



ESTD : 2007

Sri Indu Institute of Engineering and Technology (Autonomous)

(Formerly RVR Institute of Engineering & Technology)

An Autonomous Institution Under UGC

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EAMCET CODE: INDI

Approved by AICTE, New Delhi, & Affiliated to JNTUH, Hyderabad.

JNTUH CODE: X3



COURSE FILE

ON

PROGRAMMING FOR PROBLEM SOLVING LAB

Course Code-CS107ES

**I B.Tech Semester-I
A.Y.2022-2023**

Prepared by
U.NARESH
Asst. Professor

Head of the Department
Department of H&S
SRI INDU INSTITUTE OF ENGG & TECH
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Sri Indu Institute of Engineering & Techn.
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R.R. Dist. Telangana-501 510.



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Name of the Physical laboratory:	PROGRAMING FOR PROBLEMSOLVINGLAB
Course Code:	CS107ES
Room No:	D007& XII
Name of the Lab Incharge	G.KALYANI
Name of the Faculty Incharge	U.NARESH

Index of Lab File

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INSTITUTE VISION & MISSION

Vision:

To become a premier institute of academic excellence by providing the worldclass education that transforms individuals into high intellectuals, by evolving them as empathetic and responsible citizens through continuous improvement.

Mission:

- **IM1:** To offer outcome-based education and enhancement of technical and practical skills.
- **IM2:** To Continuous assess of teaching-learning process through institute-industry collaboration.
- **IM3:** To be a center of excellence for innovative and emerging fields in technology development with state-of-art facilities to faculty and students' fraternity.
- **IM4:** To Create an enterprising environment to ensure culture, ethics and social responsibility among the stakeholders.

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Khalsa Ibrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510

Website: <https://siiet.ac.in/>

PROGRAMME OUTCOMES

PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design / Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6: The Engineer & Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment & Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual & Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, give and receive clear instructions.

PO11: Project Management & Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-Long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Head of the Department
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SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

B.Tech in CSE-DATA SCIENCE

COURSE STRUCTURE

I YEAR SYLLABUS (BR22Regulations)

Applicable from Academic Year: 2022-23 Batch

I Year I Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1.	MA101BS	Matrices sand Calculus	3	1	0	4
2.	CH103BS	Engineering Chemistry	3	1	0	4
3.	CS103ES	Programming for Problem Solving	3	0	0	3
4.	EE101ES	Basic Electrical Engineering	2	0	0	2
5.	ME101ES	Computer Aided Engineering Graphics	1	0	4	3
6.	CS106ES	Elements of Computer Science & Engineering	0	0	2	1
7.	CH106BS	Engineering Chemistry Laboratory	0	0	2	1
8.	CS107ES	Programming for Problem Solving Laboratory	0	0	2	1
9.	EE102ES	Basic Electrical Engineering Laboratory				
		Induction Program				
		Total	12	2	12	20

I Year II Semester

S. No.	Course Code	Course	L	T	P	Credits
1.	MA201BS	Ordinary Differential Equations and Vector Calculus	3	1	0	4
2.	AP202BS	Applied Physics	3	1	0	4
3.	ME202ES	Engineering Workshop	0	1	3	2.5
4.	EN204HS	English for Skill Enhancement	2	0	0	2
5.	EC201ES	Electronic Devices and Circuits	2	0	0	2
6.	AP205BS	Applied Physics Laboratory	0	0	3	1.5
7.	CS201ES	Python Programming Laboratory	0	1	2	2
8.	EN207HS	English Language and Communication Skills Laboratory	0	0	2	1
9.	CS203ES	IT Workshop	0	0	2	1
10.	*MC201ES	Environmental Science	3	0	0	0
		Total	13	4	12	20



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PROGRAMMING FOR PROBLEM SOLVING LABORATORY

(Course Code: CS107ES)

B.Tech I Year I Sem.

L T PC

0 0 21

Prerequisites: Programming for Problem Solving

Course Objectives:

The students will learn the following:

- To work with an IDE to create, edit, compile, run and debug programs
- To analyze the various steps in program development.
- To develop programs to solve basic problems by understanding basic concepts in C like operators, control statements etc.
- To develop modular, reusable and readable C Programs using the concepts like functions, arrays etc.
- To Write programs using the Dynamic Memory Allocation concept.
- To create, read from and write to text and binary files

Course Outcomes: The candidate is expected to be able to:

- formulate the algorithms for simple problems
- translate given algorithms to a working and correct program
- correct syntax errors as reported by the compilers
- identify and correct logical errors encountered during execution
- represent and manipulate data with arrays, strings and structures
- use pointers of different types
- create, read and write to and from simple text and binary files
- modularize the code with functions so that they can be reused

Practice sessions:

- Write a simple program that prints the results of all the operators available in C (including pre/post increment, bitwise and/or/not, etc.). Read required operand values from standard input.
- Write a simple program that converts one given data type to another using auto conversion and casting. Take the values from standard input.
 - Write a program for finding the max and min from the three numbers.
 - Write the program for the simple, compound interest.
- Write a program that declares Class awarded for a given percentage of marks, where mark <40% = Failed, 40% to <60% = Second class, 60% to <70% = First class, >= 70% = Distinction. Read percentage from standard input.
- Write a program that prints a multiplication table for a given number and the number of rows in the table. For example, for a number 5 and rows = 3, the output should be:

$$5 \times 1 = 5$$

$$5 \times 2 = 10$$

$$5 \times 3 = 15$$

e. Write a program that shows the binary equivalent of a given positive number between 0 to 255.

Expression Evaluation:

a. A building has 10 floors with a floor height of 3 meters each. A ball is dropped from the top of the building. Find the time taken by the ball to reach each floor. (Use the formula $s =$

$ut + \frac{1}{2} at^2$ where u and a are the initial velocity in m/sec ($= 0$) and acceleration in m/sec^2 ($= 9.8 \text{ m/s}^2$)).

b. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators $+, -, *, /, \%$ and use Switch Statement)

c. Write a program that finds if a given number is a prime number

d. Write a C program to find the sum of individual digits of a positive integer and test if the given number is a palindrome.

e. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.

f. Write a C program to generate all the prime numbers between 1 and n , where n is a value supplied by the user.

g. Write a C program to find the roots of a Quadratic equation.

h. Write a C program to calculate the following, where x is a fractional value. $1 - \frac{x}{2} + \frac{x^2}{4} - \frac{x^3}{6}$

i. Write a C program to read in two numbers, x and n , and then compute the sum of this geometric progression: $1 + x + x^2 + x^3 + \dots + x^n$. For example: if n is 3 and x is 5, then the program computes $1 + 5 + 25 + 125$.

Arrays, Pointers and Functions:

a. Write a C program to find the minimum, maximum and average in an array of integers.

b. Write a function to compute mean, variance, Standard Deviation, sorting of n elements in a single dimension array.

c. Write a C program that uses functions to perform the following:

i. Addition of Two Matrices

ii. Multiplication of Two Matrices

d. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be the same.

e. Write C programs that use both recursive and non-recursive functions to find the factorial of a given integer.

f. To find the GCD (greatest common divisor) of two given integers.

g. To find x^n

i. Write a program for reading elements using a pointer into an array and display the values using the array.

j. Write a program for displaying values in reverse order from an array using a pointer.

k. Write a program through a pointer variable to sum of n elements from an array.

Files:

- a. Write a C program to display the contents of a file to standard output device.
- b. Write a C program which copies one file to another, replacing all lowercase characters with their uppercase equivalents.
- c. Write a C program to count the number of times a character occurs in a text file. The file name and the character are supplied as command line arguments.
- d. Write a C program that does the following:
 It should first create a binary file and store 10 integers, where the file name and 10 values are given in the command line. (hint: convert the strings using a to i function) Now the program asks for an index and a value from the user and the value at that index should be changed to the new value in the file. (hint: use fseek function)
 The program should then read all 10 values and print them back.
- e. Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file).

Strings:

- a. Write a C program to convert a Roman numeral ranging from I to L to its decimal equivalent.
 - b. Write a C program that converts a number ranging from 1 to 50 to Roman equivalent
 - c. Write a C program that uses functions to perform the following operations:
 - d. To insert a sub-string into a given main string from a given position.
 - e. To delete n Characters from a given position in a given string.
 - f. Write a C program to determine if the given string is a palindrome or not (Spelled same in both directions with or without a meaning like madam, civic, noon, abcba, etc.)
 - g. Write a C program that displays the position of a character ch in the string S or - 1 if S doesn't contain ch.
 - h. Write a C program to count the lines, words and characters in a given text.
- Miscellaneous:
- a. Write a menu driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choices are to be functions. Use a switch statement to determine what action to take. Display an error message if an invalid choice is entered.
 - b. Write a C program to construct a pyramid of numbers as follows:

Sorting and Searching:

1	*	1	1	*
1 2	* *	2 3	2 2	* *
1 2 3	* * *	4 5 6	3 3 3	* * *
			4 4 4 4	* *
				*

- a. Write a C program that uses non recursive function to search for a Key value in a given list of integers using linear search method.
- b. Write a C program that uses non recursive function to search for a Key value in a given sorted list of integers using binary search method.
- c. Write a C program that implements the Bubble sort method to sort a given list of integers in ascending order.
- d. Write a C program that sorts the given array of integers using selection sort in descending order
- e. Write a C program that sorts the given array of integers using insertion sort in ascending order
- f. Write a C program that sorts a given array of names.

TEXT BOOKS:

1. Jeri R. Hanly and Elliot B.Koffman, Problem solving and Program Design in C 7th Edition, Pearson
2. B.A. Forouzan and R.F. Gilberg C Programming and Data Structures, Cengage Learning, (3rd Edition)

REFERENCE BOOKS:

1. Brian W. Kernighan and Dennis M. Ritchie, The C Programming Language, PHI
2. E. Balagurusamy, Computer fundamentals and C, 2nd Edition, McGraw-Hill
3. Yashavant Kanetkar, Let Us C, 18th Edition, BPB
4. R.G. Dromey, How to solve it by Computer, Pearson (16th Impression)
5. Programming in C, Stephen G. Kochan, Fourth Edition, Pearson Education.
6. Herbert Schildt, C: The Complete Reference, Mc Graw Hill, 4th Edition
7. Byron Gottfried, Schaum's Outline of Programming with C, McGraw-Hill



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COURSE OUTCOMES

Course Name: Programming for Problem Solving lab(C118)

At the End of the course, student will be able to:

CO No	DESCRIPTION
C118.1	Solve the Problems by using Operators and type casting. (Evaluation).
C118.2	Write the programs based on Branching and Looping statements. (Knowledge).
C118.3	Illustrate the Problems by using the recursion and Functions. (Comprehension).
C118.4	Analyze the programs based on Derived Data type.(Analysis).
C118.5	Develop the programs using Files (Synthesis).
C118.6	Solve the Problems by using the Searching and Sorting Technique.(Evaluation)

Cos and POs & PSOs Mapping

CO/PO /PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C118.1	2	2	3	-	1	-	-	-	-	-	-	2	2	2
C118.2	-	2	3	1	2	-	-	-	2	-	-	-	3	3
C118.3	1	2	3	-	2	-	-	-	-	-	-	-	2	-
C118.4	-	2	3	-	1	-	-	-	-	-	2	-	-	-
C118.5	3	2	2	-	-	-	-	-	-	-	2	-	-	-
C118.6	2	2	2	2	1	-	-	-	-	-	-	-	3	-
Avg	2	2	2.6	1.5	1.4				2		2	2	2.5	2.5

3-High

2-Medium

1-Low



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PROGRAMMING FOR PROBLEM SOLVING LAB

LIST OF PROGRAMS AND THEIR CO, PO, PSO MAPPING

Week no.	Name of the program	CO	PO/PSO	
			PO	PSO
1	<p>a. Write a simple program that prints the results of all the operators available in C (including pre/post increment, bitwise and/or/not, etc.). Read required operand values from standard input.</p> <p>b. Write a simple program that converts one given data type to another using auto conversion and casting. Take the values from standard input.</p>	C118.1	PO1, PO2, PO3, PO5, PO12	PSO1 PSO2
2	<p>a. Write a program to find the max and min from the three numbers.</p> <p>b. Write the program for the simple, compound interest.</p> <p>c. Write a program that declares Class awarded for a given percentage of marks, where mark <40% = Failed, 40% to <60% = Second class, 60% to <70% = First class, >= 70% = Distinction. Read percentage from standard input.</p> <p>d. Write a program that prints a multiplication table for a given number and the number of rows in the table. For example, for a number 5 and rows = 3, the</p> <p>e. $5 \times 1 = 5$</p> <p>f. $5 \times 2 = 10$</p> <p>g. $5 \times 3 = 15$</p> <p>h. Write a program that shows the binary equivalent of a given positive number between 0 to 255.</p>	C118.2	PO2, PO3, PO4, PO5, PO9	PSO1 PSO2

3	<p>a. A building has 10 floors with a floor height of 3 meters each. A ball is dropped from the top of the building. Find the time taken by the ball to reach each floor. (Use the formula $s = ut + \frac{1}{2}at^2$ where u and a are the initial velocity in m/sec ($= 0$) and acceleration in m/sec^2 ($= 9.8 m/s^2$)).</p> <p>b. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators $+$, $-$, $*$, $/$, $\%$ and use Switch Statement)</p> <p>c. Write a program that finds if a given number is a prime number</p> <p>d. Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.</p> <p>e. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.</p> <p>f. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.</p> <p>g. Write a C program to find the roots of a Quadratic equation.</p> <p>h. Write a C program to calculate the following, where x is a fractional value.</p> <p>i. $1 - \frac{x}{2} + \frac{x^2}{4} - \frac{x^3}{6}$</p> <p>j. Write a C program to read in two numbers, x and n, and then compute the sum of this geometric progression: $1 + x + x^2 + x^3 + \dots + x^n$. For example: if n is 3 and x is 5, then the program computes $1 + 5 + 25 + 125$.</p>	C118.2	PO2, PO3, PO4, PO5, PO9	PSO1 PSO2
4		C118.3	PO1, PO2, PO3, PO5	PSO1

	<p>a. Write a C program to find the minimum, maximum and average in an array of integers.</p> <p>b. Write a functions to compute mean, variance, Standard Deviation, sorting of n elements in single dimension array.</p> <p>c. Write a C program that uses functions to perform the following:</p> <p>d. Addition of Two Matrices</p> <p>e. ii. Multiplication of Two Matrices</p> <p>f. iii. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be same.</p> <p>g. Write C programs that use both recursive and non-recursive functions</p> <p>h. To find the factorial of a given integer.</p> <p>i. ii. To find the GCD (greatest common divisor) of two given integers.</p> <p>j. iii. To find x^n</p> <p>k. Write a program for reading elements using pointer into array and display the values using array.</p> <p>l. Write a program for display values reverse order from array using pointer.</p> <p>m. Write a program through pointer variable to sum of n elements from array.</p>	C118.4	PO2,PO3,PO5, PO11	
5	<p>a. Write a C program to display the contents of a file to standard output device.</p> <p>b. Write a C program which copies one file to another, replacing all lowercase characters with their uppercase equivalents.</p> <p>c. Write a C program to count the number of times a character occurs in a text file. The file name and the character are supplied as command line arguments.</p> <p>d. Write a C program that does the following: It should first create a binary file and store 10 integers, where the file name and 10 values are given in the</p>	C118.5 C118.4	PO1, PO2, PO3, PO11 PO2,PO3,PO5, PO11	

	<p>command line. (hint: convert the strings using atoi function) Now the program asks for an index and a value from the user and the value at that index should be changed to the new value in the file. (hint: use fseek function) The program should then read all 10 values and print them back.</p> <p>e. Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file).</p>			
6	<p>a. Write a C program to convert a Roman numeral ranging from I to L to its decimal equivalent.</p> <p>b. Write a C program that converts a number ranging from 1 to 50 to Roman equivalent</p> <p>c. Write a C program that uses functions to perform the following operations:</p> <p>d. To insert a sub-string in to a given main string from a given position.</p> <p>e. ii. To delete n Characters from a given position in a given string.</p> <p>Write a C program to determine if the given string is a palindrome or not (Spelled same in both directions with or without a meaning like madam, civic, noon, abcba, etc.)</p> <p>g. Write a C program that displays the position of a character ch in the string S or - 1 if S doesn't contain ch.</p> <p>f. h. Write a C program to count the lines, words and characters in a given text.</p>	<p>C118.3</p> <p>C118.4</p>	<p>PO1, PO2, PO3, PO5</p> <p>PO2, PO3, PO5, PO11</p>	<p>PSO1</p>
7	<p>a. Write a menu driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choices are to be functions. Use a switch statement to determine what action to take. Display an error message if an invalid choice is entered.</p> <p>b. Write a C program to construct a pyramid of numbers as follows:</p>	<p>C118.3</p>	<p>PO1, PO2, PO3, PO5</p>	<p>PSO1</p>

	<pre> 1 * 1 1 * 12 ** 23 22 ** 123 *** 456 333 *** 4444 ** * * </pre>			
8	<p>a. Write a C program that uses non recursive function to searchfor a Key value in a given list of integers using linear search method.</p> <p>c. Write a C program that uses non recursive function to searchfor a Key value in a given sorted list of integers using binary search method.</p> <p>e. Write a C program that implements the Bubble sort method tosort a given list of integers in ascending order.</p> <p>g. Write a C program that sorts the given array of integers usingselection sort in descending order</p> <p>h. Write a C program that sorts the given array of integers usinginsertion sort in ascending order</p> <p>i. Write a C program that sorts a given array of names</p>	C118.6	PO1, PO2, PO3, PO4,PO5	PSO1

ADDITIONAL PROGRAMS

1	Write A C Program To Check Armstrong Number	C118.2	PO2, PO3, PO4, PO5, PO9	PSO1 PSO2
2	To reverse A Write A C Program Given Number	C118.2	PO2, PO3, PO4, PO5, PO9	PSO1 PSO2
3	Write A C Program To Arrange The Numbers In Ascending Order Using Quick Sort	C118.6	PO1, PO2, PO3, PO4,PO5	PSO1



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Class: DATA SCIENCE

Semester: I

W.E.F-14-11-2022

LH:-D-107

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Class:DATA SCIENCE Semester: I W.E.F-14-11-2022 LH: D-208

	I 9:40- 10:30	II 10:30 - 11:20	III 11:20- 12:10	12:10- 12:45	IV 12.45- 1.35	V 1.35- 2.25	VI 2.25- 3.15	VII 3.15-4.00
MON	BEE	M&C	PPS	L U N C H	BEE/EC LAB			LIB
TUE	PPS LAB				M&C	M&C	ECSE	EG(T)
WED	PPS	EC	BEE		EG PRACTICE			BEE(T)/M&C(T)
THU	EC	PPS	BEE		BEE/EC LAB			EC(T)/PPS(T)
FRI	EG PRACTICE				M&C	EC	BEE	PPS(T)/EC(T)
SAT	BEE	PPS	ECSE		PPS	M&C	EC	M&C(T)/BEE(T)

Course Code	Course Name	Name of the Faculty	Course Code	Course Name	Name of the Faculty
MA101BS	Matrices and Calculus	CH.SARITHA	ME101ES	ComputerAided Engineering Graphics	A.MALLESH
CH103BS	Engineering Chemistry	O.SUBHASHINI	CH106BS	Engineering Chemistry Lab	O.SUBHASHINI
CS103ES	Programming for Problem Solving	U.NARESH	CS107ES	Programming for Problem Solving Lab	U.NARESH/G.KALYANI
EE101ES	Basic Electrical Engineering	S.NISCHALA	EE102ES	Basic Electrical Engineering Lab	G.BHARGAVI /M.NAGA RAJU
CS106ES	Elements of Computer Science & Engineering	P.SRILATHA			

O. Subhashini
Class In-Charge

Ch. Saritha
Time Table Coordinator



[Signature]
Head of The Department
Dr. R. YADAGIRI RAO
 M.Sc., B.Ed., M.Tech(CSE), Ph.D.
 Head of the Department
 Department of H&S
 SRI INDU INSTITUTE OF ENGG & TECH
 Sheriguda, Ibrahimpatnam (V), R.R. Dist. 501 510.



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Sheriguda(V), Ibrahimpatnam(M), R.Dist., Telangana-501510

X3

BR22

Lab External Question paper

Year & Semester: I-I

Branch: DATA SCIENCE

Subject Name: Programming For Problem Solving Lab

Faculty Name:

SET-1

1. Write a simple program that prints the results of all the operators available in C (including pre/post increment, bitwise and/or/not, etc.). Read required operand values from standard input.
2. Write the program for the simple, compound interest.
3. Write a C program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
4. Transpose of a matrix with memory dynamically allocated for the new matrix as row and column counts may not be same.
5. Write a program for display values reverse order from array using pointer.
6. Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file).
7. Write a C program to construct a pyramid of numbers as follows:
1
2 2
3 3 3
4 4 4 4
8. Write a C program that implements the Bubble sort method to sort a given list of integers in ascending order.

SET-2

1. Write a simple program that converts one given data type to another using auto conversion and casting. Take the values from standard input.
2. Write program that declares Class awarded for a given percentage of marks, where mark <40% = Failed, 40% to <60% = Second class, 60% to <70% = First class, >= 70% = Distinction. Read percentage from standard input.
3. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, *, /, % and use Switch Statement)
4. Write C programs that use both recursive and non-recursive functions
5. Write a program through pointer variable to sum of n elements from array.

6. Write a menu driven C program that allows a user to enter n numbers and then choose between finding the smallest, largest, sum, or average. The menu and all the choices, are to be functions. Use a switch statement to determine what action to take. Display an error message if an invalid choice is entered.

7. write a C program to construct a pyramid of numbers as follows:

```
*  
* *  
* * *  
* *  
*
```

8. Write a C program that sorts the given array of integers using selection sort in descending order.

SET-3

1. Write a program for find the max and min from the three numbers.

2. Write a program that prints a multiplication table for a given number and the number of rows in the table.

For example, for a number 5 and rows = 3, the output should be:

$$5 \times 1 = 5$$

$$5 \times 2 = 10$$

$$5 \times 3 = 15$$

3. Write a C program to find the roots of a Quadratic equation.

4. Write C programs that use both recursive and non-recursive functions to find the GCD (greatest common divisor) of two given integers.

5. Write a C program to display the contents of a file to standard output device.

6. Write a C program to construct a pyramid of numbers as follows:

```
1  
1 2  
1 2 3
```

7. Write a C program that uses non recursive function to search for a Key value in a given list of integers using linear search method.

8. Write a C program that sorts the given array of integers using insertion sort in ascending order.

SET-4

1. A building has 10 floors with a floor height of 3 meters each. A ball is dropped from the top of the building. Find the time taken by the ball to reach each floor. (Use the formula $s = ut + (1/2)at^2$ where u and a are the initial velocity in m/sec (= 0) and acceleration in m/sec^2 (= $9.8 m/s^2$)).

2. Write a C program to find the sum of individual digits of a positive integer and test given number is palindrome.

3. Write a C program to find the minimum, maximum and average in an array of integers.
4. Write a C program that uses functions to perform the Multiplication of Two Matrices
5. Write a C program which copies one file to another, replacing all lowercase characters with their uppercase equivalents
6. Write a C program to construct a pyramid of numbers as follows:
*
* *
* * *
7. Write a C program that uses non recursive function to search for a Key value in a given sorted list of integers using binary search method.
8. Write a C program that sorts a given array of names

SET-5

1. Write a program that finds if a given number is a prime number.
2. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence
3. Write a C program that uses functions to perform the Addition of Two Matrices
4. Write C programs that use both recursive and non-recursive functions to find x^n .
5. Write a C program to count the number of times a character occurs in a text file. The file name and the character are supplied as command line arguments.
6. Write a C program to construct a pyramid of numbers as follows:
1
2 3
4 5 6
7. Write a C program that implements the Bubble sort method to sort a given list of integers in ascending order.
8. Write C programs that use both recursive and non-recursive functions to find the GCD (greatest common divisor) of two given integers.



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<https://siiet.ac.in/>

PPS Lab External Time Table

Examination Branch

A.Y.: 2022-23

SEM-I

DATE	Day	Branch	Session	HT. No	Total No of Students
10-3-2023	FRIDAY	AI&DS	FN	22X31A7201TO22 X31A7264	64
10-3-2023	FRIDAY	IOT	AN	22X31A6901TO22 X31A6963	63
11-3-2023	SATURDAY	AI&ML-A	FN	22X31A6601TO22 X31A6650	50
11-3-2023	SATURDAY	CS	AN	22X31A6201TO22 X31A6262	62
13-3-2023	MONDAY	DS	FN	22X31A6701TO22 X31A6764	64
13-3-2023	MONDAY	AI&ML-B	AN	22X31A6251TO22 X31A6297	47
14-3-2023	TUESDAY	CSE-A	FN	22X31A0501TO22 X31A0565	65
14-3-2023	TUESDAY	CSE-C	AN	22X31A05D1TO22 X31A05J1	62
15-3-2023	WEDNESDAY	CSE-B	FN	22X31A0566TO22 X31A05D0	61
15-3-2023	WEDNESDAY	ECE & CIVIL	AN	22X31A0401To22X 31A0464 22X31A6101TO22 X31A6103	67


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Department of H&S
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<https://siiet.ac.in/>

PPS Lab External Time Table with Examiners

DATE	Day	Branch	Session	HT. No	Total No of Students	Internal Examiner	External Examiner
10-3-2023	FRIDAY	AI&DS	FN	22X31A72 01TO22X 31A7264	64	G.BHARGAVI 9985427392 Bhargavi1016@gmail.com	Mr.Srinivas Rao 8977377795
10-3-2023	FRIDAY	IOT	AN	22X31A69 01TO22X 31A6963	63	G.BHARGAVI 9985427392 Bhargavi1016@gmail.com	Mr.B.S. Acharya 9676153956
11-3-2023	SATURDAY	AI&ML-A	FN	22X31A66 01TO22X 31A6650	50	T.ARUNA 7207914564 arunasrinivas@gmail.com	Mr.R.Aadil Ahmed 7780808860
11-3-2023	SATURDAY	CS	AN	22X31A62 01TO22X 31A6262	62	B.S.SWAPNA SHANTHI 9985528788 Swapnashanthi45@gmail.com	Ms. Vishalakshi 7032146627
13-3-2023	MONDAY	DS	F N	22X31A67 01TO 22X31A67 64	64	B.S.SWAPNA SHANTHI 9985528788 Swapnashanthi45@gmail.com	Dr A Ravi
13-3-2023	MONDAY	AI&ML-B	AN	22X31A62 51TO22X 31A6297	47	T.ARUNA 7207914564 arunasrinivas@gmail.com	Dr A Ravi

14-3-2023	TUESDAY	CSE-A	F N	22X31A05 01TO22X 31A0565	65	S.KIRAN 9704838922 kiransaggurthief c@gmail.com	Mr.CH.Ravindr a 9666205205
14-3-2023	TUESDAY	CSE-C	A N	22X31A05 D1TO22X 31A05J1	61	K.MOUNIKA 9052112672 k.mounika1507 @gmail.com	Ms.K.Sreedevi 8374652679
15-3-2023	WEDNESDAY	CSE-B	F N	22X31A05 66TO22X 31A05D0	65	S.KIRAN 9704838922 kiransaggurthief c@gmail.com	Ms.R.Shashikal a 9618559938
15-3-2023	WEDNESDAY	ECE & CIVIL	AN	22X31A04 01To22X3 1A0464 22X31A61 01TO22X 31A6103	62	K.MOUNIKA 9052112672 k.mounika150 7@gmail.com	Mr.B.Lalu


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Sheriguda(V), Ibrahimpatnam(M), R.R. Dist., Telangana-
501510

X3

BR22

Year & Semester: I-I

Branch: DATA SCIENCE

LAB OCCUPANCY CHART PROGRAMMING FOR PROBLEM SOLVING LAB

	I 9:40- 10:30	II 10:30- 11:20	III 11:20- 12:10		IV 12:45- 1:35	V 1:35- 2:25	V 12:25- 3:15	VII 3:15- 4:00
MON	I BTECH I SEM CSE-A			L U N C H	I BTECH I SEM CSE-C			
TUE	I BTECH I SEM DATA SCIENCE -A				I BTECH I SEM ECE & CIVIL			
WED	I BTECH I SEM AI&ML-B				I BTECH I SEM CSE-B			
THU	I BTECH I SEM AIDS				I BTECH I SEM DS-B & CS			
FRI					I BTECH I SEM AI&ML-A			
SAT					I BTECH I SEM IOT			


Head of the Department
Department of H&S
SRI INDU INSTITUTE OF ENGG & TECH
Sheriguda(V), Ibrahimpatnam (M), R.R. Dist-501510


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KhalsaIbrahimpatnam, Sheriguda (V), Ibrahimpatnam (M), Ranga Reddy Dist., Telangana – 501 510

Website:<https://siiet.ac.in/>

PROGRAMMING FOR PROBLEM SOLVING LAB

Do's

1. Come with completed observation and record.
2. Remove your shoes or wear foot socks before you enter the lab.
3. Always keep quiet. Be considerate to other lab users.
4. Report any problems with the computer to the person in charge.
5. Shut down the computer properly.
6. Wear ID card before entering into the lab.
7. Read and understand how to carry out an activity thoroughly before coming to the laboratory.
8. write Intime, Outtime and system details in the login register

Don'ts

1. Do not touch any part of the computer with wet hands.
2. Do not change system settings.
3. Do not hit the keys on the computer too hard.
4. Don't damage, remove, or disconnect any labels, parts, cables or equipment.
5. Do not install or download any software or modify or delete any system files on any lab computers.
6. Do not disturb your neighbouring students. They may be busy in completing tasks.
7. Do not remove anything from the computer laboratory without permission.
8. Do not use pen drives.



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510 Website: <https://siiet.ac.in/>

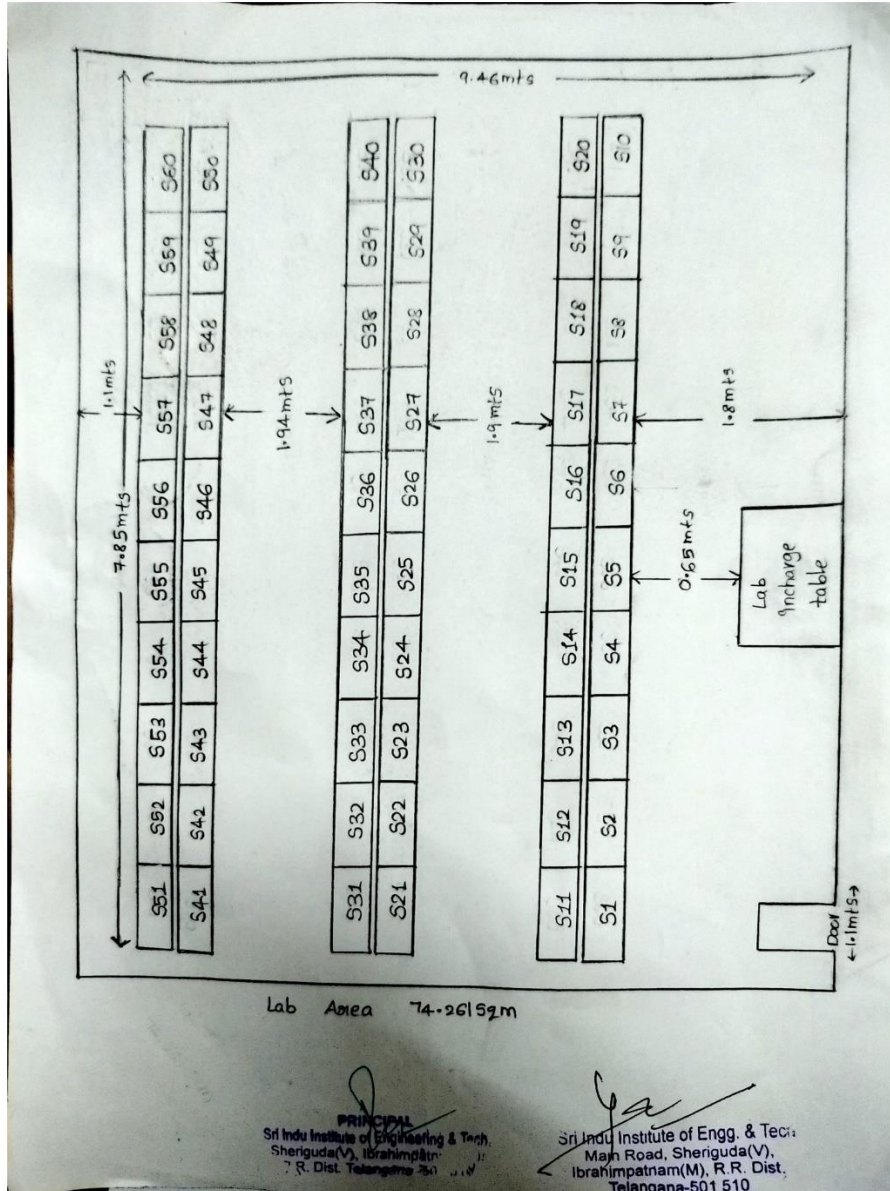
PROGRAMMING FOR PROBLEM SOLVING LAB

PHYSICAL LAB-1 FLOOR PLAN

ROOM NO: D-007

BLOCK: D

GROUND FLOOR





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510 Website: <https://siiet.ac.in/>

Lab manual link

<https://drive.google.com/file/d/1YgOYoYUNNA5g2eoi2mgYpiajzs393yv/view?usp=sharing>



SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of **Humanities and Sciences**

Course Outcome Attainment (Internal Examination-2)

Name of the faculty	U.NARESH	Academic Year:2022-2023
Branch & Section:	DATA SCIENCE	Examination: I Internal
Lab Course Name:	Programming For Problem Solving Lab	Year/semester: I/I

S.No	HT No.	R+O+A	V+V	E+E+R
Max. Marks ==>		10	10	10
1	22X31A6701	10	5	5
2	22X31A6702	10	4	4
3	22X31A6703	10	8	10
4	22X31A6704	10	6	4
5	22X31A6705	10	6	4
6	22X31A6706	10	1	4
7	22X31A6707	10	5	6
8	22X31A6708	10	4	4
9	22X31A6709	10	4	4
10	22X31A6710	10	4	4
11	22X31A6711	10	7	4
12	22X31A6712	10	6	7
13	22X31A6713	10	4	4
14	22X31A6714	10	4	4
15	22X31A6715	10	7	4
16	22X31A6716	10	6	4
17	22X31A6717	10	2	3
18	22X31A6718	10	7	10
19	22X31A6719	10	4	4
20	22X31A6720	10	6	10
21	22X31A6721	10	6	4
22	22X31A6722	10	6	4
23	22X31A6723	10	4	3
24	22X31A6724	10	7	5
25	22X31A6725	10	6	4
26	22X31A6726	10	6	8
27	22X31A6727	10	4	4
28	22X31A6728	10	2	4
29	22X31A6729	A	A	A
30	22X31A6730	10	2	4
31	22X31A6731	10	6	5
32	22X31A6732	A	A	A
33	22X31A6733	10	8	10
34	22X31A6734	10	4	4
35	22X31A6736	10	6	4
36	22X31A6737	10	6	4
37	22X31A6738	10	6	8
38	22X31A6739	10	4	4
39	22X31A6740	10	4	4
40	22X31A6741	10	4	4
41	22X31A6742	10	4	4
42	22X31A6743	10	4	4
43	22X31A6744	10	4	4
44	22X31A6745	10	8	10
45	22X31A6746	10	6	4
46	22X31A6747	10	8	10
47	22X31A6748	10	6	4
48	22X31A6749	10	2	3
49	22X31A6750	10	8	10
50	22X31A6751	10	6	4
51	22X31A6752	10	3	2
52	22X31A6753	10	4	4
53	22X31A6754	10	7	10
54	22X31A6755	10	4	4
55	22X31A6756	10	4	4
56	22X31A6757	10	4	5
57	22X31A6758	10	4	4
58	22X31A6759	10	6	6
59	22X31A6760	10	8	10
60	22X31A6761	10	4	4
61	22X31A6762	10	4	5
62	22X31A6763	10	4	5
63	22X31A6764	10	6	6

Target set by the faculty / HoD	6.00	6.00	6.00
Number of students performed above the target	61	29	15
Number of students attempted	63	63	63
Percentage of students scored more than target	97%	46%	24%

CO Mapping with Exam Questions:

CO - 1	y	y	Y
CO - 2	y	y	Y
CO - 3	y	y	Y
CO - 4			
CO - 5			
CO - 6			

CO Attainment based on Exam Questions:

CO - 1	97%	97%	24%
CO - 2	97%	97%	24%
CO - 3	97%	97%	24%
CO - 4			
CO - 5			
CO - 6			

CO	Intrnal practica	E+E+R	OverallI	Level
CO-1	97%	24%	60%	3
CO-2	97%	24%	60%	3
CO-3	97%	24%	60%	3
CO-4				
CO-5				
CO-6				

Attainment Level	
1	40%
2	50%
3	60%

Attainment (Internal 1 Examination) = **3**



SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Humanities and Sciences

Course Outcome Attainment (Internal Examination-2)

Name of the faculty	U.NARESH		Academic Year:2022-2023
Branch & Section:	DATA SCIENCE		Examination: II Internal
Lab Course Name:	Programming For Problem Solving Lab	Year/semester:	I/I

S.No	HT No.	R+O+A	V+V	E+E+R	ppt
Max. Marks ==>		10	10	10	10
1	22X31A 6701	10	5	5	10
2	22X31A 6702	10	4	6	9
3	22X31A 6703	10	5	10	10
4	22X31A 6704	10	9	10	10
5	22X31A 6705	10	5	5	10
6	22X31A 6706	10	3	5	10
7	22X31A 6707	10	5	6	10
8	22X31A 6708	10	5	5	10
9	22X31A 6709	10	5	5	10
10	22X31A 6710	10	5	6	10
11	22X31A 6711	10	7	10	10
12	22X31A 6712	10	5	5	10
13	22X31A 6713	10	3	6	8
14	22X31A 6714	10	4	4	10
15	22X31A 6715	10	5	6	10
16	22X31A 6716	10	5	6	10
17	22X31A 6717	10	5	5	10
18	22X31A 6718	10	9	10	10
19	22X31A 6719	10	5	5	10
20	22X31A 6720	10	7	10	10
21	22X31A 6721	10	3	5	10
22	22X31A 6722	10	6	5	7
23	22X31A 6723	10	1	5	9
24	22X31A 6724	10	7	10	10
25	22X31A 6725	10	7	10	10
26	22X31A 6726	10	7	10	10
27	22X31A 6727	10	6	10	10
28	22X31A 6728	10	6	10	10
29	22X31A 6729	10	2	3	7
30	22X31A 6730	10	2	4	10
31	22X31A 6731	10	7	10	10
32	22X31A 6732	A	A	A	A
33	22X31A 6733	10	9	10	10
34	22X31A 6734	10	6	10	10
35	22X31A 6736	10	6	8	10
36	22X31A 6737	10	3	10	10
37	22X31A 6738	9	0	6	10
38	22X31A 6739	10	5	5	10
39	22X31A 6740	6	3	6	10
40	22X31A 6741	10	5	5	10
41	22X31A 6742	10	4	4	10
42	22X31A 6743	10	7	10	10
43	22X31A 6744	10	4	8	10
44	22X31A 6745	10	10	10	10
45	22X31A 6746	10	4	5	10
46	22X31A 6747	10	10	10	10
47	22X31A 6748	10	4	10	10
48	22X31A 6749	10	4	5	10
49	22X31A 6750	10	5	8	10
50	22X31A 6751	10	6	10	10
51	22X31A 6752	10	5	4	10
52	22X31A 6753	10	3	2	10
53	22X31A 6754	10	4	10	10
54	22X31A 6755	10	4	4	10
55	22X31A 6756	10	4	3	10
56	22X31A 6757	10	4	4	10
57	22X31A 6758	10	4	5	10
58	22X31A 6759	10	7	10	10
59	22X31A 6760	10	8	10	10
60	22X31A 6761	10	3	7	10
61	22X31A 6762	10	4	10	10
62	22X31A 6763	10	4	8	10
63	22X31A 6764	10	6	8	10

Target set by the faculty / HoD	6.00	6.00	6.00	6.00
Number of students performed above the target	62	21	37	62
Number of students attempted	63	63	63	63
Percentage of students scored more than target	98%	33%	59%	98%

CO Mapping with Exam Questions:

CO - 1				
CO - 2				
CO - 3				
CO - 4	y	y	Y	y
CO - 5	y	y	Y	y
CO - 6	y	y	Y	y

CO Attainment based on Exam Questions:

CO - 1				
CO - 2				
CO - 3				
CO - 4	98%	33%	59%	59%
CO - 5	98%	33%	59%	59%
CO - 6	98%	33%	59%	59%

CO	Intrnal practical	E+E+R	ppt	OverallI	Level
CO-1					
CO-2					
CO-3					
CO-4	66%	59%	59%	61%	3
CO-5	66%	59%	59%	61%	3
CO-6	66%	59%	59%	61%	3
Attainment (Internal 2 Examination) =					3

Attainment Level	
1	40%
2	50%
3	60%



SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Humanities and Sciences

Course Outcome Attainment (University Examinations)

Name of the faculty: U.NARESH

Academic Year: 2022-2023

Branch & Section: DATA SCIENCE

Year/Semester: I/I

Lab Course Name: Programming For Problem Solving Lab

S.No	Roll Number	Marks Secured
1	22X31A6701	54
2	22X31A6702	50
3	22X31A6703	59
4	22X31A6704	59
5	22X31A6705	52
6	22X31A6706	46
7	22X31A6707	51
8	22X31A6708	45
9	22X31A6709	50
10	22X31A6710	55
11	22X31A6711	58
12	22X31A6712	50
13	22X31A6713	50
14	22X31A6714	40
15	22X31A6715	54
16	22X31A6716	52
17	22X31A6717	45
18	22X31A6718	59
19	22X31A6719	52
20	22X31A6720	58
21	22X31A6721	55
22	22X31A6722	50
23	22X31A6723	45
24	22X31A6724	57
25	22X31A6725	55
26	22X31A6726	57
27	22X31A6727	54
28	22X31A6728	53
29	22X31A6729	40
30	22X31A6730	50
31	22X31A6731	56
32	22X31A6732	A
33	22X31A6733	59
34	22X31A6734	57

S.No	Roll Number	Marks Secured
35	22X31A6736	55
36	22X31A6737	52
37	22X31A6738	54
38	22X31A6739	50
39	22X31A6740	35
40	22X31A6741	51
41	22X31A6742	45
42	22X31A6743	57
43	22X31A6744	53
44	22X31A6745	60
45	22X31A6746	54
46	22X31A6747	60
47	22X31A6748	50
48	22X31A6749	51
49	22X31A6750	50
50	22X31A6751	53
51	22X31A6752	47
52	22X31A6753	48
53	22X31A6754	53
54	22X31A6755	52
55	22X31A6756	47
56	22X31A6757	48
57	22X31A6758	45
58	22X31A6759	58
59	22X31A6760	58
60	22X31A6761	55
61	22X31A6762	56
62	22X31A6763	54
63	22X31A6764	57

Attainment Level	%students
1	40%
2	50%
3	60%



SRI INDU INSTITUTE OF ENGINEERING AND TECHNOLOGY

Department of Humanities and Sciences

Course Outcome Attainment

Name of the faculty: U.NARESH

Academic Year: 2022-2023

Branch & Section: DATA SCIENCE

Year/Semester: I/I

Lab Course Name: Programming For Problem Solving Lab

Course Outcomes	1st Internal Exam	2nd Internal Exam	Internal Exam	University Exam	Attainment Level
CO1	3.00		3.00	3.00	3.00
CO2	3.00		3.00	3.00	3.00
CO3	3.00		3.00	3.00	3.00
CO4		3.00	3.00	3.00	3.00
CO5		3.00	3.00	3.00	3.00
CO6		3.00	3.00	3.00	3.00
Internal & University Attainment:			3.00	3.00	
Weightage			40%	60%	
CO Attainment for the course (Internal, University)			1.20	1.80	
CO Attainment for the course (Direct Method)			3.00		

Overall course attainment level

3.00



SRI INDU INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Humanities and Sciences

Program Outcome Attainment (from Course)

Name of Faculty: U.NARESH Academic Year: 2022-2023
 Branch & Section: DATA SCIENCE Year/Semester: I/I
 Course Name: Programming For Problem Solving Lab

CO-PO mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C118.1	2	2	3	-	1	-	-	-	-	-	-	2	2	2
C118.2	-	2	3	1	2	-	-	-	2	-	-	-	3	3
C118.3	1	2	3	-	2	-	-	-	-	-	-	-	2	-
C118.4	-	2	3	-	1	-	-	-	-	-	2	-	-	-
C118.5	3	2	2	-	-	-	-	-	-	-	2	-	-	-
C118.6	2	2	2	2	1	-	-	-	-	-	-	-	3	-
C118	2	2	2.3	1.5	1.4	-	-	-	2	-	2	2	2.5	2.5

CO	Course Outcome Attainment
CO1	3.00
CO2	3.00
CO3	3.00
CO4	3.00
CO5	3.00
CO6	3.00
Overall course attainment level	3.00

PO-ATTAINMENT

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO Attainment	2.00	2.00	2.30	1.50	1.40	#####	#####	#####	2.00	#####	2.00	2.00	2.50	2.50

CO contribution to PO - 33%, 67%, 100% (Level 1/2/3)