Topics covered in Gateway to R&D

Principles

End-user experience

Readable code

Correctness (Dry Run)

Multiple Solutions

List down assumptions

No Duplicate code

Optimization

Programming concepts

Creating new commands

Composition, Abstraction

Functions, recursion, higher-order functions, pure functions, callbacks

Lamda, map, filter, reduce

Code in multiple files

Modules - using, creating and publishing

Function state, call stack

Stack memory, Heap memory

File handling, File systems & File formats

Errors, Warnings, Exceptions

Development concepts

Tracing, Debugging

Visualization

Incremental Development

Test, Evaluation

Analysis of Algorithms: Space and time complexity

Interface

Object oriented basic concepts

Apps

Railway station announcement

Plagiarism detector

Barcode Application

Children story book reader

Data Structures

List, tuple

Sets, dictionary

Stack, Queue

Recursive data structures - Linked List, Trees

Tools and Services

Tools	Purpose
Piazza	Instructions, tasks
Google Meet	For classes and discussions
GitHub	Classroom, Tasks, Repositories, Code Reviews
VSCode	Debugging, Visualisation, Solving problems
binarysearch.io	Practice problems in a group, and solo
educative.io	Write articles on topics covered in the course
hypothes.is	Studying material, as a group.

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