Memorandum of Understanding

Is executed on 5th March, 2025

between

Ice Hut Technologies hereinafter referred to as "**Ice Hut**", A company duly incorporated under the provisions of the Companies Act 2017, having its registered office at 3-4, Radhika Vihar D, Iskcon Road, Jaipur 30202, represented through its authorised signatory Mr. **Gajendra Badra**, party of the first part.

And

Arya College of Engineering, Jaipur hereinafter referred as "Arya College Jaipur", represented through its Faculty coordinator, Mr/Mrs..... Pawan Sen .....

Subject : Agreement for Conducting Data Structures and Algorithms (DSA) Course

1. **Purpose**
   - This MoU outlines the terms and conditions for conducting the Data Structures and Algorithms (DSA) course, which 60 hours and includes course objectives, topics, assignments and the class schedule.
2. **Scope of Work**
   - The instructor, Gajendra Badra, agrees to deliver the DSA course as per the attached syllabus. The course will cover:
   - Course Objectives
   - Topics
   - Assignments
   - Class Schedule
3. **Compensation**
   - As agreed, lthe rate for the class is 1000 per hour. Payment terms and schedule will be mutually decided.
4. **Roles and Responsibilities**
   - The instructor shall ensure high-quality instruction and timely completion of lthe syllabus.
   - The recipient shall provide necessary arrangements and support for lthe smooth conduct of the course
   - Both parties agree to maintain open communication for any clarifications or modifications.
5. **Duration & Termination**
   - This MoU shall remain in effect for the duration of the course unless terminated by mutual agreement with prior notice.
6. **Confidentiality**
   - Both parties agree to keep confidential any proprietary information shared during the course.
7. **Agreement**
   - Bothe parties acknowledge and agree to the terms outlined in this MoU.

Mode of Payment

1. The payment shall be done in Trainers Account.
2. All payments will be made after the training.
3. In case of online/cheque payment in the name of "Ice Hut Technologies"

Schedule of Payments Payment Amount	Schedule of Payments Payment Amount
After completion 50% of the training	Rs.1000 per hour per batch
After Completion of the Training & Assessment	Rs.1000 per hour per batch

Signature on Behalf of Arya College of Engineering, Kukas, Jaipur

PRINCIPAL
ARYA COLLEGE OF ENGINEERING
SP-40, Industrial Area (RIICO) Delhi Road,
Kukas, Jaipur-302038 (Raj.)

Name:
Title:
Date:

Signature on Behalf of **Ice Hut Technologies, Jaipur**

Name : Gajendra Badra
Title : Director
Ice Hut Technologies, Jaipur
Contac: 8209249640
Email: gouravbadra97@gmail.com

REAP Code : 1011

ARYA College of Engineering (ACE)

Previously Known as Arya Institute of Engineering & Technology (AIET)

(Affiliated to RTU
Approved by AICTE, New Delhi)

- Main Campus, SP-40, RIICO Industrial Area, Delhi Road
  Kukas, Jaipur - 302028 | Tel Ph. 0141-2820700
- www.aryacollegejpr.com
- Toll Free : 1800 102 1044

MOU ACTIVITY REPORT

(ACADEMIC YEAR 2024-25)

CRT Topic Covered (ICT)(UT)
Batch - A

Sno	Time	Date	Topic	Batch A
1	10.00 to 12.30	03-02-2025	Basic of Dsa , Operators , controls structure	Batch A
2	10.00 to 12.30	04-02-2025	Array , Array Assigments	Batch A
3	10.00 to 12.30	11-02-2025	Functions , String Lib	Batch A
4	10.00 to 12.30	12-02-2025	Matrix. Matrix Questions Solve	Batch A
5	10.00 to 12.30	17/02/2025	Recursion and Dynmic Memory Allocation	Batch A
6	10.00 to 12.30	18-02-2025	Recursion and Dynmic Memory Allocation	Batch A
7	10.00 to 12.30	24/02/2025	Stack And Stck implemantion with array	Batch A
8	10.00 to 12.30	28/02/2025	Loop, nested Loop and Pattern in Loops	Batch A
9	10.00 to 12.30	04-03-2025	Basic Searching in Array and searching Questions	Batch A
10	10.00 to 12.30	20-03-2025	Linklist in dsa	Batch A
11	10.00 to 12.30	24-03-2025	Linklist in dsa and its problem	Batch A
12	10.00 to 12.30	27-03-2025	Problem solving linklist and stack	Batch A
13	10.00 to 12.30	02-04-2025	Queue in dsa	Batch A
14	10.00 to 12.30	10-04-2025	Queue in dsa and problem solving in queue	Batch A
15	10.00 to 12.30	11-04-2025	trees in dsa	Batch A

verified as per DSR

ARYA COLLEGE OF ENGINEERING SP-40 KUKAS JAIPUR

CRT Topic Covered
Batch - B

S.No.	Time	Date	Topic	Batch B
1	1.30 to 3:30	03-02-2025	Basic of Dsa , Operators , controls structure	Batch B
2	1.30 to 3:30	04-02-2025	Array , Array Assigments	Batch B
3	1.30 to 3:30	11-02-2025	Functions , String Lib	Batch B
4	1.30 to 3:30	12-02-2025	Matrix. Matrix Questions Solve	Batch B
5	1.30 to 3:30	17/02/2025	Recursion and Dynmic Memory Allocation	Batch B
6	1.30 to 3:30	18-02-2025	Recursion and Dynmic Memory Allocation	Batch B
7	1.30 to 3:30	24/02/2025	Stack And Stck implemantion with array	Batch B
8	1.30 to 3:30	28/02/2025	Loop, nested Loop and Pattern in Loops	Batch B
9	1.30 to 3:30	04-03-2025	Basic Searching in Array and searching Questions	Batch B
10	1.30 to 3:30	20-03-2025	Linklist in dsa	Batch B
11	1.30 to 3:30	24-03-2025	Linklist in dsa and its problem	Batch B
12	1.30 to 3:30	27-03-2025	Problem solving linklist and stack	Batch B
13	1.30 to 3:30	02-04-2025	Queue in dsa	Batch B
14	1.30 to 3:30	10-04-2025	Queue in dsa and problem solving in queue	Batch B
15	1.30 to 3:30	11-04-2025	trees in dsa	Batch B

verified as per DSR

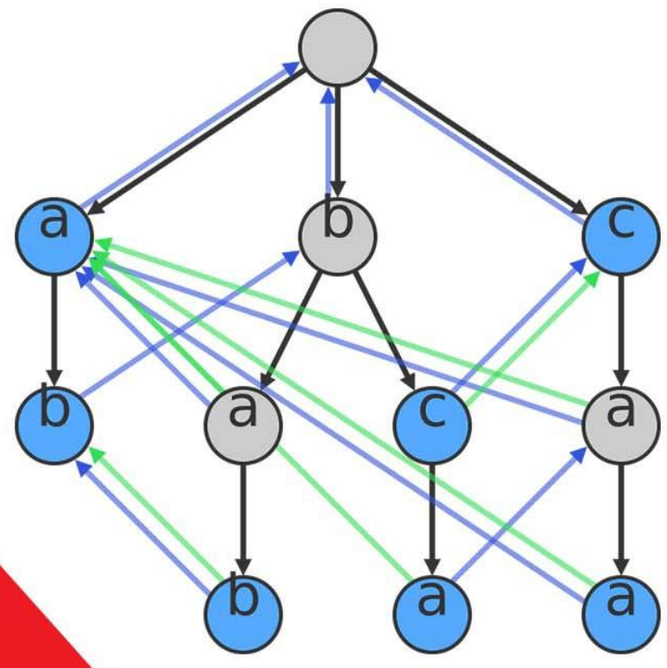
ARYA COLLEGE OF ENGINEERING JAIPUR

HACKER RANK
Array, Stack-1
65

tejasvi kapoor	75.34	AITM
Nitesh Kumar	69.07	ACE
Ankit Pandey	68.52	ACE
Muskan Bhagat	64.76	ACE
Manav Chandan	59.68	AIET
Priyanshi Gupta	59.41	ACE
nand kumar	57.47	ACE
Gagan Kumar Singh	56.5	ACE
vijayvansh saini	56.5	ACE
Nishant Raj	56.47	AIET
Piyush Tank	53.82	AIET
Ravishankar Singh	50	AIET
lakshya kumar saini	42.53	AITM
Swastik Singh Sanger	41.81	ACE
Amisha priya	41.76	ACE
Sarabjeet Kaur	38.39	AIET
Bhawana Gupta	37.64	ACE
NITESH YT	36.8	AIET
Ujjwal Trivedi	36.71	ACE
Kajal Saraswat	30.4	ACE
Nikhilesh atal	29.3	AIET
Reetika Fogat	27.27	AIET
Shivani jain	24	ACE
ansh jangid	23.95	ACE
Ishika Gurjar	23.2	ACE
Shubham Hajela	22.4	ACE
Aniket Yadav	20.8	ACE
NALIN AGRAWAL	20.58	ACE
Abhimanyu Soni	20.31	ACE
Krish Makvana	20.3	ACE
prakriti maharana	20.29	ACE
Piyush Raj	10	ACE
Shaksham Agarwal	10	ACE
VARUN SUTHAR	10	ACE
Vivek Mundhra	10	ACE
Priya Sharma	10	ACE
Somya Gupta	10	ACE
Rahul Kumar	10	ACE
Vedang Singh	10	AIET
tanya amera	10	ACE
Vishnu Gupta	10	ACE
Saril Pandey	10	ACE
Tarun Sharma	10	ACE
Sahil Badyal	10	ACE
NIKHIL MEHRA	10	ACE

Vansh Makhija	10	ACE
Tanya Rathore	10	ACE
Tanishq Saini	10	ACE
Ankit Yadav	10	AIET
Abhishek Verma	10	AITM
NAMAN Sharma	10	ACE
uday Singh gurjar	10	ACE
piyush bisht	10	AITM
ANAYANA KANWAR	10	AITM
Himanshu Sharma	10	AIET
Shreyansh Nohwar	10	AIET
kunal prasad	10	ACE
Abhishek Kumar	10	AIET
KARAN YADAV	10	ACE
Love Singhvi	10	AIET
ABHISHEK YADAV	10	ACE
Kuldeep singh	10	ACE
Kamal Kishor	10	ACE

IceHut



C & Data Structures and Algorithms

Duration: 3 Months

C Programming Curriculum

C Language

- ☑ Introduction to C
- ☑ History of C
- ☑ Features of C
- ☑ Application Areas of C
- ☑ Execution flow of c program
- ☑ Other translators
- ☑ Structure of C Program with Example
- ☑ Keywords

Hands-On - Installations of compilers,IDES.

Basic Concepts

- ☑ Tokens
- ☑ identifiers
- ☑ constants
- ☑ variables
- ☑ Data Types
- ☑ input and output functions
- ☑ Qualifiers
- ☑ Modifiers
- ☑ Escape sequences

Hands-On -Execution of Basic Programs with different data types ,i/o functions and other concepts.

Operators and Expressions

- ☑ Arithmetic operators
- ☑ Relational operators
- ☑ Logical operators
- ☑ Assignment operators
- ☑ Increment & decrement operators
- ☑ Conditional/ternary operator
- ☑ Bitwise operator
- ☑ Sizeof operator
- ☑ Comma operator
- ☑ Operators Precedence and Associativity
- ☑ Expressions
- ☑ Evaluation of Expressions

Hands-On Execution of all types operators and explain how expressions are simplified .

Control Structures

- ☑ While
- ☑ For
- ☑ Do..While
- ☑ Goto Statement
- ☑ Break and Continue Statement

Hands-On - usage of Control Structures with different scenarios.

Control /Decision Making Statements

- ☑ Simple if
- ☑ if..else
- ☑ Nested if
- ☑ if..else ladder
- ☑ Switch..Case statement
- ☑ find out given number is even or odd
- ☑ find out given character is uppercase or lowercase or digit
- ☑ find the biggest of 3 numbers
- ☑ find out given char is vowel or consonant
- ☑ find out given number is divisible by 2 or 3 or not
- ☑ find out day from a week
- ☑ find out given year is leap year or not
- ☑ develop a calculator based on user input ,if input is + do add,- is sub,* is mul and / is div.
- ☑ read ssc marks of students based on marks scores give grades A,B,C,D & Fail.

Hands-On -Observation of above control flow statements with following suitable Examples.

Assignments

- ☑ program to find the sum of first n natural numbers
- ☑ program to find the sum of digits of the number
- ☑ program to find the reverse of the number
- ☑ given number is palindrome or not
- ☑ print the fibonacci series
- ☑ armstrong number(3 digit and n digit armstrong no also)
- ☑ perfect number
- ☑ strong number
- ☑ root digit of a number
- ☑ prime no r not
- ☑ print 1 to n prime numbers
- ☑ print first n prime numbers
- ☑ lcm and hcf of 2 numbers
- ☑ 1+1/2+1/3+.....+1/n=find sum of the series and print the series

Hands-On - Performing set operations in a program

Math.h Library

- ☑ abs(int x)
- ☑ floor()
- ☑ ceil()
- ☑ sqrt()
- ☑ pow()
- ☑ exp()
- ☑ log() and etc.....

Hands-On - practice various built in functions of Math Library.

Arrays

- ☑ Introduction to arrays
- ☑ Types of arrays
- ☑ 1d array
- ☑ 2d array (matrix)

Assignments

- ☑ find max element from array
- ☑ find 2 max element from array
- ☑ sort and search
- ☑ trace & difference of sum of 2 opposite diagonals.
- ☑ Decimal to Binary conversion
- ☑ Repeated element and count
- ☑ Rotate the array elements k times(left & right)
- ☑ String declaration and initialization

Hands-On - Observation of sorting,searching and rotating array.

Strings

string.h library

- ☑ strlen(str)
- ☑ strcpy(des_str,src_st r)
- ☑ strcat(desc_str,src_str)
- ☑ strrev(str)
- ☑ strcmp(str1,str2)
- ☑ strlwr()
- ☑ strupr()

Assignments

- ☑ find the sum of numericals from the given Alphanumeric Input.
- ☑ find the frequency of each character in a given string.
- ☑ write the output code for the following inputs.

  Input:codegnan it solutions

  Output:nangedoc ti snoitulos
- ☑ write the output code for the following inputs.

  Input:codegnan it solutions

  Output:solutions it codegnan
- ☑ Find out strings are anagrams or not
- ☑ Find out string is palindrome or not without using string functions
- ☑ write the output code for the following inputs.

  Input:venu java

  Output:afov obab

Hands-On - EXECUTION of above mentioned programs.and use cases of String functions.

Functions

- ☑ function types
- ☑ built in functions
- ☑ user defined functions
- ☑ Recursive functions
- ☑ call by value and call by reference

Assignments

- ☑ find out the sum of 2 nos with above 4 ways based on function signature.
- ☑ find the factorial of given no by using function
- ☑ find the sum of first n natural nos using function
- ☑ find the square & cube of a given no by using function
- ☑ find the area and perimeter of a given circle by using function
- ☑ find the area of triangle using function
- ☑ find the ncr value
- ☑ program to print the pascal triangle by using function
- ☑ swapping of 2 nos using call by value and call by reference
- ☑ passing array as an argument calculates sum and average of given array elements.

Recursions

- ☑ find the factorial of given no by using recursive function
- ☑ find the sum of first n natural nos by using recursion
- ☑ find the gcd of 2 nos by using recursion
- ☑ find the root digit of the no by using recursion
- ☑ Program to calculate power using recursion

Hands-On - practice recursive and non-recursive functions.

Storage Classes

- ☑ auto
- ☑ static
- ☑ extern
- ☑ register

Others

- ☑ Command Line Arguments
- ☑ const
- ☑ preprocessor directive statements

Hands-On -Observes the storage classes Behaviour.

USER DEFINED DATATYPES

- ☑ Structure
- ☑ Union
- ☑ enum
- ☑ typedef

Hands-On - Observe the differences of Struct and Union with different examples.

Pointers

- ☑ Pointer types
- ☑ Void Pointer
- ☑ Null Pointer
- ☑ Wild Pointer
- ☑ Dangling Pointer
- ☑ Array of Pointers
- ☑ Pointer to Pointer
- ☑ Pointer Arithmetic

Hands-On -practice various pointer types.

Dynamic memory allocation

- ☑ malloc()
- ☑ calloc()
- ☑ realloc()
- ☑ free()

Hands-On - usage of above functions.

Files

- ☑ Concept of a file
- ☑ Streams
- ☑ Text File and Binary Files
- ☑ Opening and Closing Files
- ☑ File Input / Output Functions
- ☑ Formatted Input-Output Functions
- ☑ Character Input-Output Functions

Hands-On -Working with different file modes and file related functions.

Hands-on : Project Implementation from scratch.

Name: Project - Banking Management System uses following functionalities

- ☑ **menu()** – This function shows a menu or welcome screen that allows you to execute the various banking tasks listed below.
- ☑ **new acc()** – Creates a new customer account using this function. It requests the customer's name, date of birth, citizenship number, address, and phone number, among other personal and financial information.
- ☑ **view list()** – Displays a list of items. This feature allows you to access the customer's
- ☑ banking information, including the account number, name, address, and phone number supplied when the account was created.
- ☑ **edit()** – This method has been used to update the address and phone number associated with a specific customer account.
- ☑ **transact()** — This method allows you to deposit and withdraw funds from a specific client account.

Data Structures and Algorithms

Module I

Stacks, Queues, Linked Lists, Trees, Heaps, Tries

Stack

- ☑ Implementation of Stack using Arrays
- ☑ Implementation of Stack using Linked List

Queue

- ☑ Implementation of Queue using Arrays
- ☑ Implementation of Queue using Linked List
- ☑ Implementation of Queue using Stack

Circular Queue

- ☑ Implementation of Circular Queue
- ☑ Double Ended Queue

Priority Queues

- ☑ Min Heap
- ☑ Max Heap
- ☑ Basics Of Linked Lists

Types of Linked List

- ☑ Insertion Operation
- ☑ Deletion Operation
- ☑ Search Operation
- ☑ Sorting Operation
- ☑ Reverse Operation
- ☑ Cloning a Linked List

Basic of Trees

- ☑ Tree Traversals
- ☑ Height and Depth of Tree
- ☑ CBT and FBT

Binary Search Trees (BST)

- ☑ Insertion Operation
- ☑ Deletion Operation
- ☑ Search Operation
- ☑ Problems on BST

Hands-On -Observes the storage classes Behaviour.

Trie Data Structure

- ☑ Dictionary
- ☑ Prefix matching
- ☑ Bit manipulation with Trie

Hands-on Implementation for every concept

Module II
Sorting, Searching, Hashing ,Arrays, Strings

Sorting Techniques

- ☑ Bubble Sort
- ☑ Insertion Sort
- ☑ Selection Sort
- ☑ Shell Sort
- ☑ Merge Sort
- ☑ Quick Sort
- ☑ Radix Sort

Searching Techniques

- ☑ Linear Search
- ☑ Binanry Search

Applications of Binary Search

- ☑ Lower Bound and Upper Bound
- ☑ Finding Frequency
- ☑ Optimization Problems

Hashing

- ☑ Why Hashing
- ☑ Hashing Techniques
- ☑ Collision Resolution Techniques
- ☑ Linear Probing
- ☑ Quadratic Probing
- ☑ Double Hashing
- ☑ Rehashing
- ☑ Two Pointer Techniques
- ☑ Master's Theorem

string.h library

- ☑ strlen(str)
- ☑ strcpy(des_str,src_st r)
- ☑ strcat(desc_str,src_str)
- ☑ strrev(str)
- ☑ strcmp(str1,str2)
- ☑ strlwr()
- ☑ strupr()

Maps

- ☑ Syntax of Maps
- ☑ Usages of Maps
- ☑ Time Complexities

Sets

- ☑ Syntax of Sets
- ☑ Usages of Sets
- ☑ Time Complexities

Hands-on Implementation for every concept

Module III
Dynamic Programming and Graph Theory

Basics of Dynamic Programming

- ☑ Memoization
- ☑ Tabulation
- ☑ Applications of Fibonacci

Hands-On -practice various pointer types.

Subarrays and subsequences

- ☑ Maximum Sub array sum
- ☑ Non Adjacent Subsequence
- ☑ Longest Increasing Subsequence

Graph Theory

- ☑ Definition of Graph
- ☑ Graph Representation

Stacks, Queues, Linked Lists, Trees, Heaps, Tries Stack

- ☑ Implementation of Stack using Arrays
- ☑ Implementation of Stack using Linked List

Graph Traversals

- ☑ Depth First Search
- ☑ Breadth First Search

Important Graph Algorithms

- ☑ Dijkstra's Algorithm
- ☑ Topological Sorting
- ☑ Kruskal Algorithm

Hands-on Implementation for every concept