Question 34

Which one of the following options is NOT true for records as a data structure?

1. A record is a collection of related elements.
2. If we want to define a record for a class of 30 students, we define a record of 30 arrays.
3. An element in a record is called a field.
4. The fields in a record can be of different types.