

YEAR 10

COMPUTER SCIENCE



SRI KDU
International
School
SUBANG JAYA

PROGRAMME OF STUDY - TERM 1

TERM 1.1 DATA REPRESENTATION

- **Number Systems:**

- Understand how and why computers use binary to represent data.
- Learn the denary, binary, and hexadecimal number systems.
- Convert numbers between denary, binary, and hexadecimal.
- Understand how and why hexadecimal is used for data representation.
- Add two positive 8-bit numbers and understand overflow in binary addition.
- Perform logical binary shifts on positive 8-bit integers.
- Use two's complement notation to represent positive and negative binary numbers.

- **Text, Sound, and Images:**

- Understand how and why a computer represents text.
- Learn about character sets including ASCII and Unicode.
- Understand how and why a computer represents sound.
- Learn about sound sample rate and sample resolution.
- Understand how and why a computer represents images.
- Explore the effects of resolution and color depth on images.

- **Data Storage and Compression:**

- Understand how data storage is measured.
- Calculate the file size of an image and sound file.
- Understand the purpose of and need for data compression.
- Learn about lossy and lossless compression methods.

TERM 1.2 DATA TRANSMISSION

- **Types and Methods of Data Transmission:**

- Understand how data is broken up into data packets before transmission.
- Learn the structure of data packets (header, payload, and trailer).
- Understand packet switching, including the role of the router in the process.
- Learn methods of data transmission: serial, parallel, simplex, half-duplex, and full-duplex.
- Understand the Universal Serial Bus (USB) and its role in data transmission.

- **Methods of Error Detection:**

- Understand why error checking methods are needed.
- Learn error checking methods following data transmission:
 - Parity checks.
 - Checksum.
 - Echo check.
- Understand the use of check digits to detect data entry errors.
- Learn about the use of automatic repeat requests (ARQs) to detect errors.

- **Encryption:**

- Understand the need for and the purpose of encryption.
- Learn about symmetric and asymmetric encryption.
- Understand the use of public and private keys in encryption.