Mid Term Examination-2

Code: CSCC24

MCA (2ⁿᵈ-Semester) EXAMINATIONS - 2017
Microprocessor and Computer Architecture

Time: 50 minutes

Max Marks

- *Write your Roll No. on the top immediately on receipt of the question paper.*
- *Attempt ALL questions.*

Question No1: What are the difference between microprocessor, microcomputer and microcontroller? [3]

Question No2: Draw and explain 8085 hardware model? [4]

Question No3: What are the advantages of an assembly language in comparison with high level languages? Write any two. [2]

Question No4: How does a Microprocessor differentiate between Data and instruction code? [2]

Question No5: What do you understand by three cycle instruction execution model? [2]

Question No6: List the four categories of 8085 instructions that manipulate data. [2]

Code: CSCC24

Roll No......................

MCA (SEM-II) PRACTICAL EXAMINATIONS - 2017
Microprocessor and Computer Architecture

Time: 2 Hours

Max Marks: 10

Write your Roll No. on the top immediately on receipt of the question paper

Set-D

1. Write and run an 8086 assembly language program displays a string stored in memory. You must use appropriate interrupt for the same

2. Write and run a program in C/C++ to simulate combinational logic gates (AND, NAND, XOR) where the user inputs binary values for A,B and C and the output circuit is displayed.

MCA (SEM-II) Practical Mid-Term Examinations - 2017
Microprocessor and Computer Architecture
Set-B

Time: 1 Hr 30 minutes

Write a program in C to simulate combinational logic gates (NAND, NOR, XOR) where the user inputs binary values for A,B and C and the output circuit is displayed

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MCA (SEM-II) Mid-Semester Examination – 2017 (Dated: 20.04.2017)
CSCC23: Data and File Structures (Lab)

Time: 1 Hour   Max Marks: 15

- *Attempt ALL questions. Marks are indicated against each question.*
- Name your program file *yourName_progNo.cpp. i.e. Rehan1.cpp* and *Rehan2.cpp.*
- **Mail your programs to jahir.jmi@gmail.com by 12:10 PM positively. If you mail after 12:10 them this will be not** evaluated.

1. Define SortedArray class with a[], length, size data members and Array(n = 10), insert(x), and   **(5)**
   display() member functions. The object of this class stores the word and its frequency, and does
   not store the duplicate words.

2. Write a C++ program that read a text file word by word and store them in sorted array and then   **(10)**
   print the words and their frequencies.

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MCA (II Sem) Examination 2016-17
CBSE22 : OOP in C++ Lab
SET - 2

Attempt all the questions

1. A University and a Company have jointly taken a project. Class University contains name of the
   university, department to which the project is assigned, person to whom the project is assigned. A
   function display is there to display the information. Class Company contains name of the company,
   Number of Engineers assigned, amount invested to do the project. A function display is there to
   display the information. Class Project is inherited from University and Company. It contains type of
   project, duration of project, amount granted to complete the project. A function display displays the
   related information.

   Write a C++ program to implement this and display all information except amount invested by
   company from Project class.

2. Class polygon contains data member width and height and public method set_value() to assign values
   to width and height. class Rectangle and Triangle are inherited from polygon class. Both the classes
   contain public method calculate_area() to calculate the area of Rectangle and Triangle. Use base
   class pointer to access the derived class object and show the area calculated.

Code: CSCC23

MCA (SEM-II) EXAMINATIONS - 2016-17
Data and File Structures (Lab)
Set-9

Time: 2 Hours

Max Marks: 15

- Write your Roll no. on the top immediately on receipt of the question paper.
- Attempt ALL questions by selecting any ONE part from question 2. Marks are indicated against each question.

1. Define BinarySearchTree class with *root* data member and BinarySearchTree(), insert(x), inOrder(r), preOrder(r), and getRoot() member functions. Each node of this binary search tree stores the key and its frequency. At the time of insertion if a key already exist then its frequency will be increment by one. For example, if we insert keys 10, 5, 10, 20 one by one in an empty binary search tree, then there should be three nodes in this binary search tree, root (with key 10, frequency 2), left child (with key 5, frequency 1), and right child (with key 20, frequency 1). **(9)**

2. (a) Implement Image component labeling algorithm using stack/ queue data structure. **(6)**

   (b) Define a C/C++ function to arrange list of integers in increasing order using bubble sort algorithm. Thereafter, illustrate it by sorting a list of integers. **(6)**

   (c) Write a C/C++ program that read adjacency matrix of an undirected graph and return number of edges of the graph. **(6)**

Roll No. 16.MCA047

DEAPARTMENT OF COMPUTER SCIENCE
CBCS 21 Lab – Shell Programming, MCA-II SEM

SET A

NOTE: ATTEMPT ANY **FIVE** QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

1. Write a shell script which receives two file names as arguments. It should check whether the two file contents are same or not. If they are same then second file should be deleted.
2. Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.
3. Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions.
4. Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory and reports accordingly. Whenever the argument is a file, the number of lines on it is also reported.
5. Write a shell script that accepts a list of file names as its arguments, counts and reports the occurrence of each word that is present in the first argument file on other argument files.
6. Write an interactive file-handling shell program. Let it offer the user the choice of copying, removing, renaming, or linking files. Once the user has made a choice, have the program ask the user for the necessary information, such as the file name, new name and so on.

DEAPARTMENT OF COMPUTER SCIENCE
SESSIONAL II - OPERATING SYSTEM (CBCS 21), MCA-II SEM

DATE: 29-03-2017

TIME: 45 mnts, M.M. : 15

NOTE: ATTEMPT *any three* QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

(1) List and explain the four necessary conditions that must hold simultaneously for a deadlock to occur.
(2) Show the events using semaphore for mutual exclusion violation.
(3) Most round-robin schedulers use a fixed size quantum. Give an argument in favor of a small quantum. Now give an argument in favor of a large quantum. Compare and contrast the types of systems and jobs to which the arguments apply.
(4) Consider the following set of processes, with the length of the CPU-burst time given in milliseconds. What is the average turnaround time for these processes with the SJF (preemption & non- preemption) scheduling algorithm?

Process	Arrival Time	Burst Time
P1	0.0	8
P2	0.4	4
P3	1.0	1
P4	1.2	2

MCA Semester-II Minor Test II 2017

CBSE223: Object-Oriented Programming in C++

Time: 1 Hour

Max Marks: 15

Answer any three questions in all. All questions carry equal marks.

1. What are the static data members and member functions? When are they used? Explain with suitable examples.

2. What is operator overloading? List out the operators that cannot be overloaded using member function. Write a program to concatenate(join) two objects of class *String* by overloading '+' operator.

3. What do you mean by Overloading of a Function? On what basis, the compiler distinguishes between a set of overloaded functions having the same name. Write a program to compute the area of a traingle and circle by overloading the area function.

4. What is Inheritance? Explain different types of Inheritance with suitable examples. What problem may be encountered in Multiple Inheritance and how is it solved? Explain.

DEPARTMENT OF COMPUTER SCIENCE
Jamia Millia Islamia, New Delhi-25
M.C.A., II Semester, Second Sessional Test Examination, March 30, 2017
CSCC23: Data and File Structures

Time: 50 Minutes

Max. Marks: 15

Ques. No. 1. Solve the machine shop simulation problem and find the total waiting time using following job characteristic and machine change over tables. **(5)**

Job Characteristics Table

Job#	#Tasks	Tasks
1	2	(1, 2) (2, 4)
2	2	(3, 4) (1, 2)
3	2	(3, 2) (2, 4)

Machine Changeover Time Table

Machine	Change over time
M1	2
M2	1
M3	3

Ques. No. 2. For a non-empty binary tree T, if n_0 is number of leaf nodes (degree 0) and n_2 is number of nodes with degree 2, then show that $n_0 = n_2 + 1$. Draw the binary tree from the following traversals: **(5)**

    In-Order: F B E A D H G C
    Pre-order: A B F E C D G H

Ques. No. 3. What is AVL tree? Starting with an empty AVL tree, insert the following data one by one in the given sequence from left to right. Show each insertion and AVL rotations. **(5)**

    7, 6, 5, 4, 2, 3, 1

MCA (SEM-II) – 2017
Minor Test-I
Microprocessor and Computer Architectures

Time: 1:00 Hr.   Max Marks: 15

- Write your Roll No. on the top immediately on receipt of the question paper.
- Marks are indicated against each question.

1.(a) Define Microoperations? Give any three types of micro operations?   [2]

(b)   Write three significances of RTL(Register Transfer Language)?   [1.5]

(c)   Draw the block diagram for the hardware that implements the following statement:

P: R2 ¬ R1

if P = 1, then load the contents of register R1 into register R2", i.e., if (P = 1) then (R2 ← R1)
                                                                                          [2]

2. (a)   Draw the instruction word format and indicate the number of bits in each part? for the following:
                                                                                          [1.5]
(a) Memory-Reference Instructions   (OP-code = 000 ~ 110)

(b) Register-Reference Instructions   (OP-code = 111, I = 0)

(c). Input-Output Instructions   (OP-code =111, I = 1)

3. Write any three examples of each of the following instructions types of: [3]

(a) Functional Instructions
(b) Control Instructions

4. (a) Name various types of Addressing modes. Briefly explain any one of them.   [3]

(b) Differentiate between RISC and CISC. Any three differentiating points.   [2]

DEAPARTMENT OF COMPUTER SCIENCE
SESSIONAL FIRST - OPERATING SYSTEM
MCA-II SEM

DATE: 20-02-2017
M.M. : 15   TIME: 45 mnts

NOTE: ATTEMPT ANY three QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.

1. Show a layout for a program image in main memory and discuss its several distinct sections.
2. Explain how a disk I/O request might allow the operating system to run another process.
3. Illustrate the steps performed by an OS to create a new process. What common events lead to the creation of a process?
4. Show the traces of three processes and illustrate interleaved execution (with instruction cycles, I/O, context switch, etc.) of these processes performed by the processor.

Time: 1 Hour   Max. Marks: 15

Attempt any *three* questions in all. All the questions carry equal marks.

1. Discuss the various characteristics of Object-Oriented Programming. How is it different from Procedure-Oriented Programming?

2. What do you mean by Class and Object? How is data hiding implemented in C++? Explain with a suitable example.

3. What do you mean by a *reference variable*? How is it different from a pointer variable? Why do we pass reference to a Copy constructor instead of value? Explain with a suitable example.

4. How a Friend function different from a member function? Consider a class **Complex** having **real** and **Imaginary** as data members and getcomplex() and putcomplex() as member functions. Write a Program in C++ using a Friend function to find the sum of two Complex objects. Include the required constructors also.

DEPARTMENT OF COMPUTER SCIENCE

Jamia Millia Islamia, New Delhi-25

M.C.A., II Semester, First Sessional Test Examination, Feb. 21, 2017

CSCC23: Data and File Structures

Time: 50 Minutes   Max. Marks: 15

Ques. No. 1. Write an algorithm to delete $index^{th}$ element from an Array data structure. Suppose that (4) there are **2n** elements in an array and we want to delete them one by one; Where the first n elements are deleted from the location $index = n\text{-}1$ and remaining n elements are deleted from the location $index = 0$, by calling $del(index)$ function of the Array. Calculate the total number of required move operations.

Ques. No. 2. What is lower triangular matrix? Suppose we want to store not null (non-zero) (7) elements of this matrix of order n in a one dimensional array from *last row to first row* and *within a row from right to left*. Derive the mapping function that maps the not null elements to one dimensional array. Also write efficient algorithm to get the product of two such matrices.

Ques. No. 3. What is a stack? Write algorithms for push() and pop() operations. Also write an (4) algorithm to implement greatest common divisor (GCD) recursive function using stack.

MCA (SEM-II) Mid-Semester Examination – 2017 (Dated: 20.04.2017)
CSCC23: Data and File Structures (Lab)

Time: 1 Hour   Max Marks: 15
- *Attempt ALL questions. Marks are indicated against each question.*
- Name your program file *yourName_progNo.cpp. i.e. Rehan1.cpp* and *Rehan2.cpp.*
- Mail your programs to jahir.jmi@gmail.com by 12:10 PM positively. If you mail after 12:10 them this will be not evaluated.

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