IST Software Development Notes

Programming Languages
- Provide instructions to the computer system to perform an activity
- Programmer's code translates solutions or tasks in a language computers can understand
- 4 different types:
    - Procedural languages – Pascal, QBasic
    - Object-oriented languages – Java, C++
    - Event-driven languages such as VB6
    - Query languages – SQL, that perform database queries

Basic Programming Concepts
- Input, Processes and Output table to develop software

Input	Processes	Output
Data the program needs	Precise operations needed to produce output from input data	Produces on the screen or sends to a printer or a file

- Variables are names given to a data storage location, such as integers or records
- Constants store the same value, such as pi or the GST rate
- Assignment statements enable data to be stored into a variable, and contain an equals sign
- Functions are subprograms that do a specific task, such as RAND that makes a random number

Data Types and Data Operators
- Data types include:

Data Type	Description	Example
Character	A character can represent any value	Y, W
String	A set of characters with a set maximum length	Joshua, p455w0rd
Integer	Whole number, both +/-	3, -134
Real	Any +/- number with decimals	8, -22224.63
Boolean	Two values – 0 or 1 to represent true or false	0, 1

- Data Operators allow calculations and rules to be programmed
    - Arithmetic operators use +, -, ÷, x, =, brackets and powers.
    - Relational operators compare two values, using the symbols: <, >, and =.
    - Logical operators use AND, OR and NOT.

Graphical user interface
- Graphical user interface is designed for a graphical environment and uses WIMP
    - Windows, icons, menus and pointers – mouse and keyboard required
- Graphical tools including pictures, borders, colour and labels
- Objects including check, combo, list and text boxes, menus, command and option buttons

Algorithms
- An algorithm is a generalised series of steps which solves a particular problem.
    - Sequence e.g. 1, 2, 3
    - Selection e.g. only people with an IQ of 60 can join MENSA
    - Repetition e.g. some tasks need to be repeated