Miranda House
UNIVERSITY OF DELHI

Departmental Annual Report - 3

Departmental Activities: Curriculum and Beyond

Department: Computer Science

Academic Year: 2024-25

Part A.1

Students undertaking project work/field work/internship as part of experiential learning component of coursework

S. No	Name of the Student	Project Title	Supervised by
1.	**(Total – 49 students)** Roll Number Name 861 AAKRITI MITTAL AASHITA 430 CHAUDHARY 989 ADITI KUMARI 1726 ADITRI NAG 1442 AIMEN AKSHITA 113 CHAUHAN 816 ANAM QURESHI 275 APARNA 185 ASTHA DIWAN 1665 AYUSHI PAL 696 BHUMI BHARTI DEEPANSHI 158 YADAV 358 DEEPTI 1513 DIVYA	**B.Sc. Programme Semester I** **(NEP UGCF 2022)** **DSC01 PROGRAMMING USING C++** 1. Write a program to compute the sum of the first n terms of the following series: $S = 1 - \frac{1}{2^2} + \frac{1}{3^3} - \cdots \frac{1}{n^n}$ The number of terms n is to be taken from the user through the command line. If the command line argument is not found then prompt the user to enter the value of n. 2. Write a program to remove the duplicates from an array. 3. Write a program that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments. 4. Write a menu driven program to perform string manipulation (without using inbuilt string	**Dr. Tulika Kumari**

	1594 DIVYA GAYATRI 1450 SHARMA 739 HIMANI DUA 543 ISHIKA 1446 JIYA BHARTI KANCHAN 1470 VERMA 1453 LATA 1451 LAVANYA BANI 1313 LEENA RANI 509 MAHIMARAJ K P MANEESHA 1527 CHAUHAN 1440 MANYA RANJAN 1650 MONIKA 613 NITIKA 1437 PALAK SINGH PRANJAL 991 SHARMA 867 PRIYA KUMARI PRIYANSHI 1080 BANSAL 568 RAGINI YADAV 210 RASHI VERMA 1160 RIYA GUPTA 1106 SAKSHI 1456 SALONI SALVI 1860 SRIVYONSE 799 SAUMYA YADAV 192 SHEETAL 1609 SMRITI KUMARI 1663 SNEHA 178 SOMYA ARYA 1521 SONAL GOSWAMI 1514 SONAL GUPTA 1819 SUBARNA GUPTA 1818 SWARNIMA BAM 1057 TANIYA 506 TARUSHI	functions): a. Show address of each character in string b. Concatenate two strings. c. Compare two strings d. Calculate length of the string (use pointers) e. Convert all lowercase characters to uppercase f. Reverse the string g. Insert a string in another string at a user specified position 5. Write a program to merge two ordered arrays to get a single ordered array. 6. Write a program to search a given element in a set of N numbers using Binary Search a. with recursion b. without recursion. 7. Write a program to calculate GCD of two numbers a. with recursion b. without recursion. 8. Create a Matrix class. Write a menu-driven program to perform following Matrix operations (exceptions should be thrown by the functions if matrices passed to them are incompatible and handled by the main() function): a. Sum b. Product c. Transpose 9. Define a class Person having name as a data member. Inherit two classes Student and Employee from Person. Student has additional attributes as course, marks and year and Employee has department and salary. Write display() method in all the three classes to display the corresponding attributes. Provide the necessary methods to show runtime polymorphism. 10. Create a Triangle class. Add exception handling statements to ensure the following conditions: all sides are greater than 0 and sum of any two sides is greater than the third	

<table>
<tr><td></td><td>SANWAL</td><td>side. The class should also have overloaded functions for calculating the area of a right angled triangle as well as using Heron's formula to calculate the area of any type of triangle.
11. Create a class Student containing fields for Roll No., Name, Class, Year and Total Marks. Write a program to store 5 objects of Student class in a file. Retrieve these records from the file and display them.
12. Copy the contents of one text file to another file, after removing all whitespaces.</td><td></td></tr>
<tr><td>2.</td><td>(Total – 74Students)
395 A SIYANDRA
AANAVI
1709 CHATTOPADHYAY
1780 AANYA JINA
480 AANYA NARULA
477 AANYA SURI
599 AISHWARYA BANSAL
1555 AMRUTA
1141 ANANDITA SHARMA
848 ANJIKA RASTOGI
1639 ANSHUL
1203 ANUSHKA
1547 ASHIKA
1464 ASHITA VERMA
608 AVANI AGARWAL
1206 AYUSHI YADAV
839 BHOOMI YADAV
74 BHOOMIKA SHARMA
1273 DIKSHA JHAROTIYA
1006 DISHA
260 EUREKA DEORI
516 HANA JAIN
HIMADRI SHEKHAR
1567 GUPTA
1589 ISHA DHIMAN
1524 ISHA SAINI
586 ISHITA SHARMA</td><td>PROGRAMMING USING PYTHON for Generic Elective Semester I
GE1a (NEP UGCF 2022)

1. WAP to calculate total marks, percentage and grade of a student. Marks obtained in each of three subjects are to be input by the user. Assign grades according to the following criteria:
Grade A: if Percentage >= 80
Grade B: if Percentage >= 60 and Percentage < 80
Grade C: if Percentage >= 40 and Percentage < 60
Grade D: if Percentage < 40
2. WAP to print factors of a given number.
3. WAP to add N natural numbers and display their sum.
4. WAP to print the following conversion table (use looping constructs):
<table><tr><td>Height (in Feet)</td><td>Height (in inches)</td></tr><tr><td>5.0 ft</td><td>60 inches</td></tr><tr><td>5.1ft</td><td>61.2 inches</td></tr><tr><td>.
.
.</td><td>.
.
.</td></tr><tr><td>5.8 ft</td><td>69.6 inches</td></tr><tr><td>5.9 ft</td><td>70.8 inches</td></tr><tr><td>6.0 ft</td><td>72 inches</td></tr></table></td><td>Dr. Tulika Kumari</td></tr>
</table>

	1559	JYOTIKA RAJKUMARI	5. WAP that takes a positive integer n and the produce n lines of output as shown: * * * * * * * * * * (sample output for n = 4) 6. Write a menu driven program using user defined functions to print the area of rectangle, square, circle and triangle by accepting suitable input from user. 7. Write a function that calculates factorial of a number n. 8. WAP to print the series and its sum: (use functions) 1/1! + 1/2! + 1/3! …….1/n! 9. WAP to perform the following operations on an input string a. Print length of the string b. Find frequency of a character in the string c. Print whether characters are in uppercase or lowercase 10. WAP to create two lists: one of even numbers and another of odd numbers. The program should demonstrate the various operations and methods on lists. 11. WAP to create a dictionary where keys are numbers between 1 and 5 and the values are the cubes of the keys. 12. WAP to create a tuple t1 = (1, 2, 5, 7, 2, 4). The program should perform the following: a. Print tuple in two lines, line 1 containing the first half of tuple and second line having the second half. b. Concatenate tuple t2 = (10, 11) with t1.	
	220	KASHISH YADAV		
	1111	KHUSHI SINGH		
	1237	KHUSHI YADAV		
	685	KISHIKA		
	507	LEISHA PANDITA		
	309	MAHAK PAWAR		
	620	MAHIKA PAWAR		
	130	MAHIYAL KAUR SUMAN		
	217	MANVI MANGAL		
	1622	MEENAKSHI VAISHNAV		
	368	MEHAK YADAV		
	62	NAINA		
	150	NAJMUL SEHR JILANI		
	1545	NIHARIKA SINGH		
	579	NISHI GUPTA		
	866	PALAK AGRAWAL		
	497	PALAK JUNEJA		
		POOJA KUMARI		
	384	DEVANDA		
	1654	POOJITA MANDAL		
	907	PRAGYA SHARMA		
	165	PRANJAL WALA		
	1171	PRINSI		
	574	PRISHA		
	1811	PRIYA CHOUDHARY		
	1094	RAKHI		
	1239	RIYA		
	1558	SAANVI SINGH		
	903	SAKSHI SHARMA		
	774	SAKSHI YADAV		
	1834	SALINI SHARMA		
	1746	SAMIYA BHARDWAJ		
	824	SAMRIDHI SURYA		
	575	SEEPRA KUMARI		
	1123	SHRISTI SANDEEP MORE		
	172	SIMAR PANDEY		
	1748	SRAVANI PAI		
	145	SUHANI SINGH		
	1461	SUNITA MEENA		

	1466 SURBHI MAHOR 1557 TANISHA JAUHAR 1705 TEJASWINI SAMANTA 1867 TSEWANG CHUSKIT UMME SHARIAH AL 1852 MUTASHABIHA 1728 VAIDAI SHEKHAWAT 786 VANSHIKA SINGH 357 VARUNI NEGI 947 YASHVI PREM 300 YASHVI SINGH		
3.	**(Total – 42 Students)** Year/Roll No **Name** 2022/1610 AGREEMA 2022/1358 AKSHITA GUPTA 2022/125 ANJALI 2022/1618 ANSHIKA 2022/1574 ANSHITA SAXENA 2022/341 ESHEETA SHARMA 2022/1598 Harshita Chaudhary 2022/394 HARSHITA YADAV 2022/1558 ISHA 2022/437 JAHNAVI 2022/440 JANHVI 2022/535 KHUSHI UPADHYAY 2022/583 LAVANYA AMIT 2022/612 MANISHKA PANDEY 2022/1602 Meenakshi 2022/1385 MEENU SEVDA 2022/637 MEHAK 2022/700 NANDINI KUTIYAL 2022/705 NANDINI YADAV 2022/1621 Neetu 2022/1539 NEHA BISHT 2022/724 NIDHI KUMARI 2022/1393 NIKITA 2022/764 PALAK 2022/1452 PRATIBHA KANWAR RATHORE	**B.Sc. Program VI** **Semester (NEP UGCF 2022)** **Computer Networks** **DSC-06** 1. To Study basic network command and Network configuration commands. 2. To study and perform PC to PC communication. 3. To create Star topology using Hub and Switch. 4. To create Bus, Ring, Tree, Hybrid, Mesh topologies. 5. Perform an initial Switch configuration. 6. Perform an initial Router configuration. 7. To implement Client Server Network. 8. To implement connection between devices using a router. 9. To perform remote desktop sharing within LAN connection.	**Dr. Tulika Kumari**

	2022/1397 PRATIKSHA THAKUR 2022/1639 PRERNA 2022/1623 Priya 2022/872 PURVA VARSHNEY 2022/1005 SANJANA CHIMWAL 2022/1519 SEJAL 2022/1034 SEZAL GARG 2022/1559 SHANVI 2022/1053 SHEETAL YADAV 2022/1061 SHIKSHA MALL 2022/1076 SHIVANSHI YOGI 2022/1132 SNEHA GUPTA 2022/1253 TVISHA KHATRI 2022/1261 UNNATI SHARMA 2022/1422 VANCHITA SHARMA 2022/1291 VARTIKA MOHAN 2022/1315 YASHASVI GOSWAMI		
4.	**(Total – 56 Students)** Roll Number Name 395 A SIYANDRA AANAVI 1709 CHATTOPADHYAY AANYA SURI 477 AISHWARYA BANSAL 599 AMRUTA ANANDITA SHARMA 1555 ANJIKA RASTOGI 1141 ANSHUL ASHIKA 848 ASHITA VERMA 1639 AVANI AGARWAL 1547 AYUSHI YADAV BHOOMIKA SHARMA 1464 DIKSHA JHAROTIYA 608 DISHA 1206	**GE Semester II (NEP-UGCF 2022)** **Data Analysis and Visualization using Python** **GE2a** 1. Load a Pandas dataframe with a selected dataset. Identify and count the missing values in a dataframe. Clean the data after removing noise as follows a) Drop duplicate rows. b) Detect the outliers and remove the rows having more than two outliers identified using boxplot. c) Identify the most correlated positively correlated attributes and negatively correlated attributes 2. Import iris data using sklearn library or (Download IRIS data from: https://archive.ics.uci.edu/ml/datasets/iris or import it from sklearn.datasets) a. Compute mean, mode, median, standard deviation, confidence interval and standard error for each feature b. Compute correlation coefficients between each pair of features and plot heatmap	**Dr. Tulika Kumari**

	516	HANA JAIN	c. Find covariance between length of sepal and petal iv. Build contingency table for class feature 3. Load Titanic data from sklearn library , plot the following with proper legend and axis labels: a. Plot bar chart to show the frequency of survivors and non-survivors for male and female passengers separately b. Draw a scatter plot for any two selected features c. Compare density distribution for features age and passenger fare d. Use a pair plot to show pairwise bivariate distribution 4. Using Titanic dataset, do the following a. Find total number of passengers with age less than 30 b. Find total fare paid by passengers of first class c. Compare number of survivors of each passenger class 5. Download any dataset and do the following a. Count number of categorical and numeric features b. Remove one correlated attribute (if any) c. Display five-number summary of each attribute and show it visually 6. Write programs in Python using NumPy library to do the following: a. Compute the mean, standard deviation, and variance of a two dimensional random integer array along the second axis. b. Create a 2-dimensional array of size m x n integer elements, also print the shape, type and data type of the array and then reshape it into an n x m array, where n and m are user inputs given at the run time. c. Test whether the elements of a given 1D array are zero, non-zero and NaN. Record the indices of these	
		HIMADRI		
	1567	SHEKHAR GUPTA		
	1589	ISHA DHIMAN		
	1524	ISHA SAINI		
	586	ISHITA SHARMA		
		JYOTIKA		
	1559	RAJKUMARI		
	220	KASHISH YADAV		
	1111	KHUSHI SINGH		
	1237	KHUSHI YADAV		
		MAHIYAL KAUR		
	130	SUMAN		
	217	MANVI MANGAL		
		MEENAKSHI		
	1622	VAISHNAV		
	368	MEHAK YADAV		
	62	NAINA		
		NAJMUL SEHR		
	150	JILANI		
	1545	NIHARIKA SINGH		
	579	NISHI GUPTA		
	866	PALAK AGRAWAL		
	497	PALAK JUNEJA		
		POOJA KUMARI		
	384	DEVANDA		
	1654	POOJITA MANDAL		
	165	PRANJAL WALA		
	1171	PRINSI		
	574	PRISHA		
		PRIYA		
	1811	CHOUDHARY		
	1094	RAKHI		
	1558	SAANVI SINGH		
	903	SAKSHI SHARMA		
	1834	SALINI SHARMA		
		SAMIYA		
	1746	BHARDWAJ		
	575	SEEPRA KUMARI		
		SHRISTI SANDEEP		
	1123	MORE		

	172 SIMAR PANDEY 1748 SRAVANI PAI 1461 SUNITA MEENA TEJASWINI 1705 SAMANTA TSEWANG 1867 CHUSKIT VAIDAI 1728 SHEKHAWAT 786 VANSHIKA SINGH 357 VARUNI NEGI 947 YASHVI PREM	elements in three separate arrays. d. Create three random arrays of the same size: Array1, Array2 and Array3. Subtract Array 2 from Array3 and store in Array4. Create another array Array5 having two times the values in Array1. Find Co-variance and Correlation of Array1 with Array4 and Array5 respectively. e. Create two random arrays of the same size 10: Array1, and Array2. Find the sum of the first half of both the arrays and product of the second half of both the arrays. 7. Consider two data files (in CSV format) having attendance of two workshops. Each file has three fields 'Name', 'Date, duration (in minutes) where names are unique within a file. Note that duration may take one of three values (30, 40, 50) only. Import the data into two data frames and do the following: a. Perform merging of the two data frames to find the names of students who had attended both workshops. b. Find names of all students who have attended a single workshop only. c. Merge two data frames row-wise and find the total number of records in the data frame. d. Merge two data frames row-wise and use two columns viz. names and dates as multi-row indexes. Generate descriptive statistics for this hierarchical data frame. 8. Consider the following data frame containing a family name, gender of the family member and her/his monthly income in each record. Name Gender MonthlyIncome (Rs.) Shah Male 114000.00 Vats Male 65000.00 Vats Female 43150.00 Kumar Female 69500.00 Vats Female 155000.00 Kumar Male 103000.00	

<table>
<tr>
<td></td>
<td></td>
<td>Shah Male 55000.00
Shah Female 112400.00
Kumar Female 81030.00
Vats Male 71900.00
Write a program in Python using Pandas to perform the following:
a. Calculate and display familywise gross monthly income.
b. Display the highest and lowest monthly income for each family name
c. Calculate and display monthly income of all members earning income less than Rs. 80000.00.
d. Display total number of females along with their average monthly income
e. Delete rows with Monthly income less than the average income of all members</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>
<table>
<tr><th>S.No.</th><th>Roll Number</th><th>Name</th></tr>
<tr><td>1</td><td>1610</td><td>AGRIMA SINGH</td></tr>
<tr><td>2</td><td>341</td><td>ESHEETA SHARMA</td></tr>
<tr><td>3</td><td>535</td><td>KHUSHI UPADHYAY</td></tr>
<tr><td>4</td><td>612</td><td>MANISHKA PANDEY</td></tr>
<tr><td>5</td><td>1602</td><td>MEENAKSHI TIWARI</td></tr>
<tr><td>6</td><td>700</td><td>NANDINI KUTIYAL</td></tr>
<tr><td>7</td><td>705</td><td>NANDINI YADAV</td></tr>
<tr><td>8</td><td>724</td><td>NIDHI KUMARI</td></tr>
<tr><td>9</td><td>1452</td><td>PRATIBHA KANWAR RATHORE</td></tr>
<tr><td>10</td><td>1639</td><td>PRERNA BHARTI</td></tr>
<tr><td>11</td><td>1005</td><td>SANJANA CHIMWAL</td></tr>
<tr><td>12</td><td>1519</td><td>SEJAL</td></tr>
<tr><td>13</td><td>1053</td><td>SHEETAL YADAV</td></tr>
<tr><td>14</td><td>1076</td><td>SHIVANSHI YOGI</td></tr>
<tr><td>15</td><td>1132</td><td>SNEHA GUPTA</td></tr>
</table>
</td>
<td>Sem 7-Scientific Writing And Computational Analysis Tools

1. Basic Document Setup and Formatting Text: Create a new document with a specific page size, orientation, and margins, Format a paragraph using different font styles (bold, italic, underline) and sizes, Apply alignment options (left, right, center, justified) to different text blocks, Use styles to format headings and body text consistently. (4 hours)
2. Lists and Tables, Multi-Column Layouts: Create a bulleted and numbered list for an agenda or shopping list, design a table to represent student grades or inventory details, merge and split cells in the table, and apply borders and shading. Create a newsletter-style document using two or three-column layouts.(4 hours)
3. Mathematical Equations: Insert and format basic math expressions, such as fractions, superscripts, and subscripts. Write complex equations, like the quadratic formula, matrices, and integrals, using equation tools or LaTeX</td>
<td>Dr Priti Rai Jain</td>
</tr>
</table>

16	1253	TVISHA KHATRI	
17	1291	VARTIKA MOHAN	
18	1315	YASHASVI GOSWAMI	

syntax (if applicable), and align multiple equations properly using equation editors or tab alignment. (4 hours)
4. Figures and Graphics, Customising Fonts and Colours: Insert an image or figure into the document with a caption, Resize and position the image using wrap text and alignment options, Change font family and colour scheme for different document elements, Create a cover page with custom fonts, colours, and images. (4 hours)
5. References, Citations, and Headers/Footers/Page Numbering: Insert a bibliography and add citations using a reference manager or built-in citation tools, Apply consistent header and footer designs across the document, Insert and format page numbers (e.g., Roman numerals for intro, Arabic for content), Create a Table of Contents and update it automatically. (4 hours)
6. Creating a Resume or CV: Use a template or design a CV layout from scratch with appropriate sections (Education, Experience, Skills), Insert a profile photo, format contact details, and add social media links, Apply proper use of whitespace, bullets, and alignment to ensure clarity and readability, Export the CV as a PDF and check formatting consistency. (4 hours)

7. Introduction to MATLAB Interface and Basic Commands: Using command window, editor, and workspace, Arithmetic operations, using help, clc, clear, who, whos. Variable Assignment and Data Types: Creating scalars, vectors, complex numbers, Type conversion, and precision handling, Matrix Creation and Manipulation: Defining matrices, transposition, reshaping, Indexing, slicing, concatenation, Matrix multiplication, inversion, determinant, eigenvalues. **(4 hours)**
8. Plotting and Visualization 2D and 3D Plotting: *plot(), subplot(), title(), xlabel(),*

ylabel(), legend(), 3D plots: mesh(), surf(), contour(). Data Visualisation with Customisation: Bar graphs, pie charts, histograms, Line styles, markers, colour changes. **(4 hours)**

9. Loops and Conditional Statements: Using for, while, and if-else, writing loops to sum a series, the Fibonacci series, and Conditionals to check prime numbers or grading systems, Functions and Scripts, Creating User-Defined Functions, writing a function to compute factorial, and standard deviation. **(4 hours)**

10. Using Scripts for Automation: Writing scripts to read input, process, and display output, File Handling: Reading and Writing Files, reading data from .txt, .csv using *fopen, fscanf, textscan, readmatrix()*. Writing output to files. **(4 hours)**

11. Signal Processing: Basic Signal Generation and Analysis, generating sine, square, and triangular waves, plotting signals, and performing FFT. Filtering Signals: Applying FIR and IIR filters, using filter (), butter (), and freqz(). **(4 hours)**

12. Image Processing: Image Reading and Display, Read and display an image using *imread(), imshow(), and rgb2gray()*. Image Enhancement and Filtering: Histogram equalization, edge detection, smoothing**. (8 hours)**

13. Optimisation and Curve Fitting: Curve Fitting using *polyfit()* and *fit()*. Fit a polynomial or custom function to data, Evaluate goodness of fit, optimisation using fminsearch, fmincon: Minimise a nonlinear function with constraints. **(8 hours)**

14. Posteer on a research topic as under:

Project #	Student Name 1	College Roll No	Student Name 2 and 3	College Roll No	Poster Topic
1	Agrima	2022/1610			Transparent Windshield

							Prototypes for Reducing LED Headlight Glare and Blue-Light Intensity	
		2	Nidhi kumari	2022/724	Nandini Yadav	2022/705	Air quality in Delhi analysis over past 20 years	
		3	Sheetal	2022/1053	Meenakshi	2022/1602	Art in the Uncanny Valley: An Analysis of Ethical Conflict in AI-Generated Media (pl elaborate) has to finally come out as a poster	
		4	Sejal	2022/1519	Shivanshi yogi	2022/1076	Average IQ (IQ VS EQ studies over past 3 decades) - include 5-8 best ones	
		5	Yashasvi Goswami	2022/1315	Vartika Mohan	2022/1291	Computational Prediction of Phytochemicals Binding using Machine Learning and Deep Learning	
		6	Manishka	2022/612	Prerna	2022/1639	From Well-Being to	

						Wellness: Analyzing Happiness Index and Life Expectancy of India vs Globally	
		7	Nandini Kutiyal	2022/700	Pratibha Rathore	2022/1452	Bitcoin–Gold Correlation & Portfolio Analysis (INR)	
		8	Tvisha Khatri	2022/1132	Sneha Gupta, Esheeta Sharma	2022/1132, 2022/341	Enhancing Heart Disease Prediction Using Chi-Square Feature Selection and SMOTE Balancing must show work enough for 3 its 40 marks)	
		9	Sanjana Chimwal	2022/1005	Khushi Upadhyay	2022/535	prediction of diabetes using different ML algorithms	

6

S.No	College Roll No	Student Name
1	861	Aakriti Mittal
2	989	Aditi Kumari
3	1726	Aditri Nag
4	113	Akshita Chauhan
5	816	Anam Qureshi
6	275	Aparna
7	185	Astha Diwan

DSE 3 - Object Oriented Programming Using Python UPC 23435700001

1. Execute expressions having various types of arithmetic, relational, logical and bitwise operators in the python Shell.

2. Do the following:

   a. Write a Python Program that illustrates the use of various functions of the math module.

8	1665	Ayushi Pal
9	696	Bhumi Bharti
10	158	Deepanshi Yadav
11	358	Deepti
12	1513	Divya
13	1594	Divya
14	739	Himani Dua
15	543	Ishika
16	1446	Jiya Bharti
17	1470	Kanchan Verma
18	1453	Lata
19	1313	Leena Rani
20	509	Mahima Raj K P
21	1527	Maneesha Chauhan
22	1440	Manya Ranjan
23	1650	Monika
24	613	Nitika
25	1437	Palak Singh
26	991	Pranjal Sharma
27	867	Priya Kumari
28	1080	Priyanshi Bansal
29	568	Ragini Yadav
30	210	Rashi Verma
31	1160	Riya Gupta
32	1106	Sakshi
33	1456	Saloni
34	1860	Salvi Srivyonse
35	799	Saumya Yadav
36	1609	Smriti Kumari
37	1663	Sneha
38	178	Somya Arya
39	1521	Sonal Goswami
40	1819	Subarna Gupta
41	1818	Swarnima Bam
42	1057	Taniya
43	506	Tarushi Sanwal

b. Write a Python program to produce a table of sins, cosines and tangents. Make a variable x in range from 0 to 10 in steps of 0.2. For each value of x, print the value of sin(x), cos(x) and tan(x).

3. Write a program that reads an integer value and prints “leap year” or “not a leap year” . A year is a leap year if the following conditions are satisfied: The year is multiple of 400. The year is multiple of 4 and not multiple of 100. Use assert statement and comments wherever needed.

4. Write a Python function to find the factorial of a given number “n”.

5. Write a Python function to generate the Fibonacci sequence till a given number “n”.

6. Write a function that takes a number as an input and finds its reverse and computes the sum of its digits. Accept suitable inputs and use suitable assertions.

7. Write a function that takes two numbers as input parameters and returns their least common multiple.

8. Write a function that takes a number as an input and determine whether it is prime or not. Use suitable assertions and comments

9. Write a function that finds the sum of the a) first n odd terms b) first n even terms

10. Write a Python function that takes an argument n to produce the outputs such as:

(a) n = 4

1
21
321
4321

b) n = 4

		1 121 12321 1234321 12321 121 1 11. Write a Python function that takes a string as an input from the user and determines whether it is palindrome or not 12. Write a function that takes a sentence as input from the user and calculates the frequency of each letter. Use a variable of dictionary type to maintain the count. 13. Write a Python function that prints a dictionary where the keys are numbers between 1 and 5 and the values are cubes of the keys. 14. Consider a tuple t1=(1,2,5,7,9,2,4,6,8,10). Write a program to perform following operations: a. Print half the values of tuple in one line and the other half in the next line. b. Print another tuple whose values are even numbers in the given tuple. c. Concatenate a tuple t2=(11,13,15) witht1. d. Return maximum and minimum value from this tuple. 15. Write a function called “check_duplicates” that takes a list and returns true if there is any element that appears more than once. Also find the frequency of that element. The original list should not be modified. 16. Write a menu driven program to perform the following functions on strings:	

		a. Find the length of string b. Return maximum of three strings c. Accept a string and replace every successive character with '#' Example- For Given string 'Hello World' returned string is 'H#l#o W#r#d'. d. Find number of words in the given string 17. Write a Python program to perform the following using list: a. Check if all elements in list are numbers or not b. If it is a numeric list, then count number of odd values in it c. If list contains all Strings, then display largest String in the list d. Display list in reverse form e. Find a specified element in list f. Remove the specified element 18. Write a program to implement a class for finding area and perimeter of a rectangle. Write constructor, destructor, and functions for calculating area and perimeter. 19. Implement : a. Linear Search b. Binary Search (optional) 20. Implementation of a. selection sort b. insertion sort (optional) c. bubble sort (optional)	

7.

Sem 5 (Database Management Systems)

1	2022/1610	AGRIMA SINGH
2	2022/1358	AKSHITA GUPTA
3	2022/125	ANJALI
4	2022/1618	ANSHIKA GANJOO
5	2022/1574	ANSHITA SAXENA
6	2022/341	ESHEETA SHARMA
7	2022/1598	HARSHITA CHAUDHARY
8	2022/394	HARSHITA YADAV
9	2022/1558	ISHA
10	2022/437	JAHNAVI
11	2022/440	JANHVI
12	2022/535	KHUSHI UPADHYAY
13	2022/583	LAVANYA AMIT
14	2022/612	MANISHKA PANDEY
15	2022/1602	MEENAKSHI
16	2022/1385	MEENU SEVDA
17	2022/637	MEHAK
18	2022/700	NANDINI KUTIYAL
19	2022/705	NANDINI YADAV
20	2022/1621	NEETU RANI
21	2022/1539	NEHA BISHT
22	2022/724	NIDHI KUMARI
23	2022/1393	NIKITA
24	2022/764	PALAK
25	2022/1452	PRATIBHA KANWAR RATHORE
26	2022/1397	PRATIKSHA THAKUR
27	2022/1639	PRERNA BHARTI
28	2022/1623	PRIYA
29	2022/872	PURVA VARSHNEY
30	2022/1005	SANJANA CHIMWAL
31	2022/1519	SEJAL
32	2022/1034	SEZAL GARG
33	2022/1559	SHANVI
34	2022/1053	SHEETAL YADAV
35	2022/1061	SHIKSHA MALL
36	2022/1076	SHIVANSHI YOGI
37	2022/1132	SNEHA GUPTA
38	2022/1253	TVISHA KHATRI
39	2022/1261	UNNATI SHARMA
40	2022/1422	VANCHITA SHARMA
41	2022/1291	VARTIKA MOHAN
42	2022/1315	YASHASVI GOSWAMI

I. Create and use the following student-society database schema for a college to answer the given (sample) queries using the standalone SQL editor.

STUDENT	Roll No	StudentName	Course	DOB
	Char(6)	Varchar(20)	Varchar(10)	Date

SOCIETY	SocID	SocName	MentorName	TotalSeats
	Char(6)	Varchar(20)	Varchar(15)	Unsigned int

ENROLLMENT	Roll No	SID	DateOfEnrollment
	Char(6)	Char(6)	Date

Here Rollno (ENROLLMENT) and SID (ENROLLMENT) are foreign keys.

1. Retrieve names of students enrolled in any society.
2. Retrieve all society names.
3. Retrieve students' names starting with the letter 'A'.
4. Retrieve students' details studying in courses 'computer science' or 'chemistry'.

5. Retrieve students' names whose roll no either starts with 'X' or 'Z' and ends with '9'
6. Find society details with more than N TotalSeats where N is to be input by the user
7. Update society table for the mentor name of a specific society
8. Find society names in which more than five students have enrolled
9. Find the name of the youngest student enrolled in society 'NSS'
10. Find the name of the most popular society (on the basis of enrolled students)
11. Find the name of two least popular societies (on the basis of enrolled students)
12. Find the students names who are not enrolled in any society.
13. Find the students names enrolled in at least two societies
14. Find society names in which maximum students are enrolled
15. Find names of all students who have enrolled in any society and society names in which at least one student has enrolled
16. Find names of students who are enrolled in any of the three societies 'Debating', 'Dancing' and 'Sashakt'.
17. Find society names such that its mentor has a name with 'Gupta' in it.
18. Find the society names in which the number of enrolled students is only 10% of its capacity.
19. Display the vacant seats for each society.
20. Increment Total Seats of each society by 10%
21. Add the enrollment fees paid ('yes'/'No') field in the enrollment table.
22. Update date of enrollment of society id 's1' to '2018-01-15', 's2' to the current date and 's3' to '2018-01-02'.
23. Create a view to keep track of society names with the total number of students enrolled in it.
24. Find student names enrolled in all the societies.
25. Count the number of societies with more than 5 students enrolled in it
26. Add column Mobile number in student table with default value '9999999999'
27. Find the total number of students whose age is > 20 years.
28. Find names of students who were born in 2001 and are enrolled in at least one society.
29. Count all societies whose name starts with 'S' and ends with 't' and at least 5 students are enrolled in the society.
30. Display the following information:
    Society name Mentor name Total Capacity Total Enrolled Unfilled Seats

II. Do the following database administration commands:

Create user, create role, grant privileges to a role, revoke privileges from a role, create index

Dr. Anuradha Khattar

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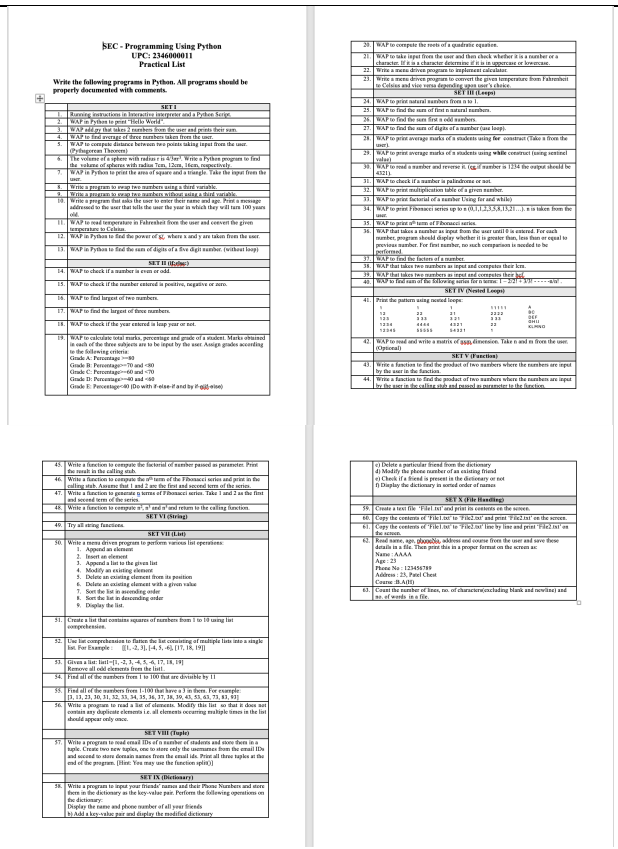
8.	**Semester 1 (SEC:Programming Using Python)** 1 861 AAKRITI MITTAL 2 1709 AANAVI CHATTOPADHYAY 3 430 AASHITA CHAUDHARY 4 599 AISHWARYA BANSAL 5 1339 ANJANA P K 6 850 ANNU NEHRA 7 705 ANUPRIYA SINGH 8 653 ANURADHA SINGH 9 1357 APOORVA ARYA 10 1464 ASHITA VERMA 11 185 ASTHA DIWAN 12 696 BHUMI BHARTI 13 534 BHUMI GAUR 14 131 CHIINLALNEI 15 562 DEEPALI 16 358 DEEPTI 17 1244 DEVANSHI SAINI 18 1392 GAURI JOSHI 19 578 HIMANI 20 569 HIMANSHI SINGH 21 105 ISHITA AGRAWAL 22 586 ISHITA SHARMA 23 1115 JAHANVI SHREE 24 6 JOSEPHINE SAVI 25 356 JULEYKA MAYENGBAM 26 1559 JYOTIKA RAJKUMARI 27 222 KALIGOTLA SAI HARSHITA 28 1694 KANAK PATHAK 29 1359 KASHISH BERRY 30 205 KAUSHIKI SHARMA 31 1439 KHUSHI 32 1686 KHUSHI SHARMA 33 1111 KHUSHI SINGH 34 1237 KHUSHI YADAV 35 834 KONKONA KAR 36 580 KRRISHN LEELOTPAL DIVYAA 37 1453 LATA 38 1300 MAHAK KHATRI 39 1521 SONAL GOSWAMI 40 1853 EMMANUELLA KELECHI					**Dr. Anuradha Khattar**

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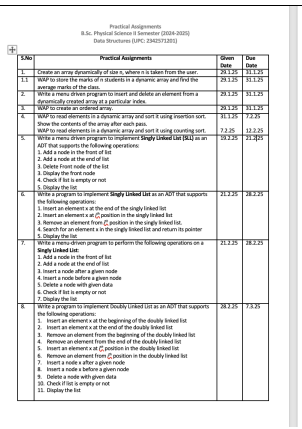
UNIVERSITY OF DELHI

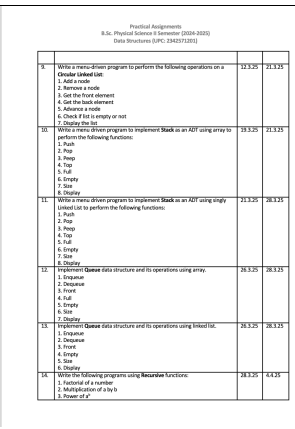
9. **Sem 2(Data Structures)**

1	861	AAKRITI MITTAL
2	989	ADITI KUMARI
3	1726	ADITRI NAG
4	113	AKSHITA CHAUHAN
5	816	ANAM QURESHI
6	275	APARNA
7	185	ASTHA DIWAN
8	1665	AYUSHI PAL
9	696	BHUMI BHARTI
10	158	DEEPANSHI YADAV
11	358	DEEPTI
12	1513	DIVYA(24047582036
13	1594	DIVYA(24047582034
14	739	HIMANI DUA
15	543	ISHIKA
16	1446	JIYA BHARTI
17	1470	KANCHAN VERMA
18	1453	LATA
19	1313	LEENA RANI
20	509	MAHIMARAJ K P
21	1527	MANEESHA CHAUHAN
22	1440	MANYA RANJAN
23	1650	MONIKA
24	613	NITIKA
25	1437	PALAK SINGH
26	991	PRANJAL SHARMA
27	867	PRIYA KUMARI
28	1080	PRIYANSHI BANSAL
29	568	RAGINI YADAV
30	210	RASHI VERMA
31	1160	RIYA GUPTA
32	1106	SAKSHI
33	1456	SALONI
34	1860	SALVI SRIVYONSE
35	799	SAUMYA YADAV
36	192	SHEETAL
37	1609	SMRITI KUMARI
38	1663	SNEHA
39	178	SOMYA ARYA
40	1521	SONAL GOSWAMI
41	1819	SUBARNA GUPTA
42	1818	SWARNIMA BAM
43	1057	TANIYA
44	506	TARUSHI SANWAL



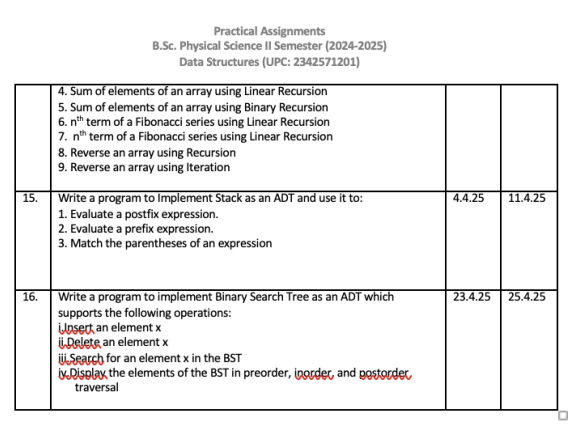
Practical Assignments
B.Sc. Physical Science II Semester (2024-2025)
Data Structures (UPC: 2342571201)

S.No	Practical Assignments	Given Date	Due Date
1.	Create an array dynamically of size n, where n is taken from the user.	29.1.25	31.1.25
1.1	WAP to store the marks of n students in a dynamic array and find the average marks of the class.	29.1.25	31.1.25
2.	Write a menu driven program to insert and delete an element from a dynamically created array at a particular index.	29.1.25	31.1.25
3.	WAP to create an ordered array.	29.1.25	31.1.25
4.	WAP to read elements in a dynamic array and sort it using insertion sort. Show the contents of the array after each pass. WAP to read elements in a dynamic array and sort it using counting sort.	31.1.25 7.2.25	7.2.25 12.2.25
5.	Write a menu driven program to implement **Singly Linked List (SLL)** as an ADT that supports the following operations: 1. Add a node in the front of list 2. Add a node at the end of list 3. Delete Front node of the list 3. Display the front node 4. Check if list is empty or not 5. Display the list	19.2.25	21.2.25
6.	Write a program to implement **Singly Linked List** as an ADT that supports the following operations: 1. Insert an element x at the end of the singly linked list 2. Insert an element x at i^{th} position in the singly linked list 3. Remove an element from i^{th} position in the singly linked list. 4. Search for an element x in the singly linked list and return its pointer 5. Display the list	21.2.25	28.2.25
7.	Write a menu-driven program to perform the following operations on a **Singly Linked List**: 1. Add a node in the front of list 2. Add a node at the end of list 3. Insert a node after a given node 4. Insert a node before a given node 5. Delete a node with given data 6. Check if list is empty or not 7. Display the list	21.2.25	28.2.25
8.	Write a program to implement Doubly Linked List as an ADT that supports the following operations: 1. Insert an element x at the beginning of the doubly linked list 2. Insert an element x at the end of the doubly linked list 3. Remove an element from the beginning of the doubly linked list 4. Remove an element from the end of the doubly linked list 5. Insert an element x at i^{th} position in the doubly linked list 6. Remove an element from i^{th} position in the doubly linked list 7. Insert a node x after a given node 8. Insert a node x before a given node 9. Delete a node with given data 10. Check if list is empty or not 11. Display the list	28.2.25	7.3.25



Practical Assignments
B.Sc. Physical Science II Semester (2024-2025)
Data Structures (UPC: 2342571201)

9.	Write a menu-driven program to perform the following operations on a **Circular Linked List**: 1. Add a node 2. Remove a node 3. Get the front element 4. Get the back element 5. Advance a node 6. Check if list is empty or not 7. Display the list	12.3.25	21.3.25
10.	Write a menu driven program to implement **Stack** as an ADT using array to perform the following functions: 1. Push 2. Pop 3. Peep 4. Top 5. Full 6. Empty 7. Size 8. Display	19.3.25	21.3.25
11.	Write a menu driven program to implement **Stack** as an ADT using singly Linked List to perform the following functions: 1. Push 2. Pop 3. Peep 4. Top 5. Full 6. Empty 7. Size 8. Display	21.3.25	28.3.25
12.	Implement **Queue** data structure and its operations using array. 1. Enqueue 2. Dequeue 3. Front 4. Full 5. Empty 6. Size 7. Display	26.3.25	28.3.25
13.	Implement **Queue** data structure and its operations using linked list. 1. Enqueue 2. Dequeue 3. Front 4. Empty 5. Size 6. Display	26.3.25	28.3.25
14.	Write the following programs using **Recursive** functions: 1. Factorial of a number 2. Multiplication of a by b 3. Power of a^b	28.3.25	4.4.25



Practical Assignments
B.Sc. Physical Science II Semester (2024-2025)
Data Structures (UPC: 2342571201)

	4. Sum of elements of an array using Linear Recursion 5. Sum of elements of an array using Binary Recursion 6. n^{th} term of a Fibonacci series using Linear Recursion 7. n^{th} term of a Fibonacci series using Linear Recursion 8. Reverse an array using Recursion 9. Reverse an array using Iteration		
15.	Write a program to Implement Stack as an ADT and use it to: 1. Evaluate a postfix expression. 2. Evaluate a prefix expression. 3. Match the parentheses of an expression	4.4.25	11.4.25
16.	Write a program to implement Binary Search Tree as an ADT which supports the following operations: i.Insert an element x ii.Delete an element x iii.Search for an element x in the BST iv.Display the elements of the BST in preorder, inorder, and postorder traversal	23.4.25	25.4.25

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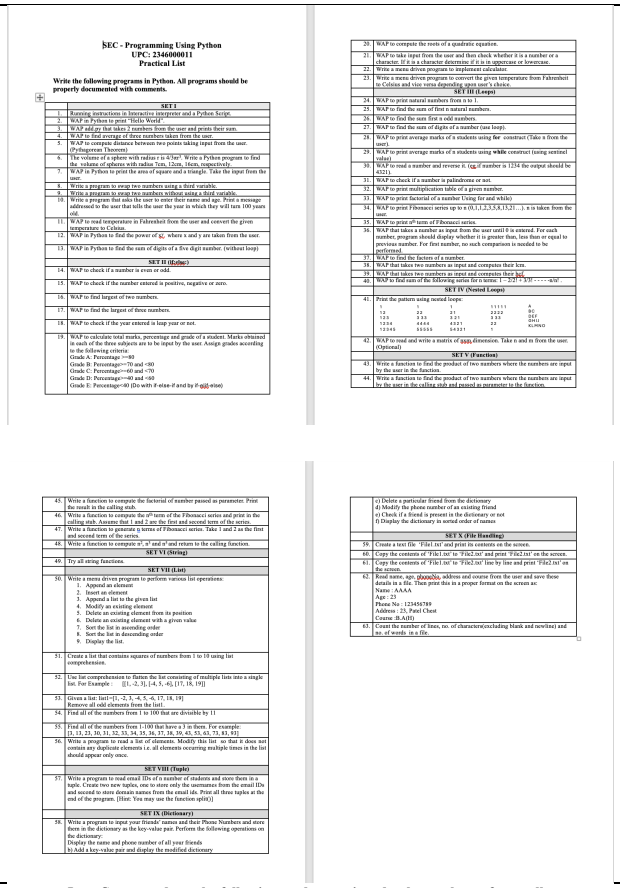
10	**Semester 2 (SEC:Programming Using Python)**		**Dr. Anuradha Khattar**
11	**Semester 3 (GE: Database Management Systems) Total 71 Students**	**I. Create and use the following student-society database schema for a college to answer the given (sample) queries using the standalone SQL editor.** **STUDENT** (**Roll No** Char(6), StudentName Varchar(20), Course Varchar(10), DOB Date) **SOCIETY** (**SocID** Char(6), SocName Varchar(20), MentorName Varchar(15), TotalSeats Unsigned int) **ENROLLMENT** (**Roll No** Char(6), **SID** Char(6), DateOfEnrollment Date) Here Rollno (ENROLLMENT) and SID (ENROLLMENT) are foreign keys. 1. Retrieve names of students enrolled in any society. 2. Retrieve all society names. 3. Retrieve students' names starting with the letter 'A'. 4. Retrieve students' details studying in courses 'computer science' or 'chemistry'.	**Dr. Tarun Kumar Gupta**

Practical Exam Date – 20 NOV 2

S.No	Your Name	Coll. Roll No.	Examination Roll No	IA
1	CHARUMATHY R	296	23047501069	
2	ISHITA PATIDAR	479	23047501111	
3	AASTHA PANDA	30	23047510003	
4	BHAVYA GOEL	272	23047510015	
5	BHAVYA JORWAL	273	23047510016	
6	BHUMIKA RAWAT	285	23047510017	
7	DISHA GURJAR	351	23047510021	
8	GARIMA KUMARI	402	23047510024	
9	HIMANI MALHOTRA	450	23047510029	
10	JASVEEN KAUR	500	23047510030	
11	KARTIKA	548	23047510033	
12	KHUSHAALI GROVER	572	23047510035	
13	KHUSHI AGGARWAL	584	23047510036	
14	LAVANYA BHADANA	659	23047510041	
15	LEHAR SINGH TOMAR	1662	23047510042	
16	M AHINTARA	673	23047510043	
17	MANVI GUPTA	719	23047510047	
18	NOORPAL KAUR SIDHU	868	23047510054	
19	PARNIKA SRIVASTAVA	1682	23047510056	
20	PRAPTI MUKHERJEE	1546	23047510060	
21	PRIYADARSHINI MEENA	983	23047510062	
22	PRIYANKA KUMARI	992	23047510064	
23	RAGHAVI BHANDARI	1011	23047510066	
24	SAKSHI SINGH	1642	23047510073	
25	SANIKA VILAS SEVATKAR	1133	23047510075	
26	SANSHITA SUMAN	1143	23047510076	
27	SHRADHA JAIN	1200	23047510079	
28	SHTAAKSHI SARASWAT	1236	23047510081	
29	SURYANSHI PATHAK	1355	23047510084	
30	TAMANNA GUPTA	1377	23047510086	
31	TANYA GUPTA	1403	23047510089	
32	TANYA RAJESH	1573	23047510090	
33	VANSHIKA VENKATRAMAN	1577	23047510098	
34	VANSHITA GUPTA	1670	23047510099	
35	VIDHI AGGARWAL	1475	23047510102	
36	VIDITA BAJAJ	1478	23047510103	
37	YANA GUNWANT	1496	23047510104	
38	JAYA GAYATHRI	1524	23047510105	
39	SUSAMA KHAN	1356	23047513069	
40	KAJAL	523	23047526027	
41	SHUCHI PANWAR	1671	23047527082	
42	MAHAK GUPTA	682	23047529011	
43	SUPRIYA SAURAV	1351	23047529034	
44	SHRUTI KARTHIK	1228	23047557068	
45	SIMARAN GARANG	1249	23047557070	
46	AASHI SHARMA	1614	23047563002	
47	ANKITA KUMARI	143	23047563008	
48	AYUSHI SINGH	256	23047563018	

S.No	Your Name	Coll. Roll No.	Examination Roll No
49	BHOOMI BAJAJ	278	23047563021
50	DEEPIKA	1607	23047563023
51	JANIKA SHANKER	492	23047563029
52	KAJAL VERMA	526	23047563032
53	KARAM THOIBITHOI	545	23047563035
54	KHUSHI KUMARI	593	23047563037
55	MONIKA	757	23047563043
56	NAINA SANJEEV TIBREWAL	785	23047563045
57	NIHARIKA SINGH	831	23047563046
58	PRIYADARSHANI	982	23047563054
59	PRIYANSHI	1002	23047563057
60	RASHMI KUSHWAHA	1026	23047563060
61	REEDIM GANGWAR	1033	23047563061
62	SAKSHI KUMARI	1719	23047563065
63	SHALINI RAWAT	1718	23047563069
64	SIYA SRIVASTAVA	1261	23047563076
65	SNEHA	1571	23047563077
66	SOORYANSHI	1300	23047563080
67	TEJASVI	1409	23047563087
68	VAIDEHI KUMAR	1444	23047563088
69	YASHASHWINI SHEKHAWAT	1497	23047563092
70	YASHIKA	1503	23047563093
71	ASVEER KAUR KALHA	233	23047583004

5. Retrieve students' names whose roll no either starts with 'X' or 'Z' and ends with '9'
6. Find society details with more than N TotalSeats where N is to be input by the user
7. Update society table for the mentor name of a specific society
8. Find society names in which more than five students have enrolled
9. Find the name of the youngest student enrolled in society 'NSS'
10. Find the name of the most popular society (on the basis of enrolled students)
11. Find the name of two least popular societies (on the basis of enrolled students)
12. Find the students names who are not enrolled in any society.
13. Find the students names enrolled in at least two societies
14. Find society names in which maximum students are enrolled
15. Find names of all students who have enrolled in any society and society names in which at least one student has enrolled
16. Find names of students who are enrolled in any of the three societies 'Debating', 'Dancing' and 'Sashakt'.
17. Find society names such that its mentor has a name with 'Gupta' in it.
18. Find the society names in which the number of enrolled students is only 10% of its capacity.
19. Display the vacant seats for each society.
20. Increment Total Seats of each society by 10%
21. Add the enrollment fees paid ('yes'/'No') field in the enrollment table.
22. Update date of enrollment of society id 's1' to '2018-01-15', 's2' to the current date and 's3' to '2018-01-02'.
23. Create a view to keep track of society names with the total number of students enrolled in it.
24. Find student names enrolled in all the societies.
25. Count the number of societies with more than 5 students enrolled in it
26. Add column Mobile number in student table with default value '9999999999'
27. Find the total number of students whose age is > 20 years.
28. Find names of students who were born in 2001 and are enrolled in at least one society.
29. Count all societies whose name starts with 'S' and ends with 't' and at least 5 students are enrolled in the society.
30. Display the following information:
    Society name Mentor name Total Capacity Total Enrolled Unfilled Seats

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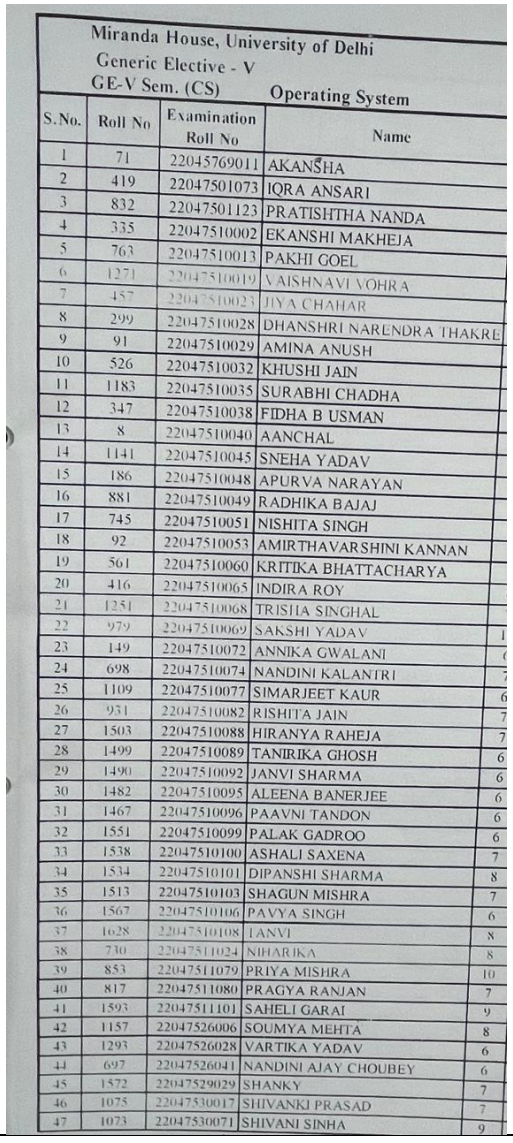
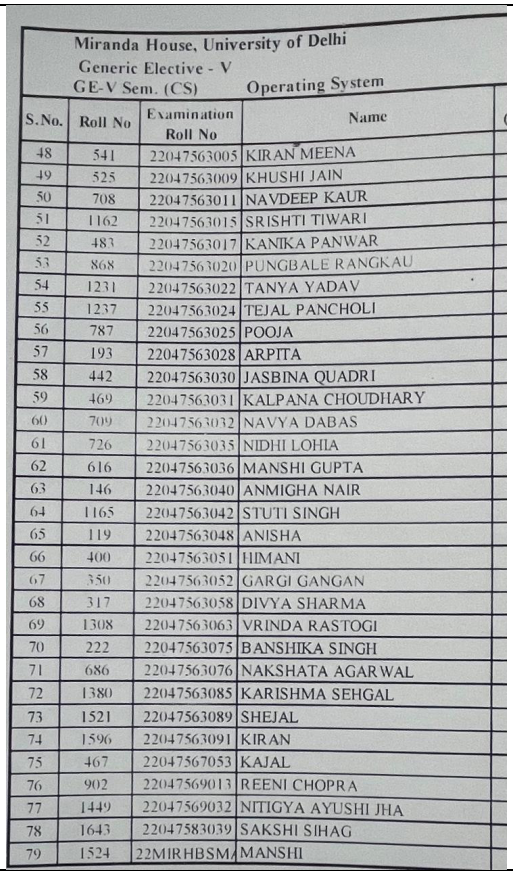
12.	**Semester 5 GE: Operating Systems** **Total Students 79** 	**Suggested Practical List for the Operating System Paper (DSC08)** 1. Demonstration of various Operating System functions using OS Simulator. 2. Execute various LINUX commands for: i. Information Maintenance: wc, clear, cal, who, date, pwd ii. File Management: cat, cp, rm, mv, cmp, comm, diff, find, grep, awk iii. Directory Management: cd, mkdir, rmdir, ls 3. Execute various LINUX commands for: i. Process Control: fork, getpid, ps, kill, sleep ii. Communication: Input-output redirection, Pipe iii. Protection Management: chmod, chown, chgrp 4. Write a program(using fork () and/or exec () commands) where parent and child execute: i. same program, same code. ii. same program, different code. iii. before terminating, the parent waits for the child to finish its task. 5. Write a program to report behaviour of Linux kernel including kernel version, CPU type andCPU information. 6. Write a program to report behaviour of Linux kernel including information on configured memory, amount of free and used memory. (Memory information) 7. Write a program to copy files using system calls. 8. Write a program to implement First Come First Serve (FCFS) scheduling algorithm. 9. Write a program to implement Shortest Job First (SJF) scheduling algorithm. 10. Write a program to implement non-preemptive priority-based scheduling algorithm. 11. Write a program to calculate sum of n numbers using Pthreads. 12. Write a program to implement first-fit, best-fit and worst-fit allocation strategies.	**Dr. Tarun Kumar Gupta**

Miranda House, University of Delhi
Generic Elective - V
GE-V Sem. (CS) Operating System

S.No.	Roll No	Examination Roll No	Name	
1	71	22045769011	AKANSHA	
2	419	22047501073	IQRA ANSARI	
3	832	22047501123	PRATISHTHA NANDA	
4	335	22047510002	EKANSHI MAKHEJA	
5	763	22047510013	PAKHI GOEL	
6	1271	22047510019	VAISHNAVI VOHRA	
7	457	22047510023	JIYA CHAHAR	
8	299	22047510028	DHANSHRI NARENDRA THAKRE	
9	91	22047510029	AMINA ANUSH	
10	526	22047510032	KHUSHI JAIN	
11	1183	22047510035	SURABHI CHADHA	
12	347	22047510038	FIDHA B USMAN	
13	8	22047510040	AANCHAL	
14	1141	22047510045	SNEHA YADAV	
15	186	22047510048	APURVA NARAYAN	
16	881	22047510049	RADHIKA BAJAJ	
17	745	22047510051	NISHITA SINGH	
18	92	22047510053	AMIRTHAVARSHINI KANNAN	
19	561	22047510060	KRITIKA BHATTACHARYA	
20	416	22047510065	INDIRA ROY	
21	1251	22047510068	TRISHA SINGHAL	
22	979	22047510069	SAKSHI YADAV	1
23	149	22047510072	ANNIKA GWALANI	6
24	698	22047510074	NANDINI KALANTRI	7
25	1109	22047510077	SIMARJEET KAUR	6
26	931	22047510082	RISHITA JAIN	7
27	1503	22047510088	HIRANYA RAHEJA	7
28	1499	22047510089	TANIRIKA GHOSH	6
29	1490	22047510092	JANVI SHARMA	6
30	1482	22047510095	ALEENA BANERJEE	6
31	1467	22047510096	PAAVNI TANDON	6
32	1551	22047510099	PALAK GADROO	6
33	1538	22047510100	ASHALI SAXENA	7
34	1534	22047510101	DIPANSHI SHARMA	8
35	1513	22047510103	SHAGUN MISHRA	7
36	1567	22047510106	PAVYA SINGH	6
37	1628	22047510108	TANVI	8
38	730	22047511024	NIHARIKA	8
39	853	22047511079	PRIYA MISHRA	10
40	817	22047511080	PRAGYA RANJAN	7
41	1593	22047511101	SAHELI GARAI	9
42	1157	22047526006	SOUMYA MEHTA	8
43	1293	22047526028	VARTIKA YADAV	6
44	697	22047526041	NANDINI AJAY CHOUBEY	6
45	1572	22047529029	SHANKY	7
46	1075	22047530017	SHIVANKI PRASAD	7
47	1073	22047530071	SHIVANI SINHA	9



Miranda House, University of Delhi
Generic Elective - V
GE-V Sem. (CS) Operating System

S.No.	Roll No	Examination Roll No	Name
48	541	22047563005	KIRAN MEENA
49	525	22047563009	KHUSHI JAIN
50	708	22047563011	NAVDEEP KAUR
51	1162	22047563015	SRISHTI TIWARI
52	483	22047563017	KANIKA PANWAR
53	868	22047563020	PUNGBALE RANGKAU
54	1231	22047563022	TANYA YADAV
55	1237	22047563024	TEJAL PANCHOLI
56	787	22047563025	POOJA
57	193	22047563028	ARPITA
58	442	22047563030	JASBINA QUADRI
59	469	22047563031	KALPANA CHOUDHARY
60	709	22047563032	NAVYA DABAS
61	726	22047563035	NIDHI LOHIA
62	616	22047563036	MANSHI GUPTA
63	146	22047563040	ANMIGHA NAIR
64	1165	22047563042	STUTI SINGH
65	119	22047563048	ANISHA
66	400	22047563051	HIMANI
67	350	22047563052	GARGI GANGAN
68	317	22047563058	DIVYA SHARMA
69	1308	22047563063	VRINDA RASTOGI
70	222	22047563075	BANSHIKA SINGH
71	686	22047563076	NAKSHATA AGARWAL
72	1380	22047563085	KARISHMA SEHGAL
73	1521	22047563089	SHEJAL
74	1596	22047563091	KIRAN
75	467	22047567053	KAJAL
76	902	22047569013	REENI CHOPRA
77	1449	22047569032	NITIGYA AYUSHI JHA
78	1643	22047583039	SAKSHI SIHAG
79	1524	22MIRHBSM	MANSHI

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13.

Sem 4 GE 4 Data Structure using Python Total 59 Students

S.No.	Roll Number	Name	Examination Roll No	Course
1	1614	AASHI SHARMA	23047563002	B.Sc (H) Mathematics
2	30	AASTHA PANDA	23047510003	B.A (H) Economics
3	143	ANKITA KUMARI	23047563008	B.Sc (H) Mathematics
4	233	ASVEER KAUR KALHA	23047583004	B.Sc Life Science
5	256	AYUSHI SINGH	23047563018	B.Sc (H) Mathematics
6	272	BHAVYA GOEL	23047510015	B.A (H) Economics
7	273	BHAVYA JORWAL	23047510016	B.A (H) Economics
8	278	BHOOMI BAJAJ	23047563021	B.Sc (H) Mathematics
9	285	BHUMIKA RAWAT	23047510017	B.A (H) Economics
10	1607	DEEPIKA	23047563023	B.Sc (H) Mathematics
11	351	DISHA GURJAR	23047510021	B.A (H) Economics
12	402	GARIMA KUMARI	23047510024	B.A (H) Economics
13	450	HIMANI MALHOTRA	23047510029	B.A (H) Economics
14	492	JANIKA SHANKER	23047563029	B.Sc (H) Mathematics
15	500	JASVEEN KAUR	23047510030	B.A (H) Economics
16	1524	JAYA GAYATHRI CHINTHAPALLY	23047510105	B.A (H) Economics
17	523	KAJAL	23047526027	
18	526	KAJAL VERMA	23047563032	B.Sc (H) Mathematics
19	545	KARAM THOIBITHOI	23047563035	B.Sc (H) Mathematics
20	548	KARTIKA	23047510033	B.A (H) Economics
21	572	KHUSHAALI GROVER	23047510035	B.A (H) Economics
22	584	KHUSHI AGGARWAL	23047510036	B.A (H) Economics
23	593	KHUSHI KUMARI	23047563037	B.Sc (H) Mathematics
24	659	LAVANYA BHADANA	23047510041	B.A (H) Economics
25	1662	LEHAR SINGH TOMAR	23047510042	B.A (H) Economics
26	673	M AHINTARA	23047510043	B.A (H) Economics
27	682	MAHAK GUPTA	23047529011	
28	719	MANVI GUPTA	23047510047	B.A (H) Economics
29	757	MONIKA	23047563043	B.Sc (H) Mathematics
30	785	NAINA SANJEEV TIBREWAL	23047563045	B.Sc (H) Mathematics
31	831	NIHARIKA SINGH	23047563046	B.Sc (H) Mathematics
32	1682	PARNIKA SRIVASTAVA	23047510056	B.A (H) Economics
33	982	PRIYADARSHANI	23047563054	B.Sc (H) Mathematics
34	983	PRIYADARSHINI MEENA	23047510062	B.A (H) Economics
35	992	PRIYANKA KUMARI	23047510064	B.A (H) Economics
36	1002	PRIYANSHI	23047563057	B.Sc (H) Mathematics
37	1026	RASHMI KUSHWAHA	23047563060	B.Sc (H) Mathematics
38	1033	REEDIM GANGWAR	23047563061	B.Sc (H) Mathematics
39	1642	SAKSHI SINGH	23047510073	B.A (H) Economics
40	1133	SANIKA VILAS SEVATKAR	23047510075	B.A (H) Economics
41	1143	SANSHITA SUMAN	23047510076	B.A (H) Economics
42	1718	SHALINI RAWAT	23047563069	B.Sc (H) Mathematics
43	1200	SHRADHA JAIN	23047510079	B.A (H) Economics
44	1236	SHTAAKSHI SARASWAT	23047510081	B.A (H) Economics
45	1671	SHUCHI PANWAR	23047527082	B.A (H) Pol.Science
46	1249	SIMARAN GARANG	23047557070	B.Sc (H) Chemistry
47	1261	SIYA SRIVASTAVA	23047563076	B.Sc (H) Mathematics
48	1571	SNEHA	23047563077	B.Sc (H) Mathematics
49	1300	SOORYANSHI	23047563080	B.Sc (H) Mathematics
50	1351	SUPRIYA SAURAV	23047529034	B.A (H) Sanskrit
51	1356	SUSAMA KHAN	23047513069	B.A (H) Geography
52	1377	TAMANNA GUPTA	23047510086	
53	1409	TEJASVI	23047563087	B.Sc (H) Mathematics
54	1444	VAIDEHI KUMAR	23047563088	B.Sc (H) Mathematics
55	1670	VANSHITA GUPTA	23047510099	B.A (H) Economics
56	1475	VIDHI AGGARWAL	23047510102	B.A (H) Economics
57	1496	YANA GUNWANT	23047510104	B.A (H) Economics
58	1497	YASHASHWINI SHEKHAWAT	23047563092	B.Sc (H) Mathematics
59	1503	YASHIKA	23047563093	B.Sc (H) Mathematics

Practicals List

1. Write a program to implement singly linked list as an ADT that supports the following operations:
   i. Insert an element x at the beginning of the singly linked list
   ii. Insert an element x at i^{th} position in the singly linked list
   iii. Remove an element from the beginning of the doubly linked list
   iv. Remove an element from i^{th} position in the singly linked list.
   vi. Search for an element x in the singly linked list and return its pointer

2. Write a program to implement doubly linked list as an ADT that supports the following operations:
   i. Insert an element x at the beginning of the doubly linked list
   ii. Insert an element x at the end of the doubly linked list
   iii. Remove an element from the beginning of the doubly linked list
   iv. Remove an element from the end of the doubly linked list

3. Write a program to implement circular linked list as an ADT which supports the following operations:
   i.Insert an element x in the list
   ii.Remove an element from the list
   iii.Search for an element x in the list and return its pointer

4. Implement Stack as an ADT and use it to evaluate a prefix/postfix expression.
5. Implement Queue as an ADT.
6. Write a program to implement Binary Search Tree as an ADT which supports the following operations:
   i.Insert an element x
   ii.Delete an element x
   iii.Search for an element x in the BST
   iv.Display the elements of the BST in preorder, inorder, and postorder traversal

7. Write a program to implement insert and search operation in AVL trees.

Dr. Tarun Kumar Gupta

Miranda House
UNIVERSITY OF DELHI

14	**Sem 6 GE 6 Data Structure Using Python Total 66 Students**	**Practicals List**	**Dr. Tarun Kumar Gupta**

Miranda House, University of Delhi

Generic Elective - VI | **Date: 29/4/25** | **Prac. Exam**

Semester VI | **Data Structure Using Python** | **UPC : 2344000024**

S.No.	Roll No.	Name	Exam Roll No	Course	Signature
1	335	EKANSHI MAKHEJA	22047510002	B.A (H) Economics	9:00 AM
2	763	PAKHI GOEL	22047510013	B.A (H) Economics	9:00 AM
3	1271	VAISHNAVI VOHRA	22047510019	B.A (H) Economics	9:00 AM
4	299	DHANSHRI NARENDRA THAKRE	22047510028	B.A (H) Economics	9:00 AM
5	91	AMINA ANUSH	22047510029	B.A (H) Economics	9:00 AM
6	526	KHUSHI JAIN	22047510032	B.A (H) Economics	9:00 AM
7	1183	SURABHI CHADHA	22047510035	B.A (H) Economics	9:00 AM
8	347	FIDHA B USMAN	22047510038	B.A (H) Economics	9:00 AM
9	8	AANCHAL	22047510040	B.A (H) Economics	9:00 AM
10	745	NISHITA SINGH	22047510051	B.A (H) Economics	9:00 AM
11	92	AMIRTHAVARSHINI KANNAN	22047510053	B.A (H) Economics	9:00 AM
12	561	KRITIKA BHATTACHARYA	22047510060	B.A (H) Economics	9:00 AM
13	416	INDIRA ROY	22047510065	B.A (H) Economics	9:00 AM
14	1251	TRISHA SINGHAL	22047510068	B.A (H) Economics	9:00 AM
15	979	SAKSHI YADAV	22047510069	B.A (H) Economics	9:00 AM
16	698	NANDINI KALANTRI	22047510074	B.A (H) Economics	9:00 AM
17	1109	SIMARJEET KAUR	22047510077	B.A (H) Economics	9:00 AM
18	931	RISHITA JAIN	22047510082	B.A (H) Economics	9:00 AM
19	1503	HIRANYA RAHEJA	22047510088	B.A (H) Economics	9:00 AM
20	1499	TANIRIKA GHOSH	**22047510089**		9:00 AM
21	1490	JANVI SHARMA	22047510092	B.A (H) Economics	9:00 AM
22	1482	ALEENA BANERJEE	22047510095	B.A (H) Economics	9:00 AM
23	1467	PAAVNI TANDON	22047510096	B.A (H) Economics	9:00 AM
24	1551	PALAK GADROO	22047510099	B.A (H) Economics	9:00 AM
25	1538	ASHALI SAXENA	22047510100	B.A (H) Economics	9:00 AM
26	1534	DIPANSHI SHARMA	22047510101	B.A (H) Economics	9:00 AM
27	1513	SHAGUN MISHRA	22047510103	B.A (H) Economics	9:00 AM
28	1567	PAVYA SINGH	22047510106	B.A (H) Economics	9:00 AM
29	1628	TANVI	22047510108	B.A (H) Economics	9:00 AM
30	853	PRIYA MISHRA	22047511079	B.A (H) English	9:00 AM
31	817	PRAGYA RANJAN	22047511080	B.A (H) English	9:00 AM
32	1593	SAHELI GARAI	22047511101	B.A (H) English	9:00 AM
33	1157	SOUMYA MEHTA	22047526006	B.A (H) Philosophy	9:00 AM
34	1293	VARTIKA YADAV	22047526028	B.A (H) Philosophy	9:00 AM
35	697	NANDINI AJAY CHOUBEY	**22047526041**	B.A (H) Philosophy	9:00 AM
36	1572	SHANKY	22047529029	B.A (H) Sanskrit	11:30 AM
37	1075	SHIVANKI PRASAD	22047530017	B.A (H) Sociology	11:30 AM
38	1073	SHIVANI SINHA	22047530071	B.A (H) Sociology	11:30 AM
39	541	KIRAN MEENA	22047563005	B.Sc (H) Mathematics	11:30 AM
40	525	KHUSHI JAIN	22047563009	B.Sc (H) Mathematics	11:30 AM
41	708	NAVDEEP KAUR	22047563011	B.Sc (H) Mathematics	11:30 AM
42	1162	SRISHTI TIWARI	22047563015	B.Sc (H) Mathematics	11:30 AM
43	483	KANIKA PANWAR	22047563017	B.Sc (H) Mathematics	11:30 AM
44	868	PUNGBALE RANGKAU	22047563020	B.Sc (H) Mathematics	11:30 AM
45	1231	TANYA YADAV	**22047563022**		11:30 AM
46	787	POOJA	22047563025	B.Sc (H) Mathematics	11:30 AM
47	193	ARPITA	22047563028	B.Sc (H) Mathematics	11:30 AM
48	442	JASBINA QUADRI	22047563030	B.Sc (H) Mathematics	11:30 AM
49	469	KALPANA CHOUDHARY	**22047563031**		11:30 AM
50	726	NIDHI LOHIA	22047563035	B.Sc (H) Mathematics	11:30 AM
51	616	MANSHI GUPTA	22047563036	B.Sc (H) Mathematics	11:30 AM
52	146	ANMIGHA NAIR	22047563040	B.Sc (H) Mathematics	11:30 AM
53	1165	STUTI SINGH	22047563042	B.Sc (H) Mathematics	11:30 AM
54	119	ANISHA	22047563048	B.Sc (H) Mathematics	11:30 AM
55	400	HIMANI	22047563051	B.Sc (H) Mathematics	11:30 AM
56	350	GARGI GANGAN	22047563052	B.Sc (H) Mathematics	11:30 AM
57	718	NEHA MAURYA	22047563055	B.Sc (H) Mathematics	11:30 AM
58	1308	VRINDA RASTOGI	22047563063	B.Sc (H) Mathematics	11:30 AM
59	686	NAKSHATA AGARWAL	**22047563076**		11:30 AM
60	1380	KARISHMA SEHGAL	22047563085	B.Sc (H) Mathematics	11:30 AM
61	1524	MANSHI	22047563088	B.Sc (H) Mathematics	11:30 AM
62	1521	SHEJAL	22047563089	B.Sc (H) Mathematics	11:30 AM
63	1596	KIRAN	22047563091	B.Sc (H) Mathematics	11:30 AM
64	71	AKANSHA	22047569011	B.Sc (H) Zoology	11:30 AM
65	902	REENI CHOPRA	22047569013	B.Sc (H) Zoology	11:30 AM
66	1449	NITIGYA AYUSHI JHA	22047569032	B.Sc (H) Zoology	11:30 AM

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   iv.Display the elements of the BST in preorder, inorder, and postorder traversal

7. Write a program to implement insert and search operation in AVL trees.

Part A.2

Students undertaking project work/field work/internship (beyond the requirements of coursework)