MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE

(UGC-AUTONOMOUS INSTITUTION)
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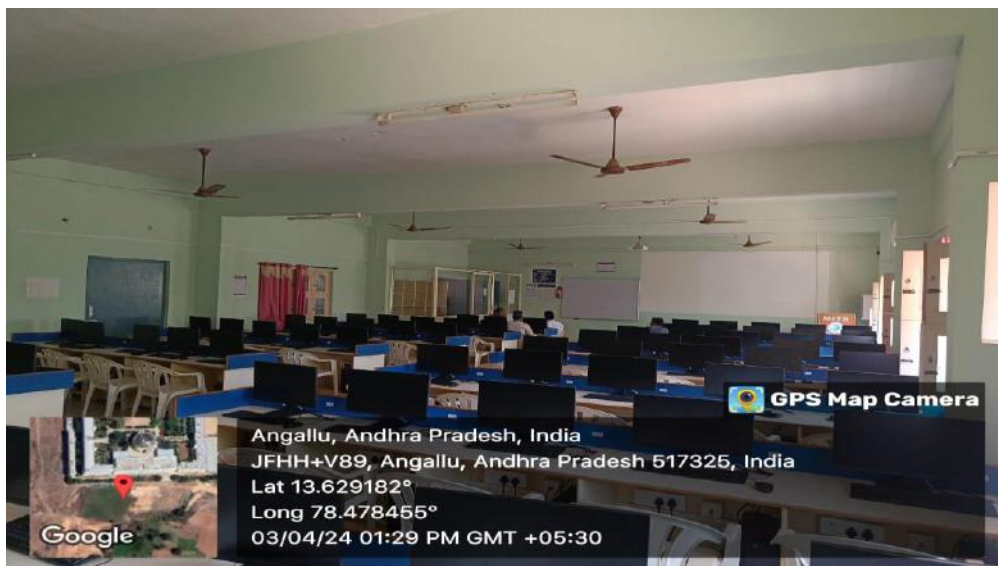NAAC Accredited with A+ Grade
NBA Accredited - B.Tech. (CIVIL, CSE, ECE, EEE, MECH), MBA & MCA

Department of Computer Science & Engineering (Cyber Security)

SYSTEM CONFIGURATION	
Model	HP Z2 TOWER G9 Workstation
Processor	i7 13th Generation
RAM	32 GB DDR5
HDD	1 TB NVMe M.2 SSD
Graphic Card	8 GB NVIDIA T1000
Monitor	HP 21.5" FHD
Total Systems	73

Angallu, Andhra Pradesh, India
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Data Structures using Python Laboratory

S.No	Name of the Experiment	Software
1	Write a Python program that uses functions to perform the following: 1. Create a singly linked list of integers. 2. Delete a given integer from the above linked list. 3. Display the contents of the above list after deletion.	
2	Write a Python program that uses functions to perform the following: 1. Create a doubly linked list of integers. 2. Delete a given integer from the above doubly linked list. 3. Display the contents of the above list after deletion.	
3	Write a Python program that uses stack operations to convert a given infix expression into its postfix Equivalent, Implement the stack using an array	
4	Write Python programs to implement a double ended queue ADT using 1. array 2. doubly linked list respectively.	
5	Write a Python program that uses functions to perform the following: 1. Create a binary search tree of characters. 2. Traverse the above Binary search tree recursively in Postorder.	
6	Write a Python program that uses functions to perform the following: 1. Create a binary search tree of integers. 2. Traverse the above Binary search tree non recursively in inorder.	Anaconda
7	Write Python programs for implementing the following sorting methods to arrange alist of integers in ascending order: 1. Insertion sort 2. Merge sort	
8	Write Python programs for implementing the following sorting methods to arrange alist of integers in ascending order: 1. Quick sort 2. Selection sort	
9.	1. Write a Python program to perform the following operation: Insertion into a B-tree 2. Write a Python program for implementing Heap sort algorithm for sorting a given list of integers in ascending order.	
10	Write a Python program to implement all the functions of a dictionary (ADT) using hashing.	
11	Write a Python program for implementing Knuth-Morris- Pratt pattern matching algorithm.	
12	Write Python programs for implementing the following graph traversal algorithms: 1. Depth first traversal 2. Breadth first traversal	

Object Oriented Programming using C++ Laboratory

S.No	Name of the Experiment	Software
1	1. Create a class named 'Student' with a string variable 'name' and an integer variable 'roll_no'. Assign the value of roll_no as '2' and that of name as "John" by creating an object of the class Student. 2. Write a class having two private variables and one member function which will return the area of the rectangle. 3. Perform addition operation on complex data using class and object. The program should ask for real and imaginary part of two complex numbers, and display the real and imaginary parts of their sum.	
2	1. Write a program that asks a name say hello. Use your own function, that receives a string of characters (name) and prints on screen the hello message. (Doesn't returns anything- void type) 2. Write a program that ask for two numbers, compare them and show the maximum. Declare a function called max_twothat compares the numbers and returns the maximum. 3. Write a C++ program that uses functions. 1. to swap two integers 2. to swap characters 3. to swap two reals	Turbo C++
3	1. Create a class 'Student' with three data members which are name, age and address. The constructor of the class assigns default values to name as "unknown", age as '0' and address as "not available". It has two functions with the same name 'setInfo'. First function has two parameters for name and age and assigns the same whereas the second function takes has three parameters which are assigned to name, age and address respectively. Print the name, age and address of 10 students. Hint - Use array of objects 2. Create a class named 'Rectangle' with two data members- length and breadth and a function to calculate the area which is 'length*breadth'. The class has three constructors which are: 1 -having no parameter - values of both length and breadth are assigned zero. 2 - having two numbers as parameters - the two numbers are assigned as length and breadth respectively. 3 - having one number as parameter - both length and breadth are assigned that number. Now, create objects of the 'Rectangle' class having none, one and two parameters and print their areas.	
4	1. Using function overloading write C++program to find the volume of cube, cylinder, cone and sphere. 2. Write a C++ program illustrating an interactive program for swapping integer,	

	real, and character type variables without using function overloading .Write the same program by using function overloading features and compare the same with its C counterpart
5	1. Write a C++ program to perform different arithmetic operation such as addition, subtraction, division, modulus and multiplication using inline function. 2. Write a program to swap private data members of classes named class_1, class_2 using friend function.
6	Using operator overloading write a C++ program for class STRING and overload the operator + and == to concatenate two strings length.
7	1. Write a C++ program illustrating Constructor overloading (Both parameterized and default). 2. Write a C++ program illustrating for overloading ++ operator to increment data.
8	1. Write a C++ program illustrating overloading of new and delete operator. 2. Write a C++ program illustrating Abstract classes.
9	Write a C++ program illustrating Inheritance (Multiple, Multilevel, Hybrid).
10	1. Create a class 'Degree' having a function 'getDegree' that prints "I got a degree". It has two subclasses namely 'Undergraduate' and 'Postgraduate' each having a function with the same name that prints "I am an Undergraduate" and "I am a Postgraduate" respectively. Call the function by creating an object of each of the three classes. 2. A class has an integer data member 'i' and a function named 'printNum' to print the valueof 'i'. Its subclass also has an integer data member 'j' and a function named 'printNum' toprint the value of 'j'. Make an object of the subclass and use it to assign a value to 'i' and to'j'. Now call the function 'printNum' by this object.
11	1. Design a virtual base class for the employee information system. 2. Implement a program using pure virtual function for calculating area and volume for the circle and cylinder.
12	Write a C++ program using Copy constructor to copy data of an object to another object
13	1. Write a C++ program illustrating access data members & member functions using 'THIS' pointer. 2. Write a program to illustrate the use of pointers to objects which are related by inheritance
14	1. Write a C++ program to read and print employee details using Files. 2. Write a C++ program to copy the contents of one text file to another file.
15	1. Write a C++ program that uses function template to determine the square of an integer, a float and a double. 2. Write a Template Based Program to Sort the Given List of Element.
16	1. Write a Program Containing a Possible Exception. Use a Try Block to Throw it and a Catch Block to Handle it Properly. 2. Write a Program to Demonstrate the Catching of All Exceptions

Database Fundamentals for Security Laboratory

S.No	Name of the Experiment	Software
1	To study DDL-create and DML-insert commands. a) Create tables according to the following definition. b) Insert the data as shown below. c) From the above given tables perform the following queries: 1. Describe deposit, branch. 2. Describe borrow, customers. 3. List all data from table DEPOSIT. 4. List all data from table BORROW. 5. List all data from table CUSTOMERS. 6. List all data from table BRANCH. 7. Give account no and amount of depositors. 8. Give name of depositors having amount greater than 4000. 9. Give name of customers who opened account after date '1-12-96'.	
2	Create the below given table and insert the data accordingly. **Perform following queries** 1. Retrieve all data from employee, jobs and deposit. 2. Give details of account no. and deposited rupees of customers having account opened between dates 01-01-06 and 25-07-06. 3. Display all jobs with minimum salary is greater than 4000. 4. Display name and salary of employee whose department no is 20. Give alias name to name of employee. 5. Display employee no, name and department details of those employee whose department lies in(10,20) **To study various options of LIKE predicate** 1. Display all employee whose name start with 'A' and third character is ''a'. 2. Display name, number and salary of those employees whose name is 5 characters long and first three characters are 'Ani'. 3. Display the non-null values of employees and also employee name second	Oracle 10G

	character	
	should be 'n' and string should be 5 character long.	
	4. Display the null values of employee and also employee name's third character should	
	be 'a'.	
	5. What will be output if you are giving LIKE predicate as '%_%' ESCAPE.	
3	To Perform various data manipulation commands, aggregate functions and sorting concept on all created tables.	
	1. List total deposit from deposit.	
	2. List total loan from karolbagh branch.	
	3. Give maximum loan from branch vice.	
	4. Count total number of customers	
	5. Count total number of customer's cities.	
	6. Create table supplier from employee with all the columns.	
	7. Create table sup1 from employee with first two columns.	
	8. Create table sup2 from employee with no data	
	9. Insert the data into sup2 from employee whose second character should be 'n' and string should be 5 characters long in employee name field.	
	10. Delete all the rows from sup1.	
	11. Delete the detail of supplier whose sup_no is 103.	
	12. Rename the table sup2.	
	13. Destroy table sup1 with all the data.	
	14. Update the value dept_no to 10 where second character of emp. name is m'.	
	15. Update the value of employee name whose employee number is 103.	
4	To study Single-row functions.	
	1. Write a query to display the current date.	
	2. For each employee, display the employee number, job, salary, and salary increased by	
	15% and expressed as a whole number. Label the column New Salary	
	3. Modify your query no 4.(2) to add a column that subtracts the old salary from the new	
	salary. Label the column Increase	

	4. Write a query that displays the employee's names with the first letter capitalized and all other letters lowercase, and the length of the names, for all employees whose name starts with J, A, or M. Give each column an appropriate label. Sort the results by the employees' last names. 5. Write a query that produces the following for each employee: <employee last name> earns <salary> monthly 6. Display the name, hire date, number of months employed and day of the week starting with Monday. 7. Display the hire date of emp in a format that appears as Seventh of June 199412:00:00 AM. 8. Write a query to calculate the annual compensation of all employees (sal+comm)	

5	Displaying data from Multiple Tables (join)
	
	1. Give details of customers ANIL.
	
	2. Give name of customer who are borrowers and depositors and having living city
	
	  Nagpur
	
	3. Give city as their city name of customers having same living branch.
	
	4. Write a query to display the last name, department number, and department name for
	
	  all employees.
	
	5. Create a unique listing of all jobs that are in department 30. Include the location of the
	
	  department in the output
	
	6. Write a query to display the employee name, department number, and department
	
	  name for all employees who work in NEW YORK.
	
	7. Display the employee last name and employee number along with their manager's
	
	  last name and manager number. Label the columns Employee, Emp#, Manager, and
	
	  Mgr#, respectively.	

	8. Create a query to display the name and hire date of any employee hired after employee SCOTT.

6	To apply the concept of Aggregating Data using Group functions.
	
	1. List total deposit of customer having account date after 1-jan-96.
	
	2. List total deposit of customers living in city Nagpur.
	
	3. List maximum deposit of customers living in bombay.
	
	4. Display the highest, lowest, sum, and average salary of all employees. Label the
	
	   columns Maximum, Minimum, Sum, and Average, respectively. Round your results to
	
	   the nearest whole number.
	
	5. Write a query that displays the difference between the highest and lowest salaries.
	
	   Label the column DIFFERENCE.
	
	6. Create a query that will display the total number of employees and, of that total, the
	
	   number of employees hired in 1995, 1996, 1997, and 1998
	
	7. Find the average salaries for each department without displaying the respective
	
	   department numbers.
	
	8. Write a query to display the total salary being paid to each job title, within each
	
	   department.
	
	9. Find the average salaries > 2000 for each department without displaying the
	
	   respectivedepartment numbers
	
	10. Display the job and total salary for each job with a total salary amount
	
	   exceeding 3000,in which excludes president and sorts the list by the total
	
	   salary.
	
	11. List the branches having sum of deposit more than 5000 and located in city Bombay.

7	To study various administration of Users Profiles, password policies, privileges, and roles

8	To apply access Control Models: MAC, DAC, RBAC	
9	To study the Stored Procedures and Functions: PL/SQL I, PL/SQL II	
10	To apply and monitor auditing of Database Activities	

Operating Systems Fundamentals for Security

S.No	Name of the Experiment	Software
1	To Study basic concepts in OS with the help of Linux commands	
2	1. Write a shell script that accepts two integers as its arguments and computers the value of first number raised to the power of the second number. 2. Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else.	
3	1. 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. 2. Develop an interactive script that ask for a word and a file name and then tells how many times that word occurred in the file.	
4	Simulate the following CPU scheduling algorithms 1. Round Robin 2. SJF 3. FCFS 4. Priority	
5	Write Program For Dining Philosophers Problem	
6	Write Program For Producer –Consumer Problem concept	
7	Write a program for scanning port	
8	Implement the Trust and confidentiality	Geany IDE, Putty kit
9.	Perform Auditing, Accounting, and Logging activity in OS	
10	Write Policy for port scans run, password requirements, virus detectors, etc	
11	Perform the Vulnerability Assessment using below mentioned concepts: • Port scanning, • Bad passwords, • Suid programs, • Unauthorized programs in system directories, • Incorrect permission bits set, • Program checksums / digital signatures • System scripts or configuration files. • New unauthorized accounts.	
12	Implement the following concepts in Windows / Linux Operating System 1. Authentication (Username / Password, Usercard / key, User attribute-fingerprint / eye retina pattern / signature / Image / EEG) 2. One Time passwords (Random numbers / Secretkey / Network password)	
13	Protect the Operating System from the virus (AntiVirus)	
14	Configure the firewall to protect the system	

Java Programming Laboratory

S.No	Name of the Experiment	Software
1	1. Write a Java program that prints all real solutions to the quadratic equation ax2+bx+c=0. Read in a, b, c and use the quadratic formula. If the discriminant b2-4ac is negative, display a message stating that there are no real solutions. 2. Write a Java program that find prime numbers between 1to n. 3. Write a Java Program that find the factorial of a number	
2	1. The Fibonacci sequence is defined by the following rule: The first two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it.Write a Java program that print the nth value in the Fibonacci sequence. 2. Write a Java program that checks whether a given string is a palindrome or not. Ex:MADAM is a Palindrome. 3. Write a Java program for sorting a given list of names in ascending order	
3	1. Write a java program to split a given text file in to 'n' parts. Name each part as the name of the original file followed by part <n> where n is the sequence number of the part file. 2. Write a java program to convert an Array List to an Array. 3. Write a Java program to make frequency count of vowels, consonants, special symbols, digits, words in a given text	
4	1. Write a Java program that reads a file name from the user, then displays information about whether the file exists, whether the file is readable, whether the file is writable, the type offline and the length of the file in bytes. 2. Write a Java program that reads a file and displays the file on the screen, with a line Number before each line. 3. Implement Stack using queues.	JDK & JRE,Eclipse IDE
5	1. Write a java program to make rolling apairofdice10,000timesandcountsthenumber of times doubles of are rolled for each different pair of doubles. Hint:Math.random(). 2. Write java program that inputs 5 numbers, each between 10 and 100 inclusive. As each number is read display it only if it's not a duplicate of any number already read display the complete set of unique values input after the user enters each new value. 3. Write a java program to read the time intervals (HH:MM) and to compare system time if the system time between your time intervals print correct time and exit else try again to repute the same thing. By using String Toknizer class.	
6	1. Write java program to create a super class called Figure that receives the dimensions of two dimensional objects. It also defines a method called area that computes the area of an object. The program derives two subclasses from Figure. The first is Rectangle and second is Triangle. Each of the sub class overridden area() so that it returns the area of a rectangle and a triangle respectively. 2. Write a Java program that creates three threads. First thread displays —Good Morning ‖ every one second, the second thread displays —Hello ‖ every two seconds and the third thread displays—Welcome ‖ every three seconds.	
7	1. Write a Java program that correctly implements producer consumer problem using the concept of inter thread communication.	

	2. Use inheritance to create an exception super class called Exception A and exception subclass Exception Band Exception C, where Exception B inherits from Exception A and Exception C inherits from Exception B. Write a java program to demonstrate that the catch block for type Exception A catches exception of type Exception Band Exception C
8	Write a Java Program to design login window using AWT components
9	Develop an application for simple calculator. Use a grid layout to arrange buttons for the digits and for the +,-,*,%operations. Add a textfield to display the result
10	Design & Develop an application that creates a user interface to perform integer divisions.The user enters two numbers in the Jtext Fields, Num1 and Num2. The division of Num1and Num2 is displayed in the Result field when the Divide button is clicked. If Num1 orNum2 were not an integer, the program would throw a Number Format Exception. If Num2were Zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box
11	Design a GUI application that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time No light is on when the program starts
12	1. Design a GUI application for Cafeteria bill generation. 2. Create a database connection using JDBC & perform some basic operation such as add, remove, update record in database using JDBC.

Design and Analysis of Algorithms Laboratory

S.No	Name of the Experiment	Software
1	Sort a given set of elements using the Quick sort method and determine the time required to sort the elements.	
2	Implement Merge Sort algorithm to sort a given set of elements and determine the time required to sort the elements.	
3	Implement Fractional Knapsack problem using Greedy Method.	
4	Implement Job Scheduling with Deadlines using Greedy Method.	
5	Implement 0/1 Knapsack problem using Dynamic Programming.	
6	Implement Traveling Salesperson problem to find the optimal tour using Dynamic Programming.	
7	Find Minimum Cost Spanning Tree of a given undirected graph using (a) Prim's algorithm. (b) Kruskal's algorithm.	Geany IDE
8	Implement the algorithm for Topological ordering of vertices in a DAG.	
9	From a given vertex in a weighted connected graph, find shortest paths to all other vertices using Dijkstra's algorithm.	
10	Implement All-Pairs Shortest Paths Problem using Floyd-Warshall's algorithm.	
11	Find a subset of a given set S = {S1, S2, ...Sn} of n positive integers whose sum is equal to a given positive integer d. For example, if S= {2, 3, 5, 7, 8} and d = 10 there are three solutions {2,3,5}, {3,7}. and {2,8}. A suitable message is to be displayed if the given problem instance doesn't have a solution.	
12	Implement N Queen's problem using Back Tracking.	

Computer Networks Laboratory

S.No	Name of the Experiment	Software
1	Practice LAN setup and Router configuration.	Geany IDE, Wireshark
2	Create a socket for HTTP for webpage upload and download.	
3	Write a program for client Server chat application.	
4	Perform Protocol analysis, Packet Capture & Traffic Analysis with Wireshark.	
5	Implementation of Link State Routing Algorithm.	
6	Write a socket program for echo/ping/talk commands.	
7	Implementation of Distance Vector Routing Algorithm.	
8	Write a program for client Server chat application.	
9	Write a program to generate CRC code for checking error.	
10	Write a program to transfer data between two nodes using NS.	
11	Write a program to simulate data transfer and packet loss using NS.	
12	Study on Network simulator and Simulation of Congestion Control Algorithm using Network Simulator.	

Software Engineering Laboratory

S.No	Name of the Experiment	Software
1	Prepare a SRS document in line with the IEEE recommended standards.	
2	Draw the use case diagram and specify the role of each of the actors. Also state the precondition, post condition and function of each use case.	
3	Draw the activity diagram.	
4	Identify the classes. Classify them as weak and strong classes and draw the class diagram.	
5	Draw the sequence diagram for any two scenarios.	Star UML
6	Draw the collaboration diagram.	
7	Draw the state chart diagram.	
8	Draw the component diagram.	
9	Perform forward engineering in java. (Model to code conversion)	
10	Perform reverse engineering in java. (Code to Model conversion)	
11	Draw the deployment diagram.	

Cloud Computing Laboratory

S.No	Name of the Experiment	Software
1	Install VirtualBox/VMware Workstation with different flavors of Linux or windows OS on top of windows OS.	Oracle Virtual Box,AWS
2	Install a C compiler in the virtual machine created using virtual box and execute Simple Programs.	
3	Install Google App Engine. Create hello world app and other simple web applications using python/java.	
4	Install the Hadoop framework and create an application using Map Reduce Programming Model.	
5	Experiment cloud scheduling algorithms using any Cloud tools.	
6	Experiment cloud load balancing algorithms using Cloud Sim or any tools.	
7	Launch EC2 AWS – Instance Creation, Migration.	
8	Experiment VPC in EC2 Instances.	
9	Create the Load balance in EC2.	
10	Design and implementation the Web application and launch in AWS Server.	

Cryptography Laboratory

S.No	Name of the Experiment	Software
1	Write a Java program to perform encryption and decryption using the following Algorithms: 1. Ceaser cipher 2. Substitution cipher 3. Hill Cipher.	Geany IDE
2	Write a C/JAVA program to implement the DES algorithm logic.	
3	Write a Java program to implement RSA algorithm.	
4	Implement the Diffie-Hellman Key Exchange mechanism using HTML and JavaScript.	
5	Implement message authentication MAC algorithms.	
6	Implement message authentication HASH algorithms.	
7	Write a program to calculate the message digest of a text using the SHA-1 algorithm in JAVA.	
8	Write a program to calculate the message digest of a text using the MD5 algorithm in JAVA.	
9	Send and receive an encrypted email message using S/MIME.	
10	Explore and study any Network Intrusion Detection Tool used to detect network attacks.	

AI Tools, Techniques and Applications Laboratory

S.No	Name of the Experiment	Software
1	Implement simple linear regression to predict profits for a food truck based on the population of the city that the truck would be placed in.	Anaconda Navigator
2	Build a classification model that estimates the probability of admission based on the exam scores using logistic regression.	
3	Implement un-regularized and regularized versions of the neural network cost function and compute gradients via the backpropagation algorithm.	
4	Implement an anomaly detection algorithm using a Gaussian model and apply it to detect failing servers on a network.	
5	Supervisely - Perform Data Labelling for various images using object recognition.	
6	Lobe.ai - Build custom models using the visual tool for Object recognition and sentiment analysis that can convert facial expressions into emoticons.	
7	Teachable Machine - In Browser Object Recognition through Brain.JS.	
8	Liv.ai - App for Speech recognition and Synthesis through APIs.	
9	Building a Chatbot using AWS Lex, Pandora bots.	
10	Configure an existing Neural Network by manipulating various parameters involved.	
11	Build a virtual assistant for Wikipedia using Wolfram Alpha and Python.	
12	Build a Convolutional Neural Network for Cat vs Dog Image Classification.	