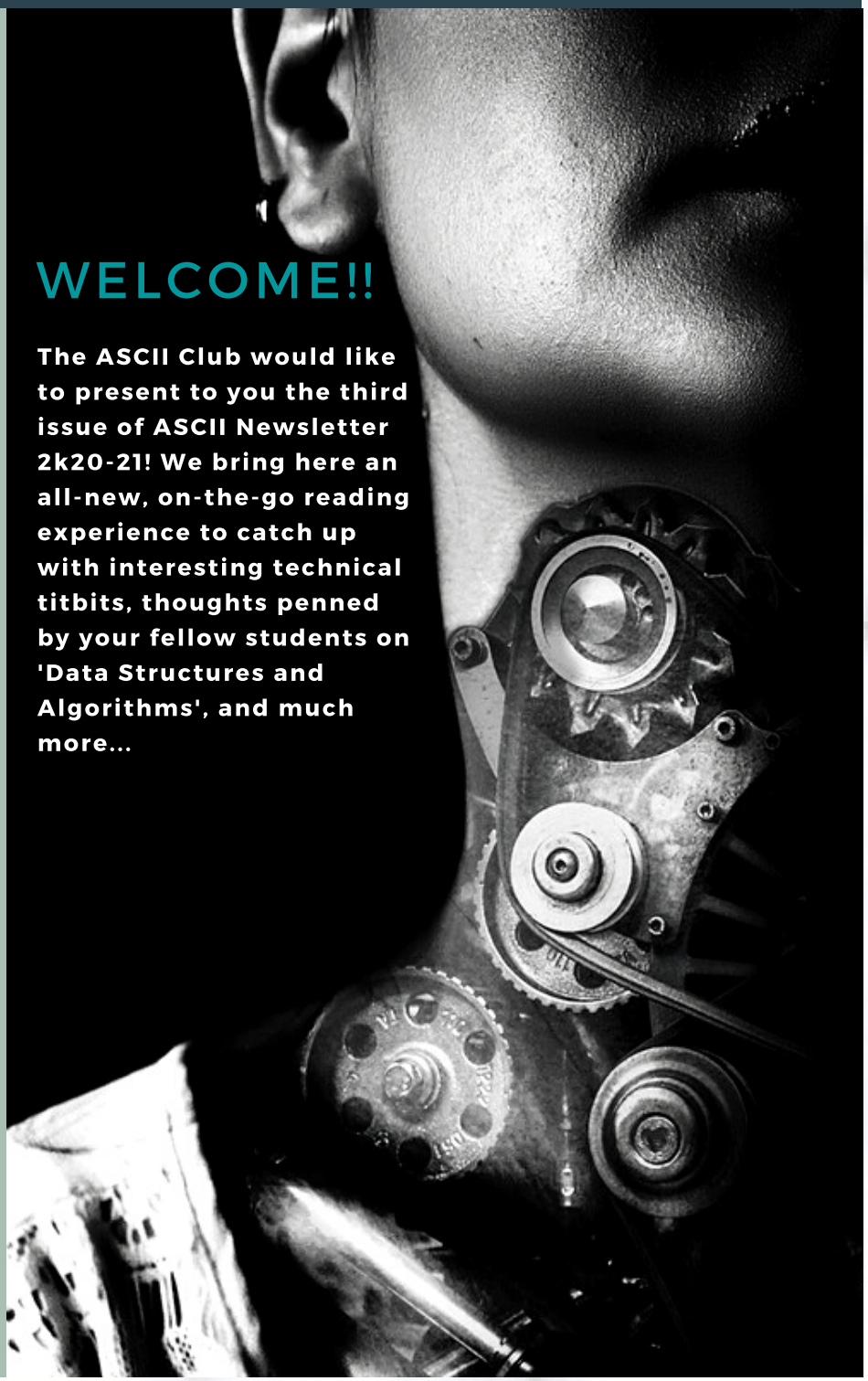
2020-21 | ISSUE 3

ASCII NEWSLETTER

ASSOCIATION OF STUDENTS OF COMPUTER SCIENCE FOR INFORMATION INTERCHANGE

WHAT'S INSIDE THIS ISSUE



WELCOME!!

The ASCII Club would like to present to you the third issue of ASCII Newsletter 2k20-21! We bring here an all-new, on-the-go reading experience to catch up with interesting technical titbits, thoughts penned by your fellow students on 'Data Structures and Algorithms', and much more...

Department of Computer Science and Engineering

Vision:

To be acclaimed internationally for excellence in teaching and research in Computer Science & Engineering, and in fostering a culture of creativity and innovation to responsibly harness state-of-the-art technologies for societal needs.

Mission:

Mission 1: To assist students in developing a strong foundation in Computer Science and Engineering by providing analytical, computational thinking and problem solving skills.
Mission 2: To inculcate entrepreneurial skills to develop solutions and products for interdisciplinary problems by cultivating curiosity, team spirit and spirit of innovation.
Mission 3: To provide opportunities for students to acquire knowledge of state-of-the-art in Computer Science and Engineering through industry internships, collaborative projects, and global exchange programmes with Institutions of international repute.
Mission 4: To develop life-long learning, ethics, moral values and spirit of service so as to contribute to the society through technology.
Mission 5: To be a premier research-intensive department by providing a stimulating environment for knowledge discovery and creation.

Programme Educational Objectives (PEOs)

The Computer Science & Engineering Program graduates will
PEO1: Strive on a global platform to pursue their professional career in Computer Science and Engineering.
PEO2: Contribute to product development as entrepreneurs in inter disciplinary fields of engineering and technology.
PEO3: Demonstrate high regard for professionalism, integrity and respect values in diverse culture, and have a concern for society and environment.

Programme Outcomes (PO's) and Programme Specific Outcomes (PSO's)

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, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3: ***Design and 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 and 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 and 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 and 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, and give and receive clear instructions.
PO11: ***Project management and 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.
PSO1: ***Adopt Standard Practices:*** Ability to design and engineer, innovative, optimal and elegant computing solutions to interdisciplinary problems using standard practices, tools and technologies.
PSO2: ***Research and Innovation:*** Ability to learn emerging computing paradigms for research and innovation

TREES

Tree : the very first image that comes to our mind is that of an enormous tree with a huge trunk that consists of several branches, and every branch containing sub-branches with leaves, flowers, fruits, etc., in it. Similarly, in data structures, tree features a root node at the very top, with child nodes and each of these child nodes having child nodes themselves. Trees are so useful and regularly used, because they yield some advantages:·

BINARY TREE:

Binary tree means each node has two child nodes. Generally, the child nodes are called as children nodes . The time complexity of binary search is O (log n).

Types of binary trees:

1.Full Binary Tree .

2.Complete Binary

3.Perfect Binary

BINARY SEARCH TREE:

A binary search tree may be a binary tree which fulfills a selected ordering property. So, in any sub-tree, the left nodes are less than the root node which is less than all of the right nodes. This ordering property makes finding a node easier and quicker.

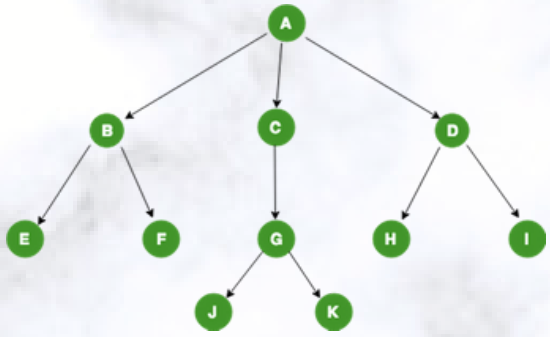


Image Courtesy: Geeks for Geeks

AVL TREE

AVL (Adelson-Velskii and Landis) trees are height balancing binary search trees.

Balance Factor = height(left-sub-tree) − height(right-sub-tree)

If the difference within the height of left and right sub-trees is greater than 1, the tree is balanced, using some rotation techniques.

B-TREE

B Tree may be a specialized m-way tree which will be widely used for access. A B-Tree of order m can have at the most m-1 keys and m children. One of the main reasons of using B tree is its capability to store large number of keys in a single node and large key values by keeping the height of the tree relatively small. It is not necessary that all the nodes contain an equivalent number of youngsters, but each node must have m/2 number of nodes.

Image Courtesy: Google Images

Did You know...?

Computer chess games work by building of trees...

Did You know...?

Game engines use trees to simulate human movement...

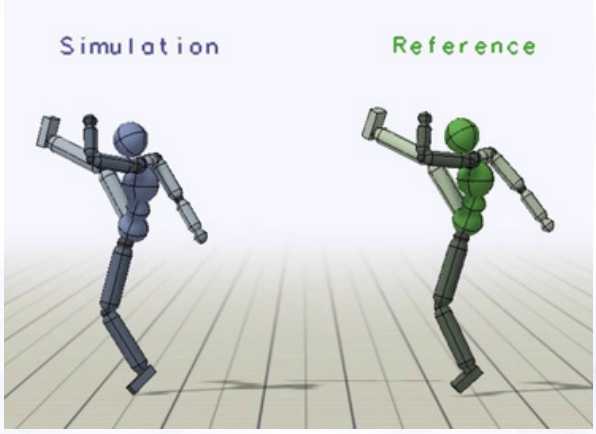


Image Courtesy: pinterest.com

Compiled by: Sumitra S, CB.EN.U4CSE19247, CSE - C

References: https://www.javatpoint.com/tree, https://www.educba.com/types-of-trees-in-data-structure/

LINKED LIST

In a nutshell

Linked list is a linear data structure consisting of nodes, which are structures made up of data and a pointer to another node. The first and last node of a linked list usually are called the top and tail.

types

SINGLY LINKED LIST

A node in it has 2 fields: one namely the info field and the other being the link field/address field pointing to the nest node's address.

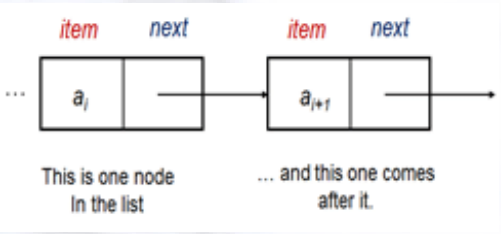


Image Courtesy: Google Images

DOUBLY LINKED LIST

A node in it has 3 fields, the middle one for the data, left one pointing the previous node, and the right one pointing the next node. So, we can traverse along in both the directions.

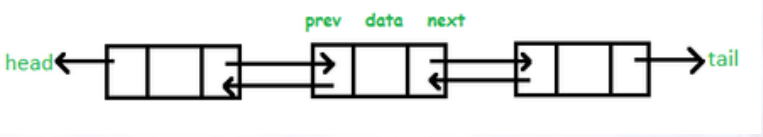


Image Courtesy: Geeks for Geeks

CIRCULAR LINKED LIST

A circular linked list contains neither head nor tail. A circular list may be a list during which the link field of the last node is formed to point to the start/first node of the list. We also have a circular doubly linked list, which has the properties that of circular linked list and doubly-linked list.

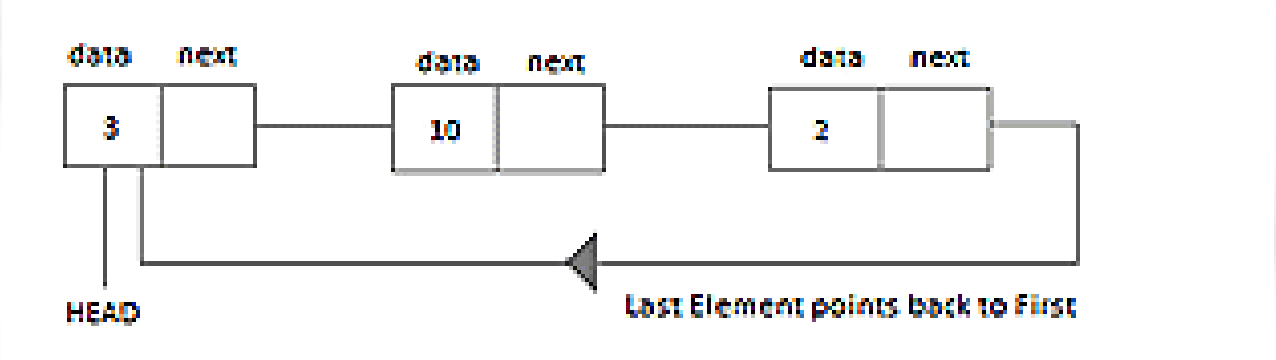


Image Courtesy: tutorialspoint.com

Application of Linked List

Doubly linked list are often utilized in navigation systems where both forward and backward navigation is required. It is employed by browsers to implement backward and forward navigation of visited sites i.e. back and forward button. It is also used in various application to implement Undo and Redo functionality

Circular linked list is employed in our Personal Computers, where multiple applications are running. All the running applications are kept during a circular linked list and therefore, the OS gives a hard and soft time slot to all for running. The OS keeps on iterating over the linked list until all the applications are completed.

Another example can be Multiplayer games. All the Players are kept during a Circular Linked List and therefore the pointer keeps on moving forward as a player's chance ends...

COMPILED BY: VS THARUNIKA, CB.EN.U4CSE19255, CSE - C

References: codeforwin.org, www.studytonight.com, geeksforgeeks.org

Hi Folks!
Here is a Crash course on Hashing!

References: tutorialride, geeksforgeeks, cs.cmu.edu, hackerearth
Compiled by: Varadharajan K, CB.EN.U4CSE19257, CSE - C

What is Hashing?

Hashing also known as Message Digest is the process of mapping large amount of data items to a smaller table with the help of Hash functions.

What is a Hash function?

A fixed process that converts a key and maps it to a value of a certain length. The hash key is known as a Hash Function.

What is a Hash table?

Hash table or hash map is a data structure used to store key-values into an array of buckets or slots from which the desired value can be found.

What are collisions in Hash functions?

The situation where a newly inserted key maps to an already occupied slot squeeze the hash table is named collision.

What are the ways to handle a collision?

There are mainly two methods to handle collision:

1) Separate Chaining: Each cell of hash table points` to a linked list of records that have same hash function value.

2) Open Addressing:This is done in 2 ways.

#Linear Probing: Probing for next slot.

#Quadratic Probing: Searching for i2'th slot in i'th iteration.

Let's Know More!

#Hashes are one-way functions. You cannot reproduce any message by running it back through the hash.

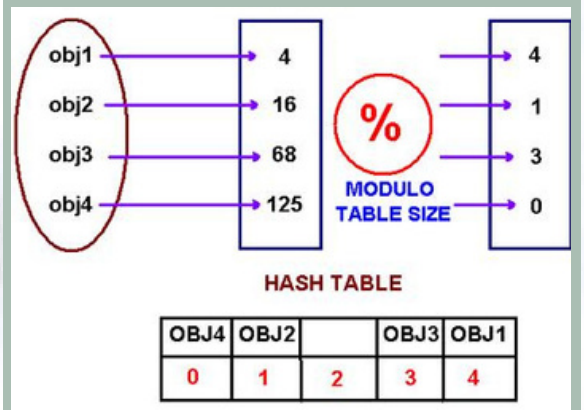
#The sender and the receiver use the same hashing algorithm.

#Good hashing algorithms have high amplification, also known as the avalanche effect.

#A cryptographic hash function behaves like a random function.

#It is impossible to find two different messages whose hash values are similar.

# # #



Data transmission & body :)
Neurons send information to your brain at more than 240kmph!!!

Stack Data Structure

Compiled by: Mahesh V Iyer, CB.EN.U4CSE19224, CSE - C

What is a Stack Data Structure?

Stack is a linear data structure which follows a particular order in which the operations are performed. There are many real-life examples of a stack. Consider an example of plates stacked over one another in the canteen. The plate which is at the top is the first one to be removed, i.e. the plate which has been placed at the bottommost position remains in the stack for the longest period of time.

TYPES OF STACK:

FIFO:
The First object or item in a stack is the first object or item to leave the stack.

LIFO:
The last object into a stack is the first object to leave the stack, used by a stack

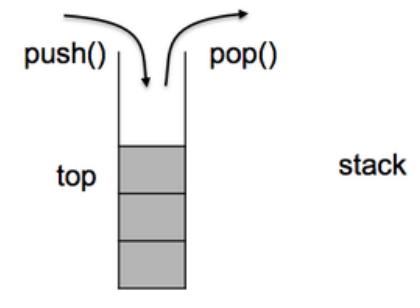


Image Courtesy: tutorialspoint.com

USES OF A STACK:

Syntax Parsing: Many compilers use a stack for parsing the syntax of expressions, program blocks etc.
before translating into low level code.

Backtracking: Suppose we are finding a path for solving maze problem. We choose a path and after following it we realize that it is wrong. Going back to the beginning of the path to start with new path can be done with the help of stack.

Parenthesis Checking Stack is used to check the proper opening and closing of parenthesis.

String Reversal Stack is used to reverse a string. We push the characters of string one by one into stack and then pop character from stack.

Function Call Stack is used to keep information about the active functions or subroutines. There are the various other applications.

References:https://www.tutorialspoint.com/data_structures_algorithms/stack_algorithm.htm
https://www.javatpoint.com/data-structure-stack
https://www.faceprep.in/data-structures/stack-applications-in-data-structure/
https://www.thecrazyprogrammer.com/2016/04/applications-of-stack.html

Commercialization of SIH Project sponsored by MHRD, Government of India implemented for Ministry of AYUSH

Team Exalt Student Members:

Eric Joseph (Team Leader) (CB.EN.U4CSE16322)

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Prabakaran A.S. (CB.EN.U4CSE17448)

The project mentors are Dr. M. Senthilkumar and Dr. D. Venkataraman

Team Journey and Achievements:

Sl. No	Competition/Event name	Achievement
1	SmartIndia Hackathon 2018 (Software Edition) held at GNIT, Kolkata (30th March and 31th March 2018)	Won First Prize – Other State and cash award of Rs. 1,00,000/- from Ministry of AYUSH.
2	India Singapore Hackathon 2018 held at Nanyang Technical University, Singapore (12th to 14th November 2018)	Selected from Winners of SIH 2018 and represented India at the competition. Received participation certificated from NTU, Singapore.
3	Commercialization of project done at SIH 2018	Received a grant of Rs. 3,00,000/- from MHRD, Government of India for developing commercialization prototype of project done at SIH 2018 for Ministry of AYUSH. Each student received a stipend of Rs. 5000/- per month for the six months of working on the commercialization project.

Commercialization Project Overview:

Objective

The app/site aims to convert ancient Ayurveda, Unani, and Siddha units into their modern metric equivalents in the three dimensions of Length, Weight and Time.

Platforms

1) **Android Application:** Works with Android smartphones and tablets running API Level 15 (Ice Cream Sandwich 4.0.3) and above. Designed to work without Internet connection or any app permissions, thus ensuring a private and secure experience while using the app. **Google Play Store Link:** https://play.google.com/store/apps/details?id=sih2018.exalt.com.exaltayurvedalite

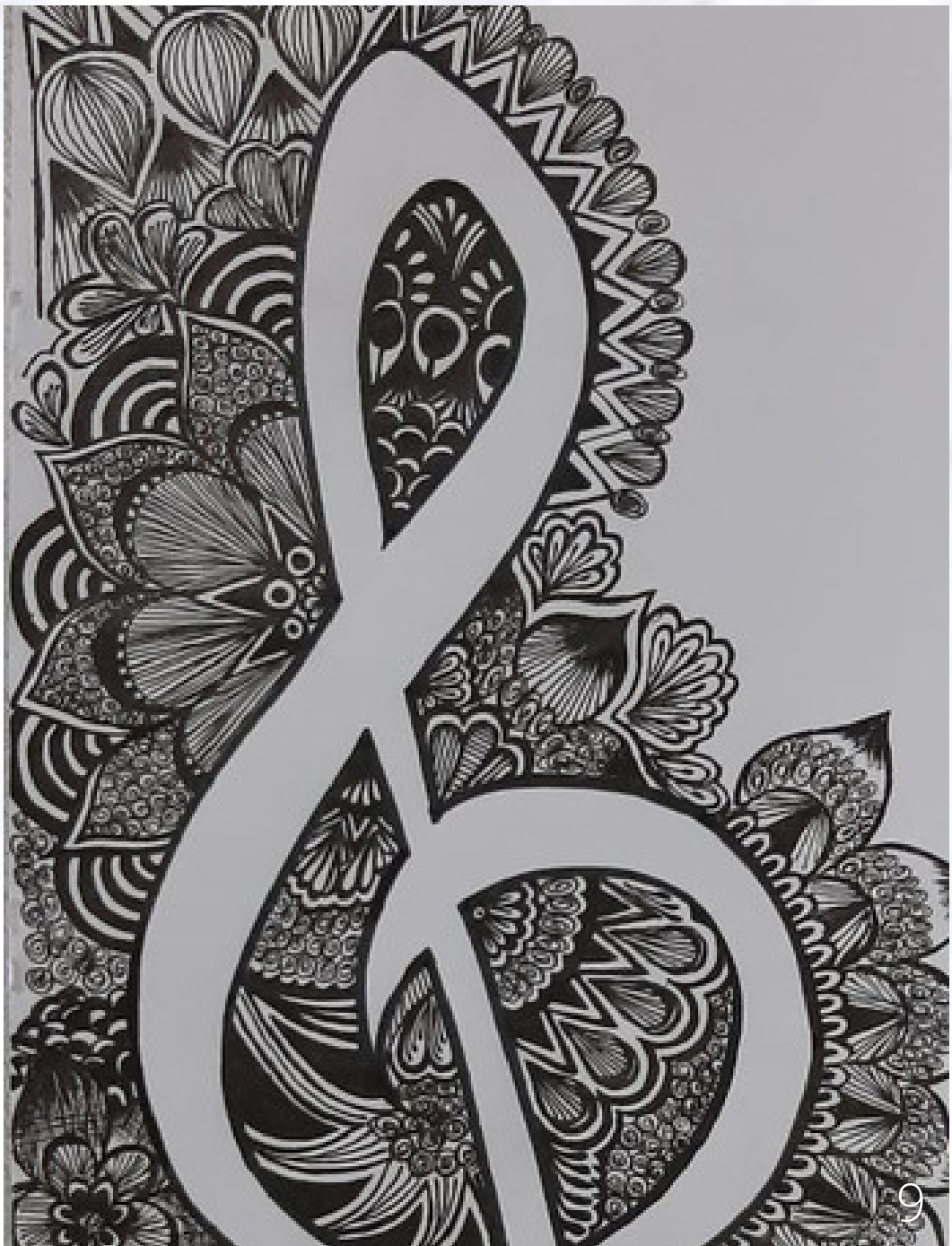
2) **Java JFrame Application:** This program is developed on Java NetBeans and is completely Java-based. The program requires JRE or JDK of Java version 8 or above to be installed on the user's system (any OS that can run Java applications). The use case is similar to the Android application.

3) **Chatbot Application:** This is a text-based Chatbot application built on Python that provides unit conversion results in a command line style interface on Windows systems. It is distributed as a lightweight .exe file which has on-board instructions for the user when he/she opens runs the exe file.

4) **Website Application:** This app is developed using the latest web technologies aiming to be minimalistic and user-friendly. The app is currently deployed using GitHub pages at https://siddharthsham.github.io/ayush/ . It will also be deployed in AIIA servers for commercialization purpose.

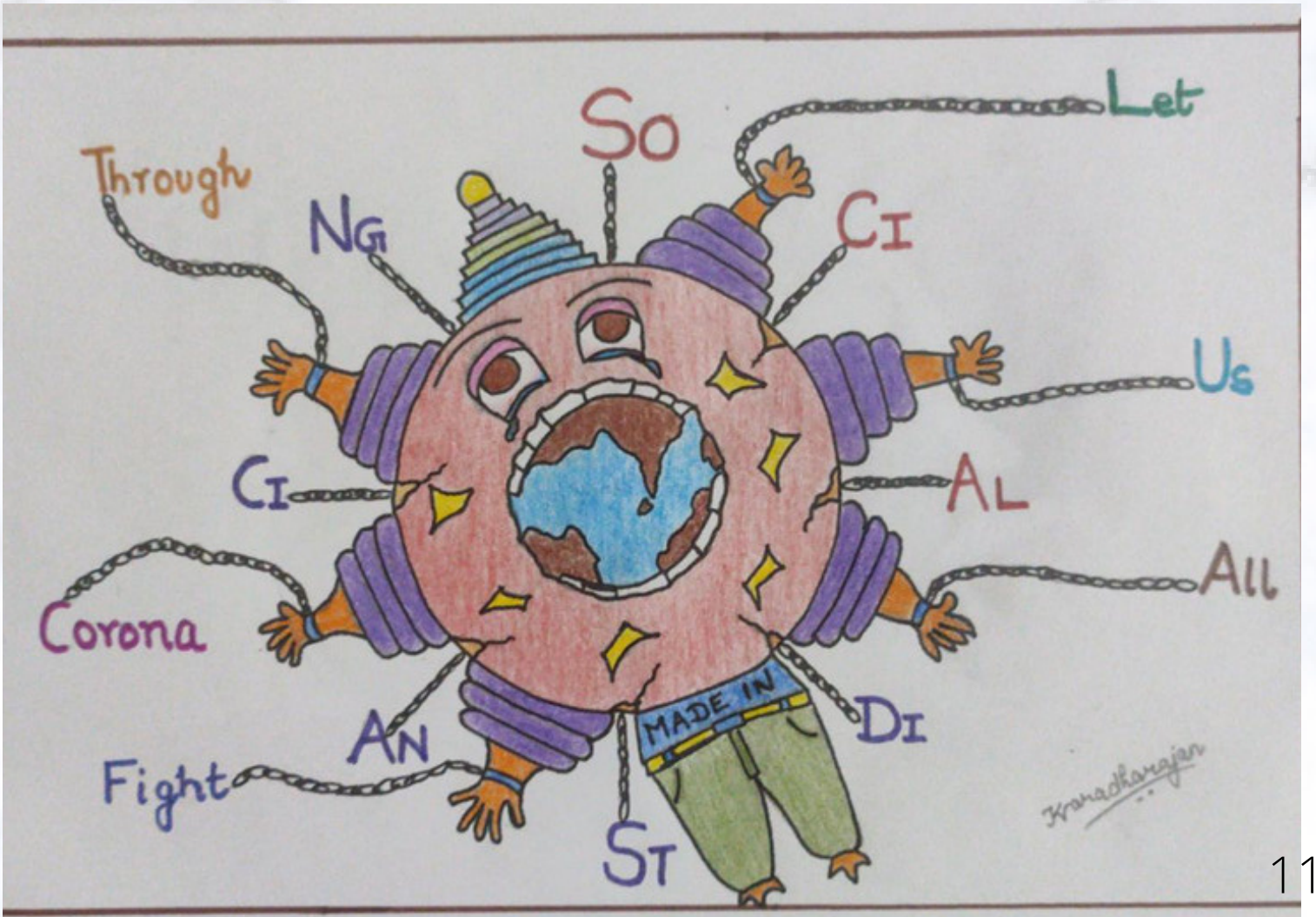
5) **Desktop Application:** It is a Windows desktop application that has been developed to be a static version of the website. It is simple and easy to use and consists of all the unit conversion facilities of the other platforms. Requires internet connection to work.

Beauty expressed as Art... by Tejaswi & Suvethaa



Sketches by Varsha

Posters on Corona by Tejaswi & Varadharajan



FRIENDSHIP

by VARADHARAJAN K, CB.EN.U4CSE19257, CSE - C

Once I set on a trip,
With my friend Hari on a ship.
'Look at the sun', I did quip;
It's colour that of a bright tulip!
In my camera, I took a clip;
But as I turned, I had a slip....
From the railing of the ship;
Like a diver, I began to flip.
Landed with a splash and pip;
My friend who was closing a zip,
After fixing a SIM card chip,
Shrieked out with his parting lip.
As he saw me in the water dip,
And bounce up soaking, my shirt drip;

Image Courtesy: Google Images

Image Courtesy: Google Images

Enough water I'd had to sip!
In the air there was a nip.
I saw Hari give the rope a rip,
And fling it down like a whip!
Then he beckoned with a tip,
To tie the rope around my hip.
And cling to it with a firm grip,
As he tied the other end to a chip;
And fastened with an iron strip;
As he pulled I began to worship!
And came up on the deck of the ship,
I acknowledged his leadership;
But greater than his partnership,
Was his bond of friendship!

THE ART OF BEING LAZY

-Sharan Babu, CB.EN.U4CSE19207, CSE - C

Image Courtesy: Google Images

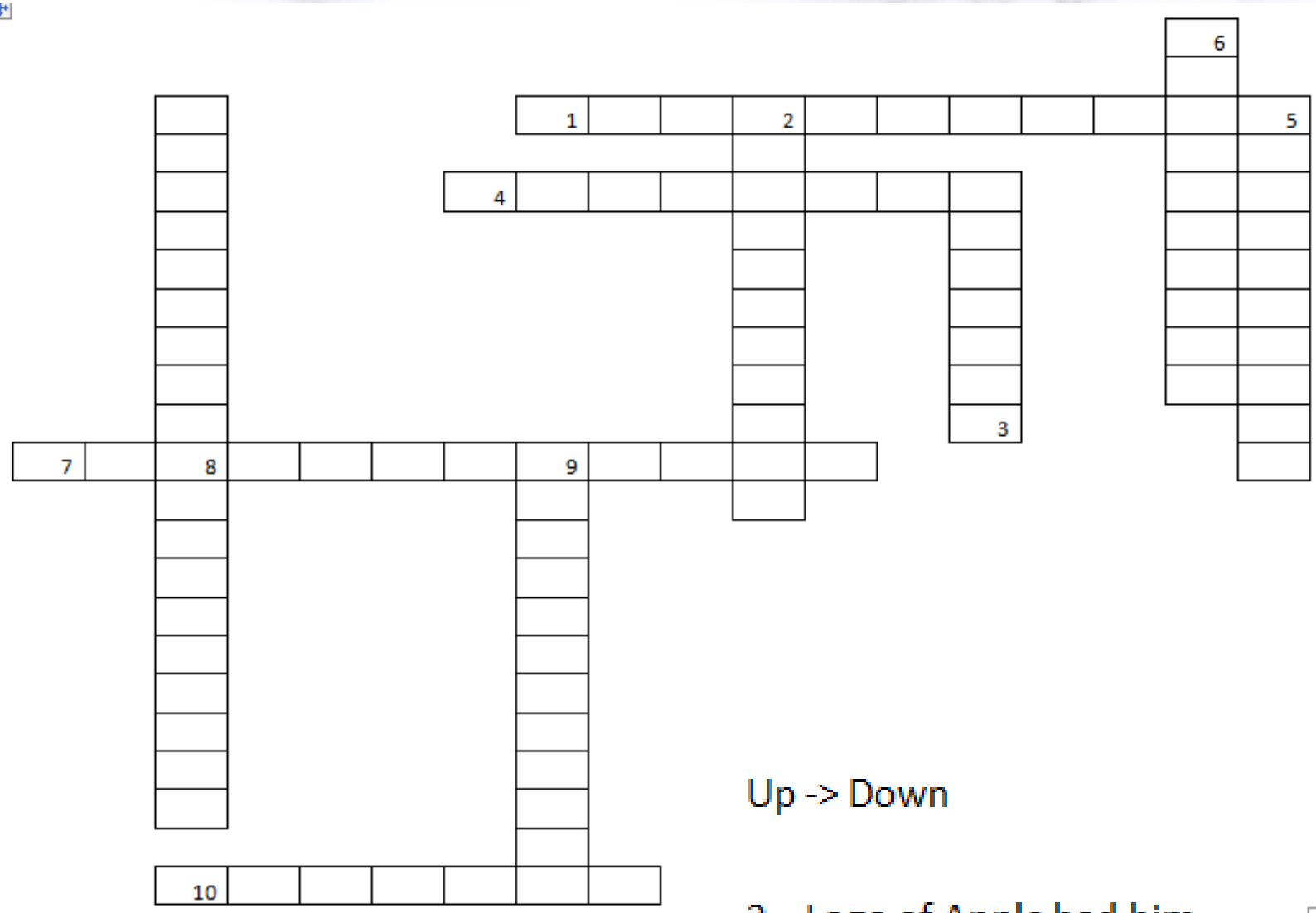
Laziness is a long-lost art that has always been overlooked and never been given appropriate emphasis. It has always been frowned upon and misinterpreted. Being lazy can be interpreted as one's desire to let the mind completely free and become unfocused. This is when thoughts become random and actions become simple-minded. The vivid implications of this state of mind and the art of mastering it is something, one shouldn't take lightly.

In the current fast-paced world, people believe that the only way to solve a problem is by focusing on it. For not even once has the thought ever occurred to them that sometimes, it's best to let the mind wander on its own. Outwardly loafing and delaying doesn't mean we are mentally unproductive. Laziness backs entropy,and entropy paves the way for creativity.

"I will always choose a lazy person to do a difficult job because a lazy person will find an easy way to do it." Bill Gates is often given credit for this wonderful quote but in fact, it came from Frank B. Gilbreth Sr, who was an American engineer, consultant, and author. "Give the hardest job to the laziest man." The wise man who said the above mentioned line, and Frank B. Gilbreth Sr, were absolutely talking sense on this matter. As the difficulty of the task increases, the required creativity increases. Only a man who has mastered the art of being lazy can deliver creativity at its finest.

Laziness can be compared to whiskey, it's good for the heart and soul at controlled rates, but there is no turning back if one gets addicted. Laziness is not something that one must look upon with disgust. It is something that one must try to master as if it were a precious skill.

CROSSWORD PUZZLE



Across:

1. Person who led us to the capturing of Black hole
4. Animal in the firefox logo (not a red fox)
7. Founder of Instagram
10. Amazon.com was earlier known as _____.com

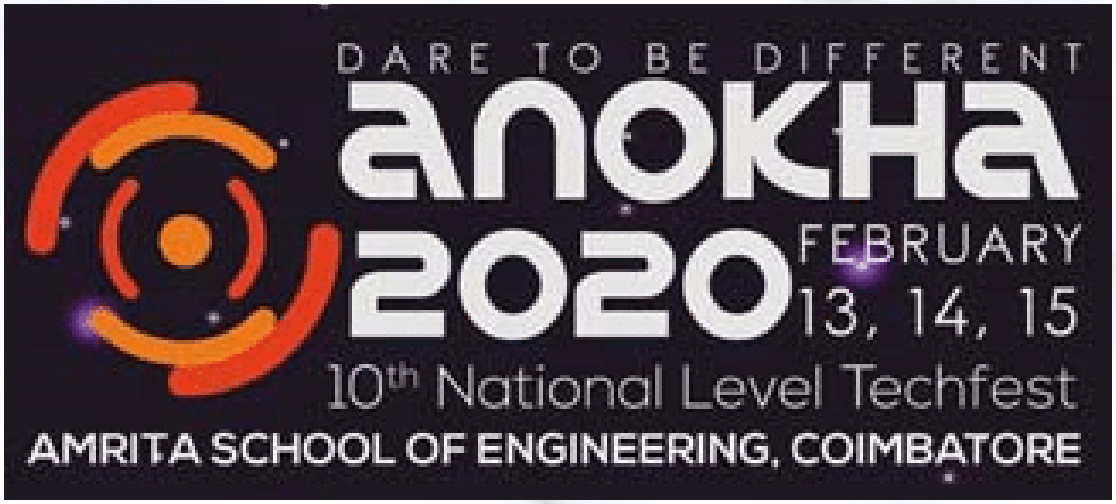
Up -> Down

2. Logo of Apple had him
5. Fear of Mobile phones
6. Padma Shri Rajagopalan Vasudevan is commonly known as _____
8. A _____glass is introduced by Intel.
9. Internet users who are above the age of 50 are known by this name

Down -> Up

3. Completely Automated Public Turing test to tell Computers and Humans Apart
8. A minor planet is named after a Padma Vibhushan awardee

MEMORABLE EVENTS



OUR ACHIEVERS!!!!

AJAY BEZAWADA

Our young achiever has bagged the seventh position in the agnaya marathon

SUMITHRA SUDHAKAR

Our talented dancer has received the title "NRITHYA VINODHINI" from a renowned classical dancer "VIDHYASHREE SUNDAR"

CORONA AND TECHNOLOGY

BY T SELVA SANJANA, CB.EN.U4CSE19250, CSE - C

The better we can track the virus, the better we can fight it. By analyzing news reports, social media platforms, and government documents, AI can learn to detect an epidemic. Tracking communicable disease risks by using AI is strictly the service Canadian start-up BlueDot provides. In fact, the BlueDot's AI warned of the threat, several days before the Centers for Disease Control and Prevention or the planet Health Organization issued their public warnings. One of the safest and fastest ways to get medical supplies where they need to go during a disease outbreak is with drone delivery. Drones also are used to patrol public spaces, track non-compliance to quarantine mandates, and for thermal imaging.

FAUCULTY COORDINATORS

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Mrs. T.BAGYAMMAL
Mrs. R.ARCHANA

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