Wasit Shafi
27-02-19

DEPARTMENT OF COMPUTER SCIENCE, JMI, NEW DELHI

Sessional Tests Series-I, 2014-15

Course: MCA-II Semester Subject: Theory of Computations (CSCC 26)

Time: 50 Min. Max. Marks: 15

Note: Attempt any two parts from each question and each question carries equal marks.

Q1. a) What do mean by finite automata? Describe the applications of finite automata.

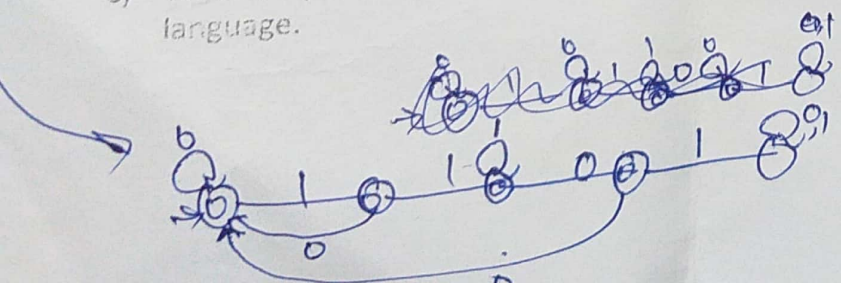
b) Define the Chomsky hierarchy mentioning the format of productions of each type of grammar.

c) Construct the finite automata over $\Sigma = \{0,1\}$ which does not except 1101 as a substring. Trace the result also.

Q2. a) Prove that the regular languages are closed under Union, Concatenation, Kleen (star), Complementation, Reversal, and intersection

b) What do you mean by the normal forms of the CFGs? Find the CNF of $(01)^*00(0+1)^*$.

c) What do you mean by pumping lemma and prove that $L = \{ w w^r \mid w \in \{0,1\}^* \}$ is not a regular language.



$(0+1)^*00(0+1)^*$

$L = \{ w w^r \mid w \in \{0,1\}^* \}$

Scanned by CamScanner

MCA Sem-II, Minor Test – I, 2018-19

CBSE22 : *Object-Oriented Programming in C++*

Time: 1 Hour

Max Marks: 15

Attempt any *three* questions.

1. (a) Distinguish between Procedure-Oriented and Object-Oriented paradigms with suitable examples. (2)

(b) Distinguish between pointer and reference variables. Why do reference to an object is passed in a copy constructor instead of value? Explain. (3)

2. (a) What is a friend function? What are the merits and demerits of a friend function? (2)

(b) Explain the Inline function and the situations where inline expansion may not work and why? Discuss its advantages and disadvantages. (3)

3. Define a class *Employee* which has *empid* and *empname* as private members. Define the constructor, the Destructor and a member function *print()* which prints the details of an employee. Create an object of type *Employee* in main() and print it. (5)

4. What are the static data members and static member functions? Explain the situations in which they are used through appropriate examples. (5)

Scanned by CamScanner

Code: CSCC24

Roll No. MCA-54

MCA (SEM-II) MID TERM EXAM-I- 2019

Microprocessor and Computer Architecture 26-02-19

Time:1 Hour

Max Marks: 15

- *Write your Roll No. on the top immediately on receipt of the question paper.*
- *Attempt all questions. Marks are indicated against each question. Your answer should be relevant, precise and Complete.*

1. What are the sequence of events that occurs when the 8085 MPU reads from memory. [3]
2. How many address lines are necessary to address two megabytes (2048K) of memory? [2]
3. Why are the program counter and the stack pointer 16-bits registers? [2]
4. If the 8085 microprocessor has fetched the machine code located at the memory location 205FH, what will be the contents of the program counter? [2]
5. What are the different addressing modes supported by 8086 microprocessor? What are their advantages ? [4]
6. List out the five categories of the 8086 instructions. Give two examples of instructions for each group? [2]

Scanned by CamScanner

DEAPARTMENT OF COMPUTER SCIENCE

SESSIONAL FIRST - OPERATING SYSTEM, MCA-II SEM

DATE: 25-02-2019

TIME: 45 mnts, M.M. : 15

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

1. List three general categories of information in a process control block. What is the difference between turnaround time and response time?
2. Illustrate the steps performed by an OS to create a new process. What common events lead to the creation of a process?
3. 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.
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 scheduling algorithm (with preemption and without pre-emption)?

Process	Arrival Time	Burst Time
P1	0.0	8
P2	0.4	4
P3	1.0	

6.33

28.6 / 3 = 9.53

16
12
28

8 - 4

Scanned by CamScanner

DEPARTMENT OF COMPUTER SCIENCE
SESSIONAL II - OPERATING SYSTEM, MCA-II SEM

DATE: 06-05-2019

TIME: 45 mnts, M.M. : 15

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

(a) Discuss critical section problem and its solution.
(b) Illustrate the procedure used by MMU to map a logical address into a physical address in paging.
(c) Define semaphores and specify their usage in handling of deadlock and busy waiting conditions.
(d) Explain four necessary conditions for deadlock.

Scanned by CamScanner

DEPARTMENT OF COMPUTER SCIENCE, JMI, NEW DELHI

Sessional Tests Series-II, 2018-19

Course: MCA-II Semester | Subject: Theory of Computation (CSCC 25) | DOE: 10.04.2019

Time:..... Min. | Max. Marks: 15

Note: Attempt any four questions and all questions carry equal marks.

[3]. Simplify the following grammar and then convert the same into CNF:

S → AabB | a | ab A → aA | bB | ∧ C → Bab | Bb | ab | b

[4]. Define different kinds of PDAs and design the PDA for $L = \{a^n b^{2n} \mid n \geq 1\}$.

[4]. Prove that the intersection of a Regular language with Context free language is a context free.

[4]. For the given grammar

S → (L) | a

L → L , S | S

draw the parse tree for the string ((a, a), a, (a)).

[5]. Describe the various kinds of Turing machines and design the Turing machine for deleting a string.

Scanned by CamScanner

DEPARTMENT OF COMPUTER SCIENCE, Jamia Millia Islamia, New Delhi-25

M.C.A., II Semester, Second Sessional Test Examination, April 09, 2019

CSCC23: Data and File Structures

Time: 30 Minutes Max. Marks: 15

Ques. No. 1. Sort the following list of integers in increasing order, using Shell sort and insertion sort algorithms and compute the total number of shift operations in each method. (5)

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

Ques. No. 2. Write iterative algorithm for binary search problem in pseudo code. (5)

Ques. No. 3. Let $H_1(k)=k\%11$ and $H_2(k)=k\%7+1$ are first and second hash function respectively. Build the hash table by inserting keys: 1, 12, 24, 34, 45, 15, 23, 13, 11, 35, 16 one by one and collision is resolve using double hashing. Also calculate the total number of collisions. (5)

Scanned by CamScanner

08-04-19

MCA Sem-II, Minor Test – II, 2018-19

CBSE22 : Object-Oriented Programming in C++

Time: 1 Hour

Max Marks: 15

Attempt any *three* questions.

1. Why static data members of a class cannot be initialized by constructor of the class? Define a class *Employee* which has *empid* and *empname* as members. Define the constructor, the destructor and a function print() which prints the details of 10 employees. Create objects of type Employee at run-time in main() and print them.

2. What is operator overloading? List the operators that cannot be overloaded using a member function. Explain, why a friend function cannot be used to overload assignment operator (=)? Write a program to compare two objects of class *String* by overloading <,> and == operators.

3. What is Inheritance? Mention some advantages of inheritance. Explain different types of Inheritance with suitable examples. How is the constructor of base class called using the constructor of the derived class when the parameterized object of derived class is created?

4. The keyword 'virtual' can be used for functions as well as classes in C++. Explain the two different uses. Give an example of each.

Scanned by CamScanner

Code: CSCC24

Roll No. 54

MCA (SEM-II) Mid-Term-2 EXAMINATIONS - 2019
Microprocessor and Computer Architecture

Time: 1 Hour

Max Marks: 15

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

Where does the address of the instruction following the CALL instruction is stored in? [1]

Explain the difference between a JMP instruction and CALL instruction. [2]

Explain priority interrupts of 8085. [2]

Explain Vectored and non-vectored interrupts of 8085. [2]

What is masking and why it is required ? [2]

What are the functional units available in 8086 architecture? [2]

List the segment registers of 8086. [2]

In 8086 processor the code segment contains 4060H and instruction pointer contains9820H. Find the memory location addressed by the processor. [2]

Scanned by CamScanner