STUDENT ASSIGNMENTS (SESSION 2023-24)

Certificate in Computer Hardware and Network Technology (Distance Mode)

Guidelines to submit Assignments

The students are required to read carefully and follow the instructions given below:

1. Submission of one complete Assignment in each paper of the programme is compulsory.
2. Completed Handwritten Assignments on A4 size papers in a PDF format need to be submitted on Google Classroom on or before the due date
3. Write your Name, Father's Name and Roll Number as required on the cover page of each Assignment.
4. For Assignments Submitted after due date mentioned, a late fee of Rs. 100/- per assignment will be payable through Demand Draft in favor of Jamia Millia Islamia, Payable at New Delhi
5. For ex-students who failed to submit assignments during the course of the programme are required to submit Rs. 200/- per assignment payable through Demand Draft in favor of Jamia Millia Islamia, Payable at New Delhi.
6. Please go through your Programme Guide carefully for further details.
7. Last Date for Assignment Submission is **30-Sep.-2024**
8. **Link for Google Class Room:**
   https://classroom.google.com/c/NjQ2NjQ3Njk4Mjc4?cjc=sszzqkm

Assignment Name Must be **CODE_ROLLNO** for example **CIT101_D23CIT001**

NOTE: Attempt any **THREE** questions from each Assignment and Each Question carry **10** marks. Total Marks for each Assignment is 30.

CCH-101 Operating System

1 Compare and contrast Round Robin and Shortest Job First (SJF) scheduling algorithms. Discuss their advantages and limitations.

2 Explain the working of the Least Recently Used (LRU) page replacement algorithm. Provide an example scenario and illustrate how it prevents thrashing.

3 Describe the concept of mutual exclusion and explain how it is achieved using semaphores in operating systems.

4 Assume a CPU scheduling scenario with four processes: P1, P2, P3, and P4. The arrival times and burst times for each process are:Process Arrival Time Burst Time

P1	0	8
P2	1	4
P3	2	9
P4	3	5

Calculate the average turnaround time using the Shortest Job First (SJF) scheduling algorithm.

5 Consider a demand-paged memory system with the following parameters: Page table size = 4 KB, Page size = 2 KB, and Virtual address space = 16 KB. Calculate the number of bits required for the page number and offset.

CCH-102 Fundamentals of Computer & Network

1. Write a short note on buses and extension slots, 8-bit and 16-bit ISA, EISA, VESA, PCI, AGP bus, on board ports
2. Swapping of files, Troubleshooting guidelines of memory
3. Problems with Hard Drive, What is the disk diagnostic tools, How to recovering data and Installation of it.
4. Write about troubleshooting of printer and How we can sharing printers over a network
5. What is the network hardware and software and what is components of Network hardware.

CCH-103 Computer Network

1. What is Data Communication? Discuss CDMA, TDMA, FDMA and WDMA.
2. Explain the OSI reference model with neat diagram and also discuss the devices for each layer.
3. What is IP Address? Briefly explain different classes of an IP Address. Find the Netid and Host id of the following Ip addresses: 10.20.30.40, 208.10.30.60, and 245.10.10.50
4. Discuss the TCP/IP model and also explain different protocols used by Transport and Network layer of TCP/IP.
5. Explain in detail the various protocols of application layer like FTP, HTTP, and DNS.

CCH-104 Network Operating System

1. Explain the concept of symmetric encryption and asymmetric encryption. Compare and contrast these two approaches, discussing their strengths and weaknesses in different security scenarios.
2. Construct a Huffman tree for the following set of characters and their frequencies: A (5), B (9), C (12), D (13), E (16), F (45). Show the encoding process for a given message using the Huffman tree and calculate the compression ratio achieved compared to ASCII encoding.
3. Write a Bash script that displays the current system date and time in a user-friendly format, such as "Today is <day of the week>, <month> <day>, <year>."
4. Define open-source software and its significance in the context of operating systems. Discuss the benefits and potential challenges of using open-source systems compared to proprietary alternatives.
5. Explain the key principles and advantages of Unix/Linux operating systems compared to proprietary alternatives. Provide examples of popular Unix/Linux distributions and their typical use cases.

CCH-105 Trouble Shooting

1. Provide an overview of testing techniques for circuit boards, including breadboard testing, in-circuit testing, and functional testing systems. Explain the objectives and procedures of each testing method, emphasizing their role in ensuring the reliability and performance of electronic boards.

2. Explain common causes of hard disk failures such as bad sectors, mechanical issues, and file system corruption. Describe diagnostic tools and techniques used to identify and troubleshoot hard disk errors. Discuss preventive measures to minimize the risk of data loss due to hard disk failures.

3. Discuss typical symptoms of Ethernet card failures such as network connection drops, slow transfer speeds, and intermittent connectivity issues. Describe troubleshooting procedures to diagnose Ethernet card problems, including checking drivers, network configurations, and hardware connections. Suggest strategies to resolve common Ethernet card errors effectively.

4. Define what a computer virus is and explain how it spreads and infects systems. Describe different types of computer viruses (e.g., trojans, worms) and their potential effects on data and system performance. Discuss best practices for virus prevention, detection, and removal.

5. Analyze the impact of malware infections on Database Management Systems (DBMS). Discuss potential consequences such as data loss, unauthorized access, and compromised integrity. Recommend security measures and backup strategies to protect DBMS from malware threats.