# OCR GCSE COMPUTER SCIENCE - LEARNING JOURNEY
COMPONENT 2

Running through all of the topics will be the key ideas of algorithm design using pseudo code and flowcharts, maintainability using naming conventions, indent and comments and . Programming Techniques will be practised throughout the course in the forms of problems and longer projects. Students will also gain hands-on experience of an IDE and different languages
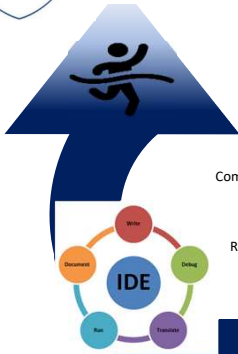
The IDE
Common tools and facilities available in an IDE
Editors
Error Diagnostics
Run-Time Environment
Translators

Languages
Characteristics and purpose of different levels of programming High level
Low level
The purpose of translators
The characteristics of a compiler and an interpreter

Testing
The purpose of testing
The types of test data
Selecting and using test data

Advanced Programming
2-D arrays
Using Records to Store Data
Validating Input
Defensive Design Considerations
Maintainability

IDE

Languages

Testing

Advanced Programming
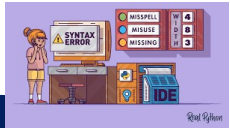
Identifying Errors
Syntax Errors
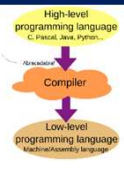Logic Errors

Principles of Computational Thinking
Abstraction
Decomposition
Algorithmic Thinking

More Data Types
Casting
Boolean Data Types

File Handling
Open
Close
Read
Write

Identifying Errors

Trace Tables
Tracing programs

Principles of Computational Thinking

More Data Types
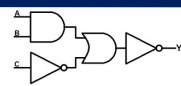
File Handling
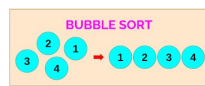
SQL

Trace Tables

SQL
SELECT
FROM
WHERE

YEAR 11
5 hours per fortnight

Boolean Logic
Simple Logic Diagrams for AND, OR, NOT
Truth Tables
Combining Boolean Operators
Using Boolean logic to solve problems

Sorting Algorithms
Bubble Sort
Insertion Sort
Merge Sort

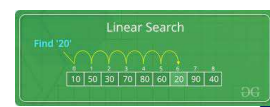**Sorting Algorithms**

Boolean Logic

Sorting Algorithms

Manipulatiing Strings
Converting a string to uppercase or lowercase
Identifying that a string is an list of characters
Understanding the need to split a string
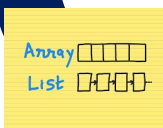Being able to split text based on a separator

Searching Algorithms
Linear and Binary Search

Manipulating Strings

Search Algorithms

Lists
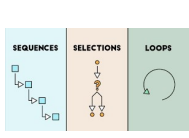The benefit of using a list
Simple operations on lists
Practice using lists
1-D only

Introduction to Functions and Procedures
The introduction to sub programs
Creating Functions
Creating Procedures
The differences between a function and a procedure

Lists and Arrays

Introduction to Functions and Procedures

More Operators and Random Numbers
Mod and Div
Generating Random Numbers
Logical Operators – AND, OR, NOT

More Operators & Random Numbers

Fundamentals
The use the three basic programming constructs
Sequence, Selection and Iteration (count and condition controlled loops)

Arithmetic Operators
The use of the main arithmetic operators

Programming Fundamentals

YEAR 10
5 hours per fortnight

Fundamentals
Introduction to the programming environment. The use of variables, inputs, outputs and assignments
Identifying the inputs and outputs of a problem

Data Types
Integer
Real
Character and String.