Mathematics for Computing: Induction Day

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Induction Day

Kevin O'Brien

Kevin.obrien@ul.ie

International Program,
University *of* London

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Important Question - Do you like Maths?

Mathematical Notation

- Long form and short form notation
- Variable names (examples : x and y)
- Symbols (Logic and Set Theory)
- Discrete Maths is quite graphical (Venn Diagrams)
- Gates (AND, OR, XOR)
- Different branches of mathematics has different conventions.

Overview of Module

1. Number Systems
2. Set Theory
3. Logic
4. Functions
5. Introduction to Graph Theory
6. Digraphs and Relations
7. Sequences, Series and Induction
8. Trees
9. Probability
10. Matrices

Session 1: Number Systems

- Decimal Number - What you are probably used to.
- Binary - Zeroes and Ones.
- Hexadecimal - examples: RGB and Colours.

Decimal to Binary Conversion(1.4.1)

- Continuously divide the decimal number by 2.
- Keep record of the remainder, either 0 or 1.
- The sequence of remainders is the binary number required.

Hexadecimal Numbers

Hex Characters: 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F

Types of Numbers

- Natural Numbers (1,2,3)
- Integers (..-3,-2-1,0,1,2,3..)
- Rational Numbers (e.g 4/7, 12/3)
- Real Numbers (3.14151)