LATEX

Remember, Record, Resist:

A Self-Contained QR-Code Archival System for Long-Term Information Preservation

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This thesis is dedicated to
someone special
for some special reason

Acknowledgements

Waffle, waffle.

Abstract

Waffle, waffle.

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Chapter 1
Mathematics

1.1 Set Theory

$\{\, x : x \in \mathbb{R} \mid x > 0 \,\}$ is the set of all strictly positive real numbers.

S = letters of the alphabet.

$|S| = 26$

Power of Sets

$$S = \{a, b, c\}$$
$$\mathcal{P}(S) = \{\varnothing, \{a\}, \{b\}, \{c\}, \{a,b\}, \{a,c\}, \{b,c\}, \{a,b,c\}\}$$

Let $A = \{1, 2, 3\}$ and $B = \{3, 4, 5\}$:

$$\text{Union: } A \cup B = \{1, 2, 3, 4, 5\}$$
$$\text{Intersection: } A \cap B = \{3\}$$
$$\text{Complement: } A \setminus B = \{1, 2\}$$
$$\text{Symmetric Difference: } A \triangle B = \{1, 2, 4, 5\}$$

Union $A \cup B = \{1, 2, 3, 4, 5\}$

Intersection $A \cap B = \{3\}$

Complement $A \setminus B = \{1, 2\}$

Symmetric Difference $A \triangle B = \{1, 2, 4, 5\}$

Cartesian products

$$A \times B = \{(1,3), (1,4), (2,3), (2,4)\}$$

$$B \times A = \{(3,1), (3,2), (4,1), (4,2)\}$$

$$A \times B \neq B \times A$$

1.2 Discrete Mathematics

1.2.1 Key Concepts

Arguments Group of statements, one of which is claimed to follow from the others.

Proposition A statement that is either true or false, usually a declarative sentence.

1.2.2 Connectives

Connectives	Symbols	Meaning
Negation	$\sim$ / $\neg$	Not
Conjunction	$\wedge$	And
Disjunction	$\vee$	Or
Implication/ Conditional	$\rightarrow$	If
Biconditional	$\leftrightarrow$	If and Only If
NAND	$\uparrow$	Not And
NOR	$\downarrow$	Not Or
XOR	$\oplus$	Exclusive Or

1.2.2.1 Summary

Negation Inverts the truth value

Conjunction True when both statements are True

Disjunction True when at least one of the statements are True

Biconditional True when both statements have the same truth value

Implication False if First and Second Statement are True and False respectively, otherwise all configurations are True

NAND Negation of Conjunction

NOR Negation of Disjunction

XOR Negation of Biconditional

1.2.3 Truth Tables

1.2.3.1 Negation

P	$\sim$P
T	F
F	T

1.2.3.2 Conjuction

P	Q	P$\wedge$Q
T	T	T
T	F	F
F	T	F
F	F	F

1.2.3.3 Disjunction

P	Q	P$\vee$Q
T	T	T
T	F	T
F	T	T
F	F	F

1.2.3.4 Biconditional

P	Q	P$\leftrightarrow$Q
T	T	T
T	F	F
F	T	F
F	F	T

1.2.3.5 Implication

P	Q	P$\rightarrow$Q
T	T	T
T	F	F
F	T	T
F	F	T

1.2.3.6 NAND

P	Q	P$\uparrow$Q
T	T	F
T	F	T
F	T	T
F	F	T

1.2.3.7 NOR

P	Q	P$\downarrow$Q
T	T	F
T	F	F
F	T	F
F	F	T

1.2.3.8 XOR

P	Q	P$\oplus$Q
T	T	F
T	F	T
F	T	T
F	F	F

Chapter 2
Sample Title

In conclusion: give me a degree

Appendix A
Sample Title

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Appendix B
Sample Title

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