



**University of Rajshahi**  
**Department of Computer Science and Engineering**  
**B.Sc. (Engg.) Part-4 Odd Semester Practical Examination-2022**  
**Course: CSE-4132 (Simulation and Modeling Lab)**

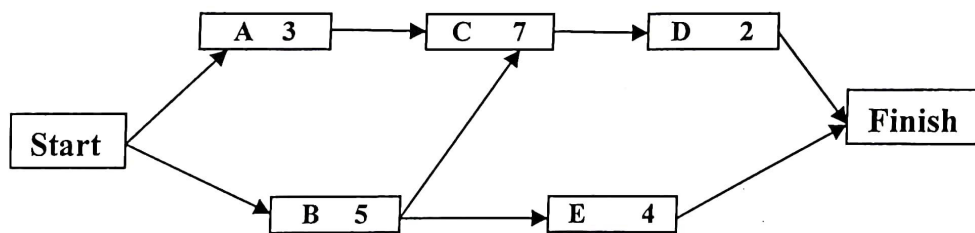
Duration: 3 Hours

Marks:17.5

**Problem 1: Simulation of Critical Path Method**

5.5

The figure given below contains the activity label, its respective duration (in weeks) and its precedence. Use critical path method to find the critical path, also show the Early Start (ES), Early Finish (EF), Latest Start (LS), Latest Finish (LF) duration in a tabular format.



**Problem 2: Predictions by ARIMA model:**

7.0

Utilize the provided dataset stored in the file "Shampoo.csv" to develop a program implementing ARIMA(5, 1, 0) for predictive analysis. Allocate 66% of the data for model training and reserve the remaining 34% for testing. Display both the plot of the actual data and a comparative plot of the actual versus predicted data.

**University of Rajshahi**  
**Department of Computer Science and engineering**  
**B.Sc. Engg Part-4 Odd Semester, Examination-2022**  
**CSE-4142 (Computer Peripherals and Interfacing Lab)**

**Duration: 3 Hours**

**Marks:17.5**

1.	<p>Use 8086 Interfacing Trainer in Kit mode to make a traffic controlling system with three LEDs as the representing light of red, green, and yellow color light. Here the lights will be displayed according to the following sequence and time periods.</p> <p style="text-align: center;">Red light → Yellow light → Green light → Yellow light → Red light</p> <p>Red light will be displayed for 10 seconds, yellow light for 5 seconds and green light for 15 seconds. The output will be continued until the system is reset.</p>
2.	<p>Use 8086 Interfacing Trainer in Kit mode to display letters E, F, and H in an 8x8 dot matrix LED with a delay of 5 seconds between each display. The output will be continued until the system is reset.</p>
3.	<p>Use 8086 Interfacing Trainer in Kit mode to display digits 1, 2, and 3 in a 7-Segment LED with a delay of 5 seconds between each display. The output will be continued until the system is reset.</p>
4.	<p>Use 8086 Interfacing Trainer in Kit mode to display a vertical line of LEDs in an 8x8 dot matrix LEDs and then shift the display from left to right with a delay of 5 seconds between each display. The output will be continued until the system is reset.</p>
5.	<p>Use 8086 Interfacing Trainer in Kit mode to display a horizontal line of LEDs in an 8x8 dot matrix LEDs and then shift the display from top to bottom with a delay of 5 seconds between each display. The output will be continued until the system is reset.</p>

Month	Sales(USD)
2021-01	266
2021-02	145.9
2021-03	183.1
2021-04	119.3
2021-05	180.3
2021-06	168.5
2021-07	231.8
2021-08	224.5
2021-09	192.8
2021-10	122.9
2021-11	336.5
2021-12	185.9
2022-01	194.3
2022-02	149.5
2022-03	210.1
2022-04	273.3
2022-05	191.4
2022-06	287
2022-07	226
2022-08	303.6
2022-09	289.9
2022-10	421.6
2022-11	264.5
2022-12	342.3
2023-01	339.7
2023-02	440.4
2023-03	315.9
2023-04	439.3
2023-05	401.3
2023-06	437.4
2023-07	575.5
2023-08	407.6
2023-09	682
2023-10	475.3
2023-11	581.3
2023-12	646.9

**University of Rajshahi**  
**Department of Computer Science and Engineering**  
**B.Sc. (Engg.) Part-4 Odd Semester Practical Examination-2022**  
**Course: CSE 4182 (digital Image Processing Lab)**

**Duration: 3 Hours**

**Marks:17.5**

1. Take grayscale image of size 512x512, add some salt & pepper noise and perform the following operations –
  - (a) Use different size of mask (3x3, 5x5, 7x7) with average filter for noise suppression and observe their performance in term of PSNR.
  - (b) Apply harmonic and geometric mean filter on the noisy image and compare their performance with PSNR.
2. Take grayscale image of size 512x512, add some Gaussian noise and perform the following operations in frequency domain –
  - (a) Apply 4th order Butterworth and Gaussian low pass filter to analyze their performance quantitatively
  - (b) Observe the ringing effect of ideal low pass filter on the image. Use different radius ( $D_0$ ) of ideal low pass filter and display their results
3. Take a binary image and a structuring element to perform the following morphological operations –
  - (a) Erosion and Dilation operations
  - (b) Opening and Closing operations

University of Rajshahi  
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B. Sc. (Engg.) Part-IV Odd Semester Examination 2022  
CSE4122: Object Oriented Design and Design Patterns Lab

Duration: 3 Hours

Marks:17.5

Answer Any 02 (Two) questions

- ✓ 1. Write a Java program to demonstrate a PET management system—which can be PET shop, PET care, PET service. You have to follow appropriate object-oriented design concept to implement the tasks.
2. Write a Java program to demonstrate the implementation of a facade design pattern for a Banking Service with Checking, Saving, and Investment modules.
3. ✗ Write a Java program to demonstrate the implementation of a proxy pattern for an online retail store with global distribution and warehousing.

University of Rajshahi  
Department of Computer Science and engineering  
B.Sc. Engg Part-4 Odd Semester, Examination-2022  
CSE-4112 (Parallel Processing and Distributed System Lab)

Duration: 3 Hours

Marks:17.5

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| 1. | <p>Write a program using MPI to count the words in a file and sort it in descending order of frequency of words i.e., highest occurring word must come first and the least occurring word must come last.</p> <p><b>Input:</b> No. of processes, (Text input from file)<br/><b>Output:</b> Total searching time, top 10 occurrences of string</p>   |
| 2. | <p>Consider a phonebook is given as a text file and a person name P. Write a program using CUDA to search for a person P (given as a string) in the phonebook. The program will return the names of all persons containing the substring P from the phonebook, along with their corresponding contact numbers.</p> <p><b>Input:</b> No. of CPU core, (phonebook from file), person name P<br/><b>Output:</b> Total searching time, matching names and contact numbers</p> |