Algorithm

Learning concepts through play

COURSE OBJECTIVES

This course teaches basic concepts and practical examples to students who are unfamiliar with algorithm. Unplugged paly is an activity that enables student to learn the principles and concepts of computer science without using a computer so that they will feel fun and confident.

By the end of the course, students will be able to build the ability to solve problems through computational thinking. They will learn not only how computers express and process information but also the most typical theories of algorithms like Selection Sorting, BFS&DFS, Greedy Algorithm.

PREREQUISITE

No Prerequisites for this course.

DURATION OF CLASS

Ten 75 minute class sessions.

COURSE OUTLINE

|  |  |  |  |
| --- | --- | --- | --- |
| Session | | COURSE TOPICS | NOTE |
| Introduction | 1 | -What is Algorithm?  -Understanding and interpreting Flowchart’s Rules  -Drawing various flowchart |  |
| 2 | - Understanding of the binary system  - Creating and Decoding a Scytale and Caesar cipher |  |
| 3 | - Computer’s Image Representation (Pixel)  - Express and Interpret Images in Command  - Debugging, Error Finding, Fixing |  |
| 4 | -Error Detection and Correction  -Parity magic |  |
| Basic Concepts of Algorithms | 5 | - Sorting Networks  - How Computers Are Arranged in Order |  |
| 6 | - Quick Sort  - Divide and Conquer |  |
| 7 | - Array and Stack  - Push and Pop |  |
| 8 | - Linked List and Queue  - Insert and Delete |  |
| 9 | - Breadth First Search (BFS)  - Get the Shortest Distance from Home to School |  |
| 10 | - Depth First Search (DFS)  - Get the Shortest Distance from all points |  |

\*Class schedule is subject to change based on student’s interest, level of understanding, progress made in each class.