



SIMATS
ENGINEERING



SIMATS
Saveetha Institute of Medical And Technical Sciences
(Declared as Deemed to be University under Section 3 of UGC Act 1956)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CSA0804 Python Programming for Scientific Applications

CAPSTONE PROJECTS TOPICS

SNO	REG. NO	NAME	PROJECT TITLE	TASK	SPECIFIC PARAMETER S	OUTCOME/ OUTCOME PARAMETERS	TECHNIQUES TO BE USED
1	192212060	JAMNA SRI V	Grade Analyzer and Predictor for Students of Engineering College	Build a Python tool that calculates and predicts student performance based on past scores.	Assignment scores, exam results, attendance rate.	Predicted final grade with accuracy and performance category.	Linear Regression, data visualization, NumPy, Pandas.
2	192319080	MANOJ R	Expense Tracker with Budget Alerts for daily based Requirements	Develop a simple expense tracking system with budget limit warnings.	Expense amount, category, date, and monthly budget limit.	Monthly summary and alert when expenses cross the limit.	File handling, basic GUI (Tkinter), conditional logic.

3	192324253	BHANU PRASAD N	Smart Attendance System using Face Recognition	Face Detection	Accuracy, Speed	90% accuracy, Real-time performance	OpenCV, Haar Cascade, Python
4	192372330	PERAM VIVEKANANDA REDDY	Employee Attendance system for Salary Calculator	Create a Python program to track employee attendance and calculate monthly salary.	Attendance days, working hours, salary per hour, leave deductions.	Accurate salary report with deductions and bonus calculation.	Conditional statements, loops, CSV handling, basic file I/O.
5.	192411201	DARSHI DILIP	Chatbot for College Enquiry System	Query Handling	Response Accuracy, Relevance	Handles 85% queries correctly	NLTK, Flask, SQLite
6	192419004	B PRANESHAN	AI-Based Spam Email Classifier	Text Classification	Precision, Recall	95% spam detection accuracy	Scikit-learn, Naive Bayes, NLP
7	192419019	V RAKSHAN	Python-Based Virtual Assistant	Voice Command Execution	Command Accuracy	Executes 10+ voice commands	SpeechRecognition, pyttsx3

8	192419035	VEDANTH C	Simple Password Generator Tool	Build a Python program that creates strong, random passwords.	Password length, use of symbols, digits, and letters.	Random secure password with customizable strength.	random and string modules, input validation, file option.
9	192419063	GURUCHARAN KANNA	Weather Report Management System	Develop a Python program that fetches and displays real-time weather updates for different cities	City name, temperature, humidity, wind speed, and weather condition.	Timely weather reports with accurate parameter display for multiple locations.	API integration using requests, JSON parsing, and Tkinter GUI.
10	192419068	SOFIYA I	Number Guessing Game	Create an interactive game with python where the system selects a number and the user guesses it within limited tries.	Random number range, number of attempts, user input, and hints	Engaging guessing interaction with feedback on correct or incorrect guesses.	Python random module, input handling, conditional loops.
11	192419073	ABISHEK A	Online Exam Portal with Timer and Auto-Submit	Exam Interface	Time Management, UI	Seamless timed submissions	Django, JS, PostgreSQL
12	192421006	RAKESH M	Python-Based Virtual Assistant	Voice Command Execution	Command Accuracy	Executes 10+ voice commands	SpeechRecognition, pyttsx3

13	192421012	SUDHARSAN S	Smart City Planning System	Develop an intelligent urban planning tool	Based on population density, traffic data, pollution indices, and land use patterns	Suggest optimal infrastructure layouts evaluated by efficiency, congestion reduction, and sustainability scores	Data visualization, machine learning models (K-Means, Decision Trees), geospatial analysis, and real-time data APIs
14	192421020	NAVEEN P	Smart Vocabulary Builder with Spaced Repetition	Implement a language learning tool using memory retention algorithms	Leitner system, pronunciation guides, progress tracking	3x faster retention rate, exportable word lists	Spaced repetition algorithms, Text-to-speech, CSV handling
15	192421030	NAVEEN KUMAR. S	Word Scramble Game with Hints	Develop a game that scrambles words and awards points for correct guesses.	Difficulty levels (4-8 letters), hint button, timer.	Score tracking, word database, responsive UI.	Random module, String manipulation, Pygame/Tkinter.
16	192421052	KAVYA SHRI G	Currency Converter in python	Develop a program to convert currency values based on exchange rates.	User input, real time conversion, multiple currency support.	Accuracy, fast calculation, easy user interaction.	Structures, File handling, Mathematical operations.
17	192421057	HARIHARAN E	Intelligent Traffic Light Simulation System	Develop a Python-based simulation to dynamically manage	Vehicle count per lane, signal timing, traffic flow patterns,	Optimized signal transitions, reduced average vehicle wait time,	Object-oriented programming, Tkinter for GUI, multithreading, time-

				traffic signals based on vehicle density	sensor data emulation	enhanced flow efficiency	based event handling, queue logic simulation
18	192421080	SRI NAGESWARAN P S	Handwritten Digit Recognition using MNIST	Image Classification	Accuracy, Loss	98% digit recognition	Keras, CNN, NumPy
19	192421127	SAMRAJ JOEL R	University Course Registration System Optimization	Design and implement an optimized course registration system that dynamically resolves schedule conflicts and prioritizes student preferences.	Student course preferences, faculty availability, classroom constraints, time-slot overlaps, maximum course capacity.	Efficient allocation of courses with reduced schedule conflicts, improved student satisfaction scores, and optimized resource utilization.	Constraint satisfaction, graph-based scheduling, greedy and backtracking algorithms, and SQLite-based data handling in Python.
20	192421242	HASEENA THABASUM M	Face Mask Detection System	Face & Mask Detection	Precision, Real-time Response	Detects mask usage with 93% accuracy	YOLOv5, OpenCV, Python

21	192421314	SRIKANTH N	Real-Time Translator App	Speech-to-Text & Translation	Translation Accuracy	Live translation between 5 languages	Speech Recognition, Google Translate API
22	192421357	PRATHIKA K	Optimizing E-commerce Order Processing with Sorting	Implement a Python-based system to streamline order sorting in tabular formats based on real-time conditions	Order priority, processing time, delivery deadline, and payment confirmation	Enhanced order fulfillment speed, reduced late deliveries, and improved operational efficiency	Merge Sort, Quick Sort, Pandas for tabular data handling, and conditional sorting logic in Python
23	192421401	A VIMAL	Personal Finance Tracker App	Expense Monitoring	Visualization, Usability	Tracks and plots monthly expenses	Tkinter, Matplotlib, SQLite
24	192424047	D SYED RIZWAN	Bus Reservation System	Design and develop a Python-based bus reservation system that utilizes file handling for data	Includes passenger details management, seat availability tracking, fare	A fully functional console-based system that stores and retrieves reservation data with options to	Procedural programming, file handling (read/write/append), structured exception handling,

				persistence and booking operations	calculation, and trip scheduling via structured text or binary files	book, cancel, and view trips; accuracy in data processing and fault tolerance are key parameters	modularization, and menu-driven logic
25	192424274	M JYOTHI KIRAN	AI-Based Code Plagiarism Checker	Code Comparison	Similarity Score, Speed	Detects 85%+ code similarity	NLP, Tokenization, AST parsing
26	192424359	SUNDARESAN R U	Plant Disease Classifier	Leaf Image Analysis	Accuracy, Latency	Classifies 10+ plant diseases	CNN, TensorFlow, OpenCV
27	192425153	RACHAM REDDY VISWESWARA REDDY	Vehicle Rental System using File Handling	Create a system to manage vehicle rentals and returns stored in file records	Create a system to manage vehicle rentals and returns stored in file records	Tracks vehicle availability, rental history, and computes charges	File handling, function-based code, conditionals, and loops
28	192425207	DEVARAPALLI ANAND PAUL	Online Exam Result Management	Develop a Python program to manage and display student exam results stored in files	Student name, roll number, subject-wise marks, and	Generates individual report cards and maintains result history	File I/O, conditional logic, operations

					grade calculation		
29	192425212	PALNATI VISHNU VARDHAN REDDY	Plant Disease Classifier	Leaf Image Analysis	Accuracy, Latency	Classifies 10+ plant diseases	CNN, TensorFlow, OpenCV
30	192425261	PAPPU MAHENDRA REDDY	Rock-Paper-Scissors Game with Score History	Create a rock-paper-scissors game that uses functions and stores win/loss history in files	Player choices, round results, and scores recorded and retrieved	Tracks performance over sessions and displays win/loss stats	Functions, conditional logic, file handling, loops
31	192465022	SHAIK IRFAN	Cinema Ticket Booking System	Create a ticket booking system with function-based modules for movie selection, seat booking, and billing	Movie list, seat availability, and user details managed by dedicated functions	Dynamic seat booking and ticket generation with organized function flow	Functions, loops, file read/write, and string formatting
32	192465061	ANNAMREDDY BHARGAV REDDY	Fake News Detection System	News Validation	Accuracy, F1 Score	Filters out misleading news	Scikit-learn, TfidfVectorizer, Logistic Regression

				update student fee records	function modules	generation with structured code	
33	192465064	KORSIPATI PADMA PRABHAS	Quiz Game with Levels and scores	Build a multi-level quiz game that stores questions, player score, and progress in files	Questions, answers, levels, and scores managed modularly with persistence	Provides a fun quiz with increasing difficulty and saved score reports	File I/O, functions, randomization, list processing
34	192471019	D HOSHEA PAUL	Loan Management System	Design a Python program to manage loan applications, EMI calculations, and repayment status using functions	Borrower details, loan amount, interest, and repayment schedule handled by functions	Calculates EMI, updates repayment status, and stores loan records efficiently	File handling, mathematical functions, modular programming, and input validation
35	192471020	SUGIRITHA M	Hospital Information Management System Development	Enable appointment and resource scheduling across departments	Calendar API integration, conflict resolution, department-wise mapping	Optimized utilization of hospital time slots and resources	Python datetime, Scheduler APIs, Conflict-checking algorithms
36	192471025	M RUMANA KHAN	Clinic Appointment Booking System	Create a clinic system where appointments are handled using	Doctor availability, patient info, and time slots	Appointment scheduling with verification,	File handling, reusable functions, menu logic, and validation techniques

			with Functional Programming	individual functions and files for storage	handled modularly	updates, and record storage	
37	192471036	AADHITHYA KESAV P S	Traffic Sign Recognition using ML	Image Recognition	Model Accuracy	90%+ classification accuracy	OpenCV, TensorFlow
38	192471047	KEERTHANA S	Freelance Work Tracker system	Build a tracker for freelance projects that uses separate functions to manage tasks, payments, deadlines and score.	Project name, client info, status, and payment details saved in structured files	Tracks ongoing projects, deadlines, and total earnings using modular logic	Custom functions, file read/write, list manipulation, and basic math
39	192472043	DEVIREDDY HEMASUNDAR REDDY	AI Resume Screening System	Resume Parsing & Ranking	Relevance, Matching Accuracy	Ranks resumes based on job fit	NLP, Spacy, Scikit-learn
40	192473009	MADHUMITHA K T	Real-Time Weather App with GUI	API Integration	Speed, Accuracy	Displays live weather updates	Tkinter, OpenWeatherMap API, JSON

				modular functions and persistent file logs	score saved per session in file	and high score tracking	
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