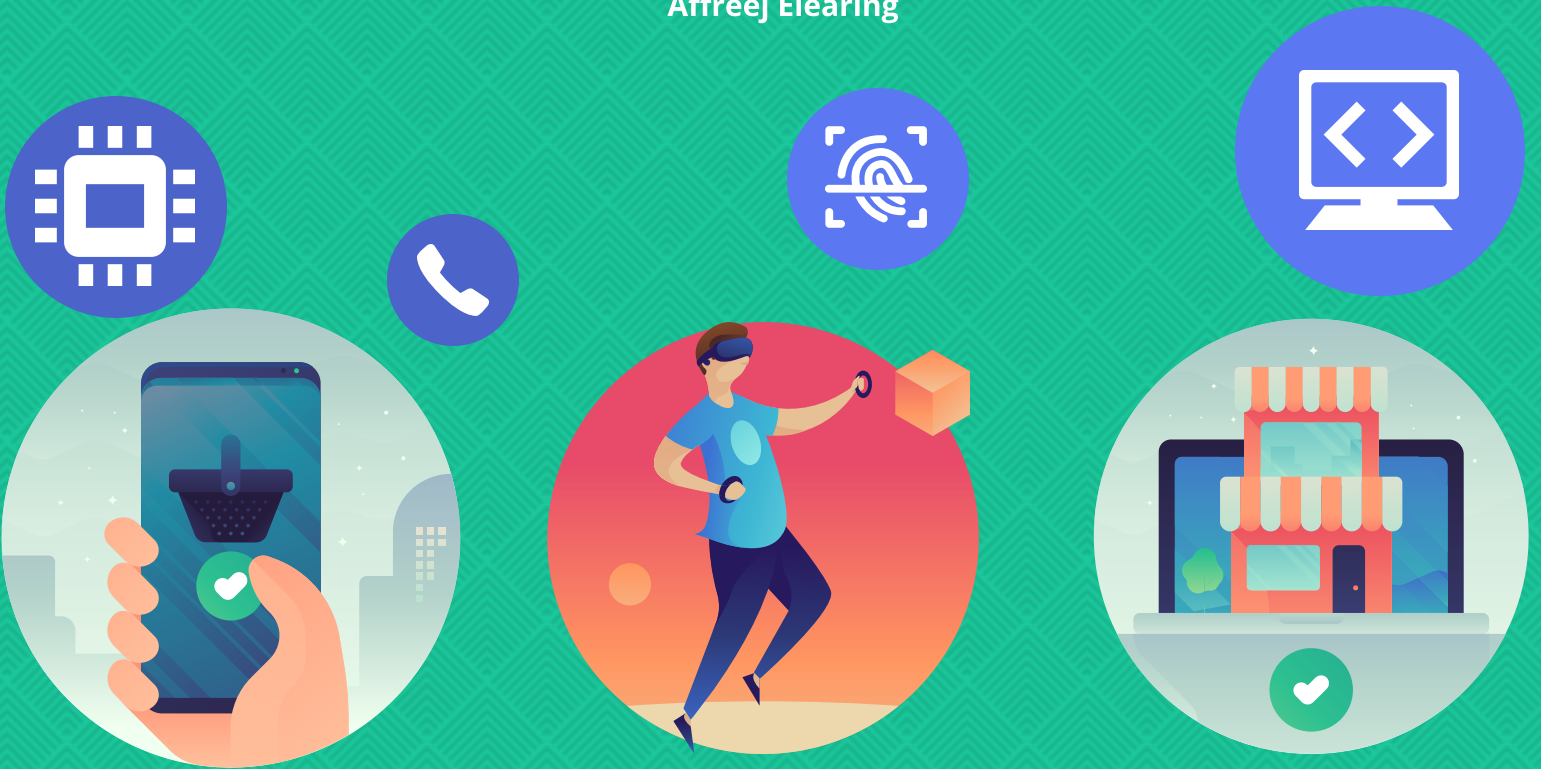




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# Level 1-Basic

## SECTION 1-THEORY

### Step 1 Data representation

- Binary systems
- Hexadecimal
- Data storage



### Step 2 Communication and Internet technologies

- Data transmission
- Security aspects
- Internet principles of operation



### Step 3 Hardware & software

- Logic gates
- Computer architecture
- Input & Output devices
- Memory, storage devices and media
- Operating systems



### Step 4 Security

- Data privacy and integrity
- Authentication techniques
- Viruses and malware
- Phishing and pharming
- Encryption
- Access rights / authentication



### Step 5 Ethics

- Copyright legislation
- Freeware, shareware and free software
- Software licencing
- Ethical bodies - BCS and IEEE



## SECTION 2-PRACTICAL

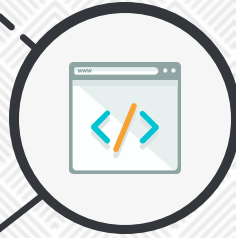
### Step 6 Algorithm design and problem-solving

- Problem-solving and design
- Pseudocode and flowcharts



### Step 7 Programming

- Programming concepts (variables, input, output, basic programs)
- Data structures; arrays



### Step 8 Database

- Database Concepts
- Database Management System (DBMS)
- Data Definition Language (DDL) and Data Manipulation Language (DML)



# Level 2-Intermediate

## SECTION 1-THEORY

### Step 1 Information representation

- Data Representation
- Multimedia – Graphics, Sound
- Compression



### Step 2 Data Types and structures

- Data Types and Records
- Arrays
- Files



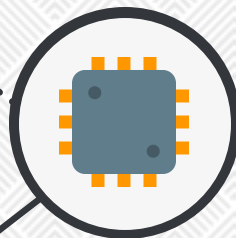
### Step 3 Hardware

- Computers and their components
- Logic Gates and Logic Circuits



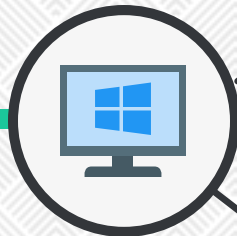
### Step 4 Processor Fundamentals

- Central Processing Unit (CPU) Architecture
- Assembly Language
- Bit manipulation



### Step 5 System Software

- Operating System
- Language Translators



### Step 6 Security, privacy and data integrity

- Data Security
- Data Integrity



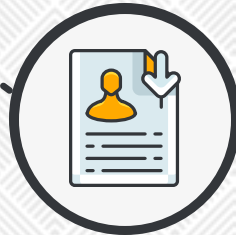
### Step 7 Ethics and Ownership

- Copyright legislation
- Freeware, shareware and free software
- Software licencing
- Ethical bodies – BCS and IEEE



### Step 8 Databases

- Database Concepts
- Database Management System (DBMS)
- Data Definition Language (DDL) and Data Manipulation Language (DML)



## SECTION 2-PRACTICAL

### Step 9 Algorithm Design and Problem-Solving

- Computational Thinking Skills
- Algorithms



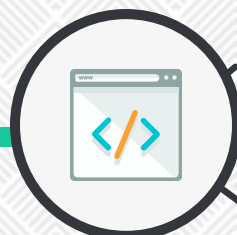
### Step 10 Data Types and structures

- Data Types and Records
- Arrays
- Files
- Introduction to Abstract Data Types (ADT)



### Step 11 Programming

- Programming Basics
- Constructs
- Structured Programming



### Step 12 Software Development

- Program Development Lifecycle
- Program Design
- Program Testing and maintenance



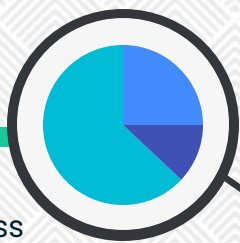
# Level 3-Advance

## SECTION 1-THEORY

### Step 1

#### Data Representation

- User-defined data types
- File organisation and access
- Floating-point numbers, representation and manipulation



### Step 2

#### Communication and internet technologies

- Protocols
- Circuit switching, packet switching



### Step 3

#### Hardware and Virtual Machines

- Processors, Parallel Processing and Virtual Machines
- Boolean Algebra and Logic Circuits



### Step 4

#### System Software

- Purposes of an Operating System (OS)
- Translation Software



### Step 5

#### Security

- Encryption, Encryption Protocols and Digital certificates



### Step 6

#### Artificial Intelligence

- Artificial Intelligence



## SECTION 2-PRACTICAL

### Step 7

#### Computational thinking and problem solving

- Algorithms
- Recursion



### Step 8

#### Further Programming

- Programming Paradigms
- File Processing and Exception Handling



## CHOOSE ONE SPECIALIZATION

### 1. Mobile Development

- Activities, Layouts, Intents, Sqlite3, Firebase in Jav



### 2. Web Development

- HTML, CSS, JS, Wordpress in Php



### 3. Data Science

- Data Cleaning, ETL, Data Analysis, Data Visualization in Python

