



SIDDARTHA

EDUCATIONAL ACADEMY GROUP OF INSTITUTIONS

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AUTONOMOUS

Ref.: SEAT/Autonomous/First BOS Meeting/CAI/MoM/AY: 2025-26 /01

First Board of Studies (BoS) Meeting held on 25.08.2025

Minutes of the Meeting (MoM)

The Fresh Autonomous Status has been conferred upon Siddhartha Educational Academy, Gollapalli (SEAT) by University Grants Commission (UGC), New Delhi and the Jawaharlal Technological University Anantapur (JNTUA), Ananthapuramu. As part of Autonomous process, the First Board of Studies(BoS) Meeting of the Department of CSE (Artificial Intelligence), Siddhartha Educational Academy Group of Institutions, C. Gollapalli was conducted on 25.08.2025 through Blended mode (google meet). The following online link was used.

Google meeting link: <https://meet.google.com/xyg-kfhr-uki>

Agenda of the meeting:

Agenda of the meeting is as follows:

1. Welcoming Members of BOS
2. Profile of the Institution
3. Profile of the Department
4. Approval of Syllabus
5. Approval of Question Paper Setters & Evaluators
6. Any other suggestions

Members Present:

The following members attended the meeting:

S. No.	Name of the Member	Designation	Role
Head of the Department concerned (Chairperson)			
1	Dr. B.Narayana Babu	Professor, Head of the Department	Chairman
All faculty members of the Department.			
2	Mr M. Purushottam	Associate Professor	Member
3	Mrs. G. Harika	Assistant Professor	Member
Two subject experts from outside the parent University are to be nominated by the Academic Council.			
4	Dr N. Usha Rani	Associate Professor, Department of CSE, S.V University College of Engineering, Tirupati	Member
5	Dr. R. Pradeep Kumar Reddy	Associate Professor, Department of CSE, YSR Engineering College of Yogi Vemana University, Proddatur, Y.S.R District.	Member



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One expert is to be nominated by the Vice-Chancellor from a panel of six recommended by the Autonomous College Principal.

6	Prof C. Shoba Bindu	Professor of CSE & Director, Future Skill Development & Incubation centre, JNT University Anantapur, Anantapuramu	Member
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One representative from Industry/Corporate sector/allied areas to be nominated by the Principal.

7	Mr Magesh Sundararajan	Senior Software Development Manager, IBM, Ascendas IT park(Chennai) Ltd., 1 st Floor International Tech Park, Chennai	Member
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Alumni students

8	Mr. S. Dileep Kumar	Software Developer, Particleblack software Development Company, Chennai	Member
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Members Absent: - NIL -

Item – 1: Welcoming Board of Studies Members.

Dr B. Narayana Babu, Chairman, Board of Studies(BOS) opened the meeting by welcoming and introducing the external members to the internal members and thanked them for accepting to become the member of the Board of Studies and the meeting thereafter deliberated on agenda items that had been approved by the BOS Chairman.

Item -2: Presentation of Institute Profile by the CSE(AI) BOS Chairman.

The BOS Chairman, Department of CSE(AI) has presented the Institute profile.

Item -3: Presentation of Department Profile by the CSE(AI) BOS Chairman.

The BOS Chairman, Department of CSE (AI) has presented the Department profile which includes:

- ❖ Department Vision & Mission
- ❖ Intake Details
- ❖ Teaching Methods
- ❖ Department Laboratories Infrastructure
- ❖ Freshers Induction Program
- ❖ Student Achievements
- ❖ Department Best Practices



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Item – 4: Presentation on Review & Approval of Course Structure and Detailed Syllabus for the Academic Year 2025–26 for I B. Tech CSE (AI) by the BoS Chairman.

Item – 4.1: Course Structure – I B. Tech (I – Sem & II – Sem) under SEAT R25 Regulations (0th Semester, I Semester and II Semester).

B. Tech (CSE-AI) 0th Semester INDUCTION PROGRAMME

S.No.	Course Name	Category	L-T-P-C
1	Physical Activities -- Sports, Yoga and Meditation, Plantation	MC	0-0-6-0
2	Career Counselling	MC	2-0-2-0
3	Orientation to all branches -- career options, tools, etc.	MC	3-0-0-0
4	Orientation on admitted Branch -- corresponding labs, tools and platforms	EC	2-0-3-0
5	Proficiency Modules & Productivity Tools	ES	2-1-2-0
6	Assessment on basic aptitude and mathematical Skills	MC	2-0-3-0
7	Remedial Training in Foundation Courses	MC	2-1-2-0
8	Human Values & Professional Ethics	MC	3-0-0-0
9	Communication Skills -- focus on Listening, Speaking, Reading, Writing skills	BS	2-1-2-0
10	Concepts of Programming	ES	2-0-2-0

B. Tech (CSE-AI) – I Year I Semester

S. No.	Course Code	Course Name	L/D	T	P	Credits
1	25BTCS103T 25BTCS104T	Engineering Chemistry - Chemistry	3	0	0	3
2	25BTCS105T	Linear Algebra & Calculus	3	0	0	3
3	25BTCS101T	Introduction to Programming	3	0	0	3
4	25BTCS101T	Basic Electrical & Electronics Engineering	3	0	0	3
5	25BTCS101T	Engineering Graphics	1	0	4	3
6	25BTCS103P 25BTCS104P	Engineering Chemistry Lab Chemistry Lab	0	0	2	1
7	25BTCS102P	Computer Programming Lab	0	0	3	1.5
8	25BTCS101P	Electrical & Electronics Engineering Workshop	0	0	3	1.5
9	25BTCS103P	IT Workshop	0	0	2	1
10	25BTCS108L	NSS/NCC/Scouts & Guides/Community Service	-	-	1	0.5
Total			13	00	15	20.5



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B. Tech (CSE-AI) – I Year II Semester

S. No.	Course Code	Course Name	L	T	P	Credits
1	25BTSH101T	Communicative English	2	0	0	2
2	25BTSH102T	Engineering Physics	3	0	0	3
3	25BTSH106T	Differential Equations & Vector Calculus	3	0	0	3
4	25BTCE101T	Basic Civil & Mechanical Engineering	3	0	0	3
5	5BTCS104T 25BTCE102T	Data Structures Engineering Mechanics	3	0	0	3
6	25BTSH101P	Communicative English Lab	0	0	2	1
7	25BTSH102P	Engineering Physics Lab	0	0	3	1
8	25BTCS104P 25BTCE102P 25BTCE103P	Data Structures Lab Engineering Mechanics Lab Engineering Mechanics & Building Practices Lab	0	0	3	1.5
9	25BTME102P	Engineering Workshop	0	1	3	1.5
10	25BTSH107L	Health and Wellness, Yoga and Sports	-	-	1	0.5
Total			15	2	10	19.5

Discussion:

Presentation of Course Structure & syllabus pertaining to Introduction to Programming (25BTCS101T), Computer Programming Lab (25BTCS102P), IT Workshop (25BTCS103P), Data Structures (25BTCS104T) and Data Structures Lab (25BTCS104P) as formulated by JNTUA towards the department of CSE(AI) in the I Year B.Tech., program (I Semester and II Semester).

Resolution:

The Board of Studies members have accepted the course structure and syllabi unanimously without any modification. Copies of the Course Structure is enclosed for your references.

Item – 4.2: Approval of detailed syllabus for B. Tech CSE(AI) - I Year

Discussion:

To review and approve the curriculum and syllabus of 1st and 2nd Semester of UG programme in CSE(AI).

Resolution:

The CSE(AI) Board of Study members have approved the detailed syllabus based on the CSE Board of Study resolution for the following courses.

1. 25BTCS101T - Introduction to Programming
2. 25BTCS102P - Computer Programming Lab
3. 25BTCS103P - IT Workshop
4. 25BTCS104T - Data Structures
5. 25BTCS104P - Data Structures Lab

Copies of the syllabus are attached in **Appendix – I**.



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Item - 5: Approval of Question Paper Setters & Evaluators

The HoD has presented the details of question papers setters and examiners. The Approved panel of examiners are as follows.

S. No	Name of the Examiner	Designation	Address	Mobile No. and Email ID
1.	Dr .K.Madhavi	Professor	Department of Computer Science and Engineering JNTUA Collage of Engineering Anantapuram (JNTUACEA)	Ph. No: 9440206501 Email id:kasamadhavi@yahoo.com
2.	Dr.R.Rajasekhar	Professor	Department of Computer Science and Engineering JNTUA Collage of Engineering Anantapuram(JNTUACEA)	Ph. No: 9966660226 Email id:drasharaj2002.cse@jntua.ac.in
3.	Dr.ShaikNaseera	Professor	Department of Computer Science and Engineering JNTUA Collage of Engineering Kalikiri(JNTUACEK)	Ph. No: 6304907070 Email id:hod.cse.cek@jntua.ac.in
4.	Dr.P.Radha Krishna	Professor	Department of Computer Science and Engineering National Institute of Technology Warangal	Ph. No: 9704988816 Email id: prkrishna@nitw.ac.in
5.	Dr. D. Vivekananda Reddy	Professor	Department of CSE, S.V University, Tirupati	Ph. No:94441005225 Email id:svuvivek@gmail.com
6.	Dr. G. Sreedhar	Professor,	Department of Computer Science, National Sanskrit University, Tirupati	Ph. No:9848991451 Email id:gsreedhar1974@nsktu.org
7.	Dr N. Ramakrishnaiah	Professor & Head	Department of Computer Science and Engineering, University College of Engineering, JNTUK,Kakinada	Ph. No:9652730019 Email id:nrkrishna27@jntucek.ac.in
8.	Dr. K. Sekar	Professor	Department of CSE(AI&ML) Chadalawada Ramanamma Engineering College, Tirupati	Ph. No: 8886603897 Mail id: sekhar.k@svcolleges.edu.in
9.	Dr Dr. P Nageswara Rao	Professor	Department of CSE Vemu Institute of Technology, Tirupati - Chittoor Highway, P.Kothakota - 517112.	Ph No: 9550195534 Mail id: puttannr@vemu.org
10.	Dr V Venkata Ramana	Professor	Department of Computer Science and Engineering, Sri Sai Institute of Technology and Science (Autonomous), Rayachoty, 516 270	Ph No: 9849777831 Mail ID: viceprincipal@ssits.ac.in



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S. No	Name of the Examiner	Designation	Address	Mobile No. and Email ID
11.	Dr.J S V R S Sastry	Sr. Associate Professor	GITAM UNIVERSITY Hyderabad	Ph No:7702708025 Mail ID: sjosyula@gitam.edu
12.	P. Aditya Sharma	Assistant Professor,	Department of AI, School of Engineering, Anurag University	Ph No: 8919991306 Mail ID: adityasharma.ai@anurag.edu.in
13.	Mr. G. Bala Gangadhara	Assistant Professor	School of Computing MB University, Tirupati - 517102	Ph No: 9951293329 Mail ID: balabgangadhar@gmail.com
14.	Dr. P. Jaya Prakash	Associate Professor,	Department of IT Sri Venkateswara College of Engineering Tirupathi.- 517507	Ph No: 9908876781 Mail ID: pokalajayaprakash@gmail.com
15.	Dr.B.Ramakantha Reddy	Associate Professor	Dept of CSE(AI ML) Sri Venkateswara college of engineering, JNTU ANANTAPUR , Tirupati – 517102	Ph No: 7989634627 Mail ID: : ramakanthareddy@gmail.com
16.	E D Pavankumar	Assistant professor	Department of CSE Annamacharya institute of technology and sciences,Tirupati	Ph No: 8801180459 Mail ID: pavankumar5490@gmail.com
17.	Mr G. Lakshmikanth	Associate Professor	Dept. Of CSE, Sree Rama Engineering College, Tirupati	Ph No: 6300146556 Mail ID: svlakshmikanth21@gmail.com
18.	Dr SVG Reddy	Sr.Associate professor	Cse Department GITAM UNIVERSITY, Visakapatnam	Ph No: 996 333 2363 Mail ID: : vsaragad@gitam.edu

Resolution: The BoS experts suggested to include Professors from Government/Public Universities in the list of examiners. The department has incorporated the same, and the revised panel of examiners was approved.

Item -6: Any other suggestions

Recommendations: -NIL-

BOS resolved to recommend the following to the Academic Council for further approval

- Curriculum I year (I Semester and II Semester) of B.Tech **CSE (Artificial Intelligence)**.

The meeting was concluded with vote of thanks by Dr B. Narayana Babu, HoD, Department of CSE(AI).

HoD & Chairman – Board of Studies

B. Narayana Babu
28.08.25
(Dr B. Narayana Babu)



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First Board of Studies Meeting

Attendance

Academic Year : 2025-26 Date of Meeting: 25.08.2025

Mode of Meeting Conducted : Blended mode (Google Meet)

Total Number of Committee Members : 08

S. No.	Name of the Member	Designation	Role	Signature
Head of the Department concerned (Chairperson)				
1	Dr. B.Narayana Babu	Professor, Head of the Department	Chairman	B. narayana
All faculty members of the Department.				
2	Mr M. Purushottam	Associate Professor	Member	m. purushottam
3	Mrs. G. Harika	Assistant Professor	Member	Harika
Two subject experts from outside the parent University are to be nominated by the Academic Council.				
4	Dr N. Usha Rani	Associate Professor, Department of CSE, S.V University College of Engineering, Tirupati	Member	Usha Rani
5	Dr. R. Pradeep Kumar Reddy	Associate Professor, Department of CSE, YSR Engineering College of Yogi Vemana University, Proddutur, Y.S.R District.	Member	ONLINE
One expert is to be nominated by the Vice-Chancellor from a panel of six recommended by the Autonomous College Principal.				
6	Prof C. Shoba Bindu	Professor of CSE & Director, Future Skill Development & Incubation centre, JNT University Anantapur, Anantapuramu	Member	ONLINE
One representative from Industry/Corporate sector/allied areas to be nominated by the Principal.				
7	Mr Magesh Sundararajan	Senior Software Development Manager, IBM, Ascendas IT park(Chennai) Ltd., 1 st Floor International Tech Park, Chennai	Member	ONLINE
Alumni students				
8	Mr. S. Dileep Kumar	Software Developer, Particleblack software Development Company, Chennai	Member	Dileep Kumar

HoD & Chairman – Board of Studies

B. narayana
25.08.25
(Dr B. Narayana Babu)



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First BOS Meeting of CSE(AI) Department

Photos – Online & Offline

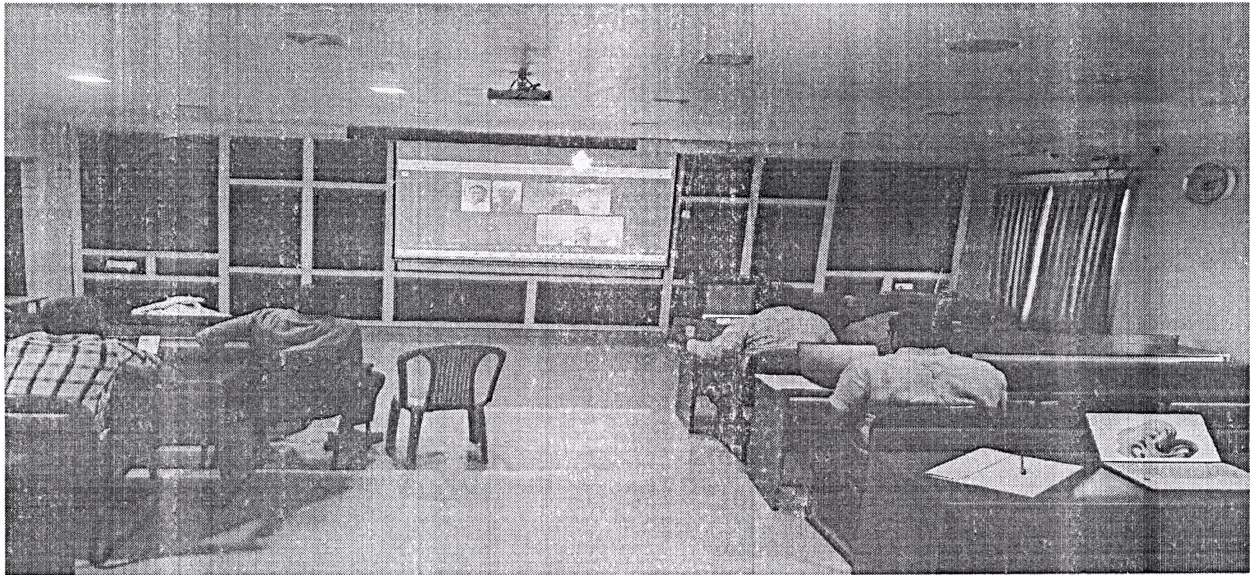
Academic Year : 2025-26

Date of Meeting: 25.08.2025

Mode of the Meeting : Blended Mode (Google Meet)



1st BOS Meeting Geotagged Photo: Welcoming the BOS members by the HOD



1st BOS meeting Geotagged Photo: The presentation by the HOD Dr B. Narayana Babu

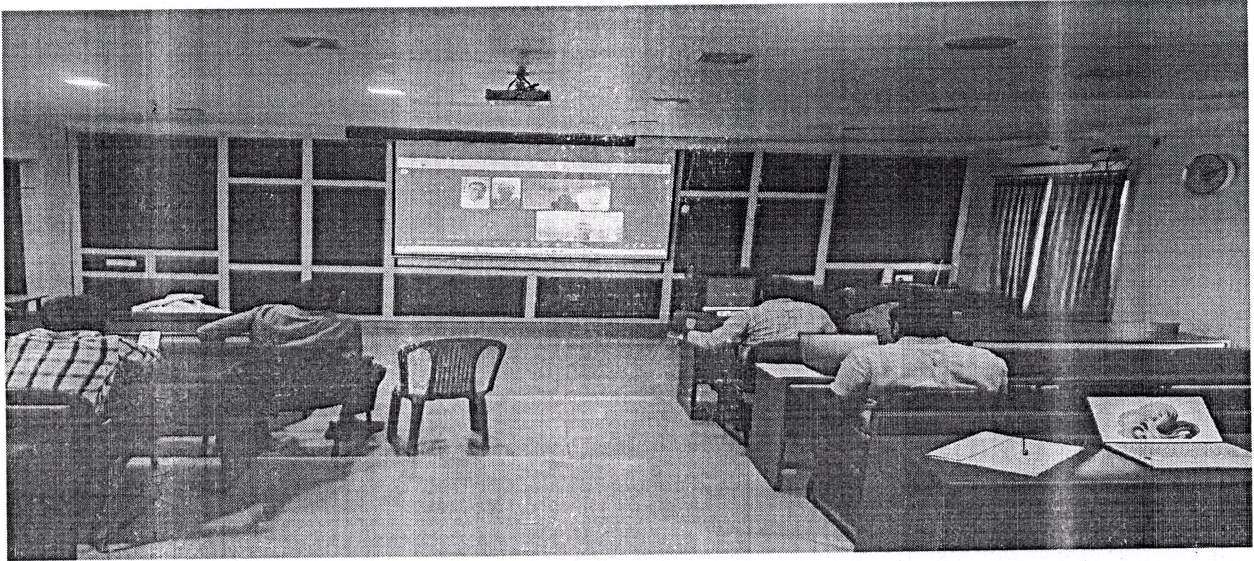


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HOD & Chairman – Board of Studies

R. Narayana Babu
28.08.23

(Dr B. Narayana Babu)



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Appendix – I

I Year B.Tech CSE(Artificial Intelligence)

Course Structure Ac. Ye 2025-26

INDUCTION PROGRAMME

0th Semester

S.No.	Course Name	Category	L-T-P-C
1	Physical Activities -- Sports, Yoga and Meditation, Plantation	MC	0-0-6-0
2	Career Counselling	MC	2-0-2-0
3	Orientation to all branches -- career options, tools, etc.	MC	3-0-0-0
4	Orientation on admitted Branch -- corresponding labs,tools and platforms	EC	2-0-3-0
5	Proficiency Modules & Productivity Tools	ES	2-1-2-0
6	Assessment on basic aptitude and mathematical Skills	MC	2-0-3-0
7	Remedial Training in Foundation Courses	MC	2-1-2-0
8	Human Values & Professional Ethics	MC	3-0-0-0
9	Communication Skills -- focus on Listening, Speaking, Reading, Writing skills	BS	2-1-2-0
10	Concepts of Programming	ES	2-0-2-0

B.Tech. – I Year I Semester

S. No.	Course Code	Course Name	L/D	T	P	Credits
1	25BTCS103T 25BTCS104T	Engineering Chemistry Chemistry	3	0	0	3
2	25BTCS105T	Linear Algebra & Calculus	3	0	0	3
3	25BTCS101T	Introduction to Programming	3	0	0	3
4	25BTEE101T	Basic Electrical & Electronics Engineering	3	0	0	3
5	25BTME101T	Engineering Graphics	1	0	4	3
6	25BTCS103P 25BTCS104P	Engineering Chemistry Lab Chemistry Lab	0	0	2	1
7	25BTCS102P	Computer Programming Lab	0	0	3	1.5
8	25BTEE101P	Electrical & Electronics Engineering Workshop	0	0	3	1.5
9	25BTCS103P	IT Workshop	0	0	2	1
10	25BTCS108L	NSS/NCC/Scouts & Guides/Community Service	-	-	1	0.5
Total			13	00	15	20.5

Purush
CM. PURUSHOTTAM
Head
(S. D. Dept)

Dileep Kumar
(S. D. Dept)

Dr. N. USHAKRANI M.Tech., Ph.D.
ASSOCIATE PROFESSOR
Department of CSE
S.V. University College of Engineer
TIRUPATI - 517 507



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B.Tech. – I Year II Semester

S. No.	Course Code	Course Name	L	T	P	Credits
1	25BTHS101T	Communicative English	2	0	0	2
2	25BTHS102T	Engineering Physics	3	0	0	3
3	25BTHS106T	Differential Equations & Vector Calculus	3	0	0	3
4	25BTCE101T	Basic Civil & Mechanical Engineering	3	0	0	3
5	25BTCS104T 25BTCE102T	Data Structures Engineering Mechanics	3	0	0	3
6	25BTHS101P	Communicative English Lab	0	0	2	1
7	25BTHS102P	Engineering Physics Lab	0	0	3	1
8	25BTCS104P 25BTCE102P 25BTCE103P	Data Structures Lab Engineering Mechanics Lab Engineering Mechanics & Building Practices Lab	0	0	3	1.5
9	25BTME102P	Engineering Workshop	0	1	3	1.5
10	25BTHS107L	Health and Wellness, Yoga and Sports	-	-	1	0.5
Total			15	2	10	19.5

*Purush
CM - PURUSHOTTAM*

*Hanka
(S. Hanka)*

*Dileshwar
(S. Dilip Kumar)*

[Signature]
Dr. N. USHA RANI M.Tech., Ph.D.
ASSOCIATE PROFESSOR
Department of CSE
S.V. University College of Engineering
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Course Code	Category	Name of the Course	L	T	P	C
25BTCS101T	ES	Introduction to Programming (Common to all branches of Engineering)	3	0	0	3

Pre-Requisites: Nil

Course Objectives:

1. To introduce students to the fundamentals of computer programming.
2. To provide hands-on experience with coding and debugging.
3. To foster logical thinking and problem-solving skills using programming.
4. To familiarize students with programming concepts such as data types, control structures, functions, and arrays.
5. To encourage collaborative learning and teamwork in coding projects.

Course Outcomes (COs):

On successful completion of the course, Student will be able to

- CO1:** Demonstrate basics of computers, the concept of algorithm & flow chart and analyse the time & complexities of algorithms. (L4)
- CO2:** Write the algorithms, draw the flow charts and develop the programs using conditional statements of C-Language. (L3)
- CO3:** Write the algorithm, draw the flow chart and develop the programs using arrays & strings of C-Language. (L3)
- CO4:** Apply the Pointers & user defined Data types of C language and Develop solutions to real world problems. (L3)
- CO5:** Develop the programs using Functions for real world problems in C language. (L3)

Unit I: Introduction to Programming and Problem Solving:

History of Computers, Basic organization of a computer: ALU, input-output units, memory, program counter, Introduction to Programming Languages, Basics of a Computer Program, Algorithms, flowcharts (Using Dia Tool), pseudo code. Introduction to Compilation and Execution, Primitive Data Types, Variables, and Constants, Basic Input and Output, Operations, Type Conversion, and Casting. Problem solving techniques: Algorithmic approach, characteristics of algorithm, Problem solving strategies: Top-down approach, Bottom-up approach, Time and space complexities of algorithms.

Unit II: Control Structures:

Simple sequential programs Conditional Statements (if, if-else, switch), Loops (for, while, do-while) Break and Continue.


Dr. N. USHA RANI M.Tech., Ph.D.
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Unit III: Arrays and Strings:

Arrays indexing, memory model, programs with array of integers, two dimensional arrays, Introduction to Strings.

Unit IV: Pointers & User Defined Data types:

Pointers, dereferencing and address operators, pointer and address arithmetic, array manipulation using pointers, User-defined data types-Structures and Unions.

Unit -5: Functions & File Handling:

Introduction to Functions, Function Declaration and Definition, Function call Return Types and Arguments, modifying parameters inside functions using pointers, arrays as parameters. Scope and Lifetime of Variables, Basics of File Handling

Note: The syllabus is designed with C Language as the fundamental language of implementation.

Text Books:

1. "The C Programming Language", Brian W. Kernighan and Dennis M. Ritchie, Prentice-Hall, 1988.
2. "Schaum's Outline of Programming with C", Byron S Gottfried, McGraw-Hill Education, 1996.

Reference Books:

1. "Computing fundamentals and C Programming", Balagurusamy, E., McGraw-Hill Education, 2008.
2. "Programming in C", Rema Theraja, Oxford, 2016, 2nd Edition.
3. "C Programming, A Problem-Solving Approach", Forouzan, Gilberg, Prasad, CENGAGE, 3rd Edition.

Purush
(M. PURUSHOTTAM)
Harika
(C. Harika)
Dileep (C)
(P. Dileep Kumar)

[Signature]
Dr. N. USHA RANI M.Tech., Ph.D.
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Department of CSE
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Course Code	Category	Name of the Course	L	T	P	C
25BTCS102P	ES	Computer Programming Lab (Common to all branches of Engineering)	0	0	3	1.5

Pre Requisites: Nil

Course Objectives:

The course aims at providing students with hands – on experience and train them on the concepts of the C-programming language.

Course Outcomes(COs):

On successful completion of the course, Student will be able to

CO1: Read, understand, and trace the execution of programs written in C language. (L2)

CO2: Select the right control structure for solving the problem. (L3)

CO3: Develop C programs which utilize memory efficiently using programming constructs like pointers. (L3)

CO4: Develop, Debug and Execute programs to demonstrate the applications of arrays, functions, basic concepts of pointers in C. (L3)

Unit I: Week 1:

Objective: Getting familiar with the programming environment on the computer and writing the first program.

Suggested Experiments/Activities:

Tutorial 1: Problem-solving using Computers.

Lab1: Familiarization with programming environment

i) Basic Linux environment and its editors like Vi, Vim & Emacs etc.

ii) Exposure to Turbo C, gcc

iii) Writing simple programs using printf(), scanf()

Week 2:

Objective: Getting familiar with how to formally describe a solution to a problem in a series of finite steps both using textual notation and graphic notation.

Suggested Experiments /Activities:

Tutorial 2: Problem-solving using Algorithms and Flow charts.

Lab 1: Converting algorithms/flow charts into C Source code.

Developing the algorithms/flowcharts for the following sample programs

i) Sum and average of 3 numbers

ii) Conversion of Fahrenheit to Celsius and vice versa

iii) Simple interest calculation

Week 3:

Objective: Learn how to define variables with the desired data-type, initialize them with appropriate values and how arithmetic operators can be used with variables and constants.

Suggested Experiments/Activities:

J. USHA RAO, M.Tech., Ph.D.
ASSOCIATE PROFESSOR
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Tutorial 3: Variable types and type conversions:

Lab 3: Simple computational problems using arithmetic expressions.

- i) Finding the square root of a given number
- ii) Finding compound interest
- iii) Area of a triangle using heron's formulae
- iv) Distance travelled by an object

UNIT – II : Week 4:

Objective: Explore the full scope of expressions, type-compatibility of variables & constants and operators used in the expression and how operator precedence works.

Suggested Experiments/Activities:

Tutorial4: Operators and the precedence and as associativity:

Lab4: Simple computational problems using the operator' precedence and associativity

- i) Evaluate the following expressions.
 - a. $A+B*C+(D*E) + F*G$
 - b. $A/B*C-B+A*D/3$
 - c. $A+++B---A$
 - d. $J=(i++) + (++i)$
- ii) Find the maximum of three numbers using conditional operator
- iii) Take marks of 5 subjects in integers, and find the total, average in float

Week 5:

Objective: Explore the full scope of different variants of “if construct” namely if-else, null-else, if-else if*-else, switch and nested-if including in what scenario each one of them can be used and how to use them. Explore all relational and logical operators while writing conditionals for “if construct”.

Suggested Experiments/Activities:

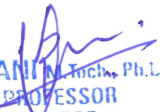
Tutorial 5: Branching and logical expressions:

Lab 5: Problems involving if-then-else structures.

- i) Write a C program to find the max and min of four numbers using if-else.
- ii) Write a C program to generate electricity bill.
- iii) Find the roots of the quadratic equation.
- iv) Write a C program to simulate a calculator using switch case.
- v) Write a C program to find the given year is a leap year or not.

Week 6:

Objective: Explore the full scope of iterative constructs namely while loop, do-while loop and for loop in addition to structured jump constructs like break and continue including when each of these statements is more appropriate to use.


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Suggested Experiments/Activities:

Tutorial 6: Loops, while and for loops

Lab 6: Iterative problems e.g., the sum of series

- i) Find the factorial of given number using any loop.
- ii) Find if the given number is a prime or not.
- iii) Compute sine and cos series
- iv) Checking a number palindrome
- v) Construct a pyramid of numbers.

Unit III: Week 7:

Objective: Explore the full scope of Arrays construct namely defining and initializing 1-D and 2-D and more generically n-D arrays and referencing individual array elements from the defined array. Using integer 1-D arrays, explore search solution linear search.

Suggested Experiments/Activities:

Tutorial 7: 1 D Arrays: searching.

Lab 7: 1D Array manipulation, linear search

- i) Find the min and max of a 1-D integer array.
- ii) Perform linear search on 1D array.
- iii) The reverse of a 1D integer array
- iv) Find 2's complement of the given binary number.
- v) Eliminate duplicate elements in an array.

Week 8:

Objective: Explore the difference between other arrays and character arrays that can be used as Strings by using null character and get comfortable with string by doing experiments that will reverse a string and concatenate two strings. Explore sorting solution bubble sort using integer arrays.

Suggested Experiments/Activities:

Tutorial 8: 2 D arrays, sorting and Strings.

Lab 8: Matrix problems, String operations, Bubble sort

- i) Addition of two matrices
- ii) Multiplication two matrices
- iii) Sort array elements using bubble sort
- iv) Concatenate two strings without built-in functions
- v) Reverse a string using built-in and without built-in string functions

Unit – IV : Week9:

Objective: Explore pointers to manage a dynamic array of integers, including memory allocation & value initialization, resizing changing and reordering the contents of an array and memory de-allocation using malloc (), calloc (), realloc () and free () functions. Gain experience processing command-line arguments received by C


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Suggested Experiments/Activities:

Tutorial 9: Pointers, structures and dynamic memory allocation

Lab 9: Pointers and structures, memory dereference.

- i) Write a C program to find the sum of a 1D array using malloc()
- ii) Write a C program to find the total, average of n students using structures
- iii) Enter n students data using calloc () and display failed students list
- iv) Read student name and marks from the command line and display the student details along with the total.
- v) Write a C program to implement realloc ()

Week 10:

Objective: Experiment with C Structures, Unions, bit fields and self-referential structures (Singly linked lists) and nested structures

Suggested Experiments/Activities:

Tutorial 10: Bitfields, Self-Referential Structures, Linked lists

Lab10: Bitfields, linked lists

Read and print a date using dd/mm/yyyy format using bit-fields and differentiate the same without using bit-fields

- i) Create and display a singly linked list using self-referential structure.
- ii) Demonstrate the differences between structures and unions using a C program.
- iii) Write a C program to shift/rotate using bitfields.
- iv) Write a C program to copy one structure variable to another structure of the same type.

Unit – V: Week 11:

Objective: Explore the Functions, sub-routines, scope and extent of variables, doing some experiments by parameter passing using call by value. Basic methods of numerical integration

Suggested Experiments/Activities:

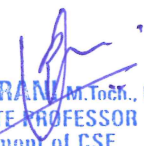
Tutorial 11: Functions, call by value, scope and extent,

Lab 11: Simple functions using call by value, solving differential equations using Euler's theorem.

- i) Write a C function to calculate NCR value.
- ii) Write a C function to find the length of a string.
- iii) Write a C function to transpose of a matrix.
- iv) Write a C function to demonstrate numerical integration of differential equations using Euler's method

Week 12:

Objective: Explore how recursive solutions can be programmed by writing recursive functions that can be invoked from the main by programming at least five distinct problems that have naturally recursive solutions.


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Suggested Experiments/Activities:

Tutorial 12: Recursion, the structure of recursive calls

Lab 12: Recursive functions

- i) Write a recursive function to generate Fibonacci series.
- ii) Write a recursive function to find the lcm of two numbers.
- iii) Write a recursive function to find the factorial of a number.
- iv) Write a C Program to implement Ackermann function using recursion.
- v) Write a recursive function to find the sum of series.

Week 13:

Objective: Explore the basic difference between normal and pointer variables, Arithmetic operations using pointers and passing variables to functions using pointers

Suggested Experiments/Activities:

Tutorial 13: Call by reference, dangling pointers

Lab 13: Simple functions using Call by reference, Dangling pointers.

- i) Write a C program to swap two numbers using call by reference.
- ii) Demonstrate Dangling pointer problem using a C program.
- iii) Write a C program to copy one string into another using pointer.
- iv) Write a C program to find no of lowercase, uppercase, digits and other characters using pointers.

Week 14:

Objective: To understand data files and file handling with various file I/O functions. Explore the differences between text and binary files.

Suggested Experiments/Activities:

Tutorial 14: File handling

Lab 14: File operations

- i) Write a C program to write and read text into a file.
- ii) Write a C program to write and read text into a binary file using fread() and fwrite()
- iii) Copy the contents of one file to another file.
- iv) Write a C program to merge two files into the third file using command-line arguments.
- v) Find no. of lines, words and characters in a file
- vi) Write a C program to print the last n characters of a given file.

Text Books:

1. Ajay Mittal, Programming in C: A practical approach, Pearson 1st Edition 2010.
2. Byron Gottfried, Schaum's Outline of Programming with C, Mc Graw Hill; 2nd edition 1996.

Reference Books:

1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, Prentice-Hall of India, 1988.
2. C Programming, A Problem-Solving Approach, Forouzan, Gilberg, Prasad, CENGAGE, 3rd edition, 2011.

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Course Code	Category	Name of the Course	L	T	P	C
25BTCS103P	ES	IT Workshop (Common to all branches of Engineering)	0	0	2	1

Pre Requisites: Nil

Course Objectives:

1. To introduce the internal parts of a computer, peripherals, I/O ports, connecting cables
2. To demonstrate configuring the system as Dual boot both Windows and other Operating Systems Viz. Linux, BOSS
3. To teach basic command line interface commands on Linux.
4. To teach the usage of Internet for productivity and self-paced life-long learning
5. To introduce Compression, Multimedia and Antivirus tools and Office Tools such as Word processors, Spread sheets and Presentation tools.

Course Outcomes (COs):

On successful completion of the course, Student will be able to

CO1: Perform Hardware troubleshooting. (L3)

CO2: Demonstrate the Hardware components and inter dependencies. (L2)

CO3: Safeguard computer systems from viruses/worms. (L3)

CO4: Prepare Document/ Presentation by utilizing computer tools. (L3)

CO5: Perform calculations using spreadsheets. (L3)

PC Hardware & Software Installation:

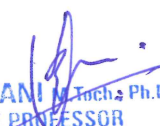
Task 1: Identify the peripherals of a computer, components in a CPU and its functions. Draw the block diagram of the CPU along with the configuration of each peripheral and submit it to your instructor.

Task 2: Every student should disassemble and assemble the PC back to working condition. Lab instructors should verify the work and follow it up with a Viva. Also, students need to go through the video which shows the process of assembling a PC. A video would be given as part of the course content.

Task 3: Every student should individually install MS windows on the personal computer. Lab instructor should verify the installation and follow it up with a Viva.

Task 4: Every student should install Linux on the computer. This computer should have windows installed. The system should be configured as dual boot (VMWare) with both Windows and Linux. Lab instructors should verify the installation and follow it up with a Viva

Task 5: Every student should install BOSS on the computer. The system should be configured as dual boot (VMWare) with both Windows and BOSS. Lab instructors should verify the installation and follow it up with a Viva


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Internet & World Wide Web:

- Task 1:** Orientation & Connectivity Boot Camp: Students should get connected to their Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally, students should demonstrate to the instructor how to access websites and email. If there is no internet connectivity preparations need to be made by the instructors to simulate the WWW on the LAN.
- Task 2:** Web Browsers, Surfing the Web: Students customize their web browsers with the LAN proxy settings, bookmarks, search toolbars and pop-up blockers. Also, plug-ins like Macromedia Flash and JRE for applets should be configured.
- Task 3:** Search Engines & Netiquette: Students should know what search engines are and how to use the search engines. A few topics would be given to the students for which they need to search on Google. This should be demonstrated to the instructors by the student.
- Task 4:** Cyber Hygiene: Students would be exposed to the various threats on the internet and would be asked to configure their computer to be safe on the internet. They need to customize their browsers to block pop ups, block active x downloads to avoid viruses and/or worms.

La TeX and Word:

- Task 1:** Word Orientation: The mentor needs to give an overview of La TeX and Microsoft (MS) office or equivalent (FOSS) tool word: Importance of La TeX and MS office or equivalent (FOSS) tool Word as word Processors, Details of the four tasks and features that would be covered in each, Using La TeX and word –Accessing, overview of toolbars, saving files, Using help and resources, rulers, format painter in word.
- Task 2:** Using La TeX and Word to create a project certificate. Features to be covered: -Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both LaTeX and Word.
- Task 3:** Creating project abstract Features to be covered: -Formatting Styles, inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.
- Task 4:** Creating a Newsletter: Features to be covered: -Table of Content, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphs and Mail Merge in word.

Excel:

Excel Orientation: The mentor needs to tell the importance of MS office or equivalent (FOSS) tool Excel as a Spreadsheet tool, give the details of the four tasks and features that would be covered in each. Using Excel –Accessing, overview of toolbars, saving excel files, Using help and resources.

Task 1: Creating a Scheduler -Features to be covered: Gridlines, Format Cells, Summation, auto fill, Formatting Text

Task 2: Calculating GPA -. Features to be covered: -Cell Referencing, Formulae in excel –average, std. deviation, Charts, Renaming and Inserting worksheets, Hyper linking, Count function,

LOOKUP/VLOOKUP

Task 3: Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting



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Power Point

Task 1: Students will be working on basic power point utilities and tools which help them create basic power point presentations. PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows in PowerPoint.

Task 2: Interactive presentations -Hyperlinks, Inserting –Images, Clip Art, Audio, Video, Objects, Tables and Charts.

Task 3: Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), and Inserting –Background, textures, Design Templates, Hidden slides.

AI Tools –Chat GPT

Task 1: Prompt Engineering: Experiment with different types of prompts to see how the model responds. Try asking questions, starting conversations, or even providing incomplete sentences to see how the model completes them.

Ex: Prompt: "You are a knowledgeable AI. Please answer the following question: What is the capital of France?"

Task 2: Creative Writing: Use the model as a writing assistant. Provide the beginning of a story or a description of a scene, and let the model generate the rest of the content. This can be a fun way to brainstorm creative ideas

Ex: Prompt: "In a world where gravity suddenly stopped working, people started floating upwards. Write a story about how society adapted to this new reality."

Task 3: Language Translation: Experiment with translation tasks by providing a sentence in one language and asking the model to translate it into another language. Compare the output to see how accurate and fluent the translations are.

Ex: Prompt: "Translate the following English sentence to French: 'Hello, how are you doing today?'"

Reference Books:

1. Comdex Information Technology course tool kit, Vikas Gupta, WILEY Dream tech, 2003
2. The Complete Computer upgrade and repair book, Cheryl A Schmidt, WILEY Dream tech, 2013, 3rd edition
3. Introduction to Information Technology, ITL Education Solutions limited, Pearson Education, 2012, 2nd edition
4. PC Hardware -A Handbook, Kate J. Chase, PHI (Microsoft), 1st Edition, 2004.
5. LaTeX Companion, Leslie Lamport, PHI/Pearson, 1st edition, 1994.
6. IT Essentials PC Hardware and Software Companion Guide, David Anfins on and Ken Quamme. – CISCO Press, Pearson Education, 3rd edition, 2008.
IT Essentials PC Hardware and Software Labs and Study Guide, Patrick Regan–CISCO Press, Pearson Education, 3rd edition, 2008.

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Course Code	Category	Name of the Course	L	T	P	C
25BTCS104T	PC	Data Structures (Common to CSE, CSE(AI), CSE(DS) & CSE (AI&ML))	2	1	0	3

Pre Requisites: Basic Knowledge in C-Language

Course Objectives:

1. To provide the knowledge of basic data structures and their implementations.
2. To understand the importance of data structures in context of writing efficient programs.
3. To develop skills to apply appropriate data structures in problem solving.

Course Outcomes(COs):

On successful completion of the course, Student will be able to

- CO1:** Implement linear data structures using Abstract Data Types (ADTs) and apply basic searching and sorting techniques to solve computational problems with appropriate time and space complexity considerations. (L3)
- CO2:** Design, implement, and apply linked lists for dynamic data storage, demonstrating understanding of memory allocation. (L4)
- CO3:** Develop programs using stacks to handle recursive algorithms, manage program states, and solve related problems. (L3)
- CO4:** Apply queue-based algorithms for efficient task scheduling and breadth-first traversal in graphs and distinguish between deques and priority queues and apply them appropriately to solve data management challenges. (L3)
- CO5:** Design novel solutions to small scale programming challenges involving data structures such as stacks, queues, Trees. Recognize scenarios where hashing is advantageous, and design hash-based solutions for specific problems. (L4)

Unit I: Introduction to Linear Data Structures:


Definition and importance of linear data structures, Abstract data types (ADTs) and their implementation, Overview of time and space complexity analysis for linear data structures. Searching Techniques: Linear & Binary Search, Sorting Techniques: Bubble sort, Selection sort, Insertion Sort.

Unit II: Linked Lists:

Singly linked lists: representation and operations, doubly linked lists and circular linked lists, Comparing arrays and linked lists, Applications of linked lists.

Unit III: Stacks:

Introduction to stacks: properties and operations, implementing stacks using arrays and linked lists, Applications of stacks in expression evaluation, backtracking, reversing list etc.


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Unit IV: Queues, Deques and Graphs:

Queues: Introduction to queues: properties and operations, implementing queues using arrays and linked lists, Applications of queues in breadth-first search, scheduling, etc. **Deques:** Introduction to deques (double-ended queues), Operations on deques and their applications, **Graphs:** Basic Terminology and Representations.

Unit V: Trees & Hashing:

Trees: Introduction to Trees, Binary Search Tree –Insertion, Deletion & Traversal.

Hashing: Brief introduction to hashing and hash functions, Collision resolution techniques: chaining and open addressing, Hash tables: basic implementation and operations, Applications of hashing in unique identifier generation, caching, etc.

Text Books:

1. Data Structures and algorithm analysis in C, Mark Allen Weiss, Pearson, 2nd Edition, 2002.
2. Fundamentals of data structures in C, Ellis Horowitz, Sartaj Sahni, Susan Anderson-Freed, Silicon Press, 2008.

Reference Books:

1. Algorithms and Data Structures: The Basic Toolbox by Kurt Mehlhorn and Peter Sanders, 1st edition, 2008.
2. C Data Structures and Algorithms by Alfred V. Aho, Jeffrey D. Ullman, and John E. Hopcroft, 1st edition, 2002.
3. Problem Solving with Algorithms and Data Structures" by Brad Miller and David Ranum, 1st edition, 2006.
4. Introduction to Algorithms by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, 3rd edition, 2006.
5. Algorithms in C, Parts 1-5 (Bundle): Fundamentals, Data Structures, Sorting, Searching, and Graph Algorithms" by Robert Sedgewick, 3rd edition, 2001.

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Course Code	Category	Name of the Course	L	T	P	C
25BTCS104P	PC	Data Structures Lab (Common to CSE, CSE(AIML) CSE (D) & CSE(AI))	0	0	3	1.5

Pre Requisites: Basic Knowledge in C-Language

Course Objectives:

The course aims at strengthening the ability of the students to identify and apply suitable data structure for the given real-world problem. It enables them to gain knowledge in practical applications of data structures.

Course Outcomes (COs):

On successful completion of the course, Student will be able to

- CO1:** Explain the role of linear data structures in organizing & accessing data efficiently in algorithms. (L2)
- CO2:** Design, implement, and apply linked lists for dynamic data storage, demonstrating understanding of memory allocation. (L4)
- CO3:** Develop programs using stacks to handle recursive algorithms, manage program states, and solve related problems. (L3)
- CO4:** Apply queue-based algorithms for efficient task scheduling and breadth-first traversal in graphs and distinguish between dequeues and priority queues and apply them appropriately to solve data management challenges. (L3)
- CO5:** Recognize scenarios where hashing is advantageous, and design hash-based solutions for specific problems. (L3)

List of Experiments:

Exercise 1: Array Manipulation


- Write a program to reverse an array.
- C Programs to implement the Searching Techniques –Linear & Binary Search
- C Programs to implement Sorting Techniques –Bubble, Selection and Insertion Sort

Exercise 2: Linked List Implementation

- Implement a singly linked list and perform insertion and deletion operations.
- Develop a program to reverse a linked list iteratively and recursively.
- Solve problems involving linked list traversal and manipulation.

Exercise 3: Linked List Applications

- Create a program to detect and remove duplicates from a linked list.
- Implement a linked list to represent polynomials and perform addition.
- Implement a double-ended queue (deque) with essential operations.


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Exercise 4: Double Linked List Implementation

- i) Implement a doubly linked list and perform various operations to understand its properties and applications.
- ii) Implement a circular linked list and perform insertion, deletion, and traversal.

Exercise 5: Stack Operations

- i) Implement a stack using arrays and linked lists.
- ii) Write a program to evaluate a postfix expression using a stack.
- iii) Implement a program to check for balanced parentheses using a stack.

Exercise 6: Queue Operations

- i) Implement a queue using arrays and linked lists.
- ii) Develop a program to simulate a simple printer queue system.
- iii) Solve problems involving circular queues.

Exercise 7: Stack and Queue Applications

- i) Use a stack to evaluate an infix expression and convert it to postfix.
- ii) Create a program to determine whether a given string is a palindrome or not.
- iii) Implement a stack or queue to perform comparison and check for symmetry.

Exercise 8: Binary Search Tree

- i) Implementing a BST using Linked List.
- ii) Traversing of BST.

Exercise 9: Hashing

- i) Implement a hash table with collision resolution techniques.
- ii) Write a program to implement a simple cache using hashing.

Text Books:

1. Data Structures and algorithm analysis in C, Mark Allen Weiss, Pearson, 2nd Edition, 2002.
2. Fundamentals of data structures in C, Ellis Horowitz, Sartaj Sahni, Susan Anderson-Freed, Silicon Press, 2008

Reference Books:

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4. Introduction to Algorithms by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, 3rd edition 2006.
5. ~~HELD~~ Algorithms in C, Parts 1-5 (Bundle): Fundamentals, Data Structures, Sorting, Searching, and Graph Algorithms by Robert Sedgewick, 3rd edition, 2001.