

HKOI Training

ami ~ wkc

Last modified: February 27, 2010

Course information

- My contact
- Course Schedule
- Topics - Math
- Topics - Programming
- Reference

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My contact

Name:

Wu, Kai Chiu

email / facebook:

ami@mathdb.org

Other information:

in my facebook

Course Schedule

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Course webpage : <http://hkoi.mathdb.org>

Previous training material: <http://game.integate.net/hkoi/>

Almost every Saturday, from *10am* to *12pm*

Location: Computer Room 10 of Methodist College

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27-Feb, 6-Mar, 13-Mar, 27-Mar

10-Apr, 17-Apr, 24-Apr

8-May, 15-May, 22-May, 29-May

5-Jun, 26-Jun

3-Jul (Examination)

No lesson on 20-Mar, as I will be at PuiChing Middle School.

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You are required to submit homework *at the beginning* of the lessons.

There will be around three quizzes and one examination.

Homework problems are related to all you learnt in school.

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NO Calculator is allowed!!!

Topics - Math

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- Discrete Mathematics

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- Discrete Mathematics

1. Propositional logic

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- Discrete Mathematics

1. Propositional logic

- (a) Statements - negation, conjunction, disjunction and condition
- (b) Truth values - TRUE , FALSE
- (c) Boolean algebra
- (d) Recursive definition

Topics - Math

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- Discrete Mathematics
 1. Propositional logic
 2. Mathematical induction

Topics - Math

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- Discrete Mathematics
 1. Propositional logic
 2. Mathematical induction
 - (a) well-ordering principle
 - (b) identity for sum of powers
 - (c) identity for sum of geometric sequence

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- Discrete Mathematics
 1. Propositional logic
 2. Mathematical induction
 3. Set theory, relations and functions

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- Discrete Mathematics
 1. Propositional logic
 2. Mathematical induction
 3. Set theory, relations and functions
 - (a) equivalence relation and classes
 - (b) domain, codomain and image

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- Discrete Mathematics
 1. Propositional logic
 2. Mathematical induction
 3. Set theory, relations and functions
 4. Number theory

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- Discrete Mathematics

1. Propositional logic
2. Mathematical induction
3. Set theory, relations and functions
4. Number theory
 - (a) Divisibility
 - (b) Division algorithm and Euclidean algorithm
 - (c) Modular arithmetic - Addition, subtraction and multiplication.
 - (d) The congruence classes modulo n
 - (e) Modular arithmetic - Inverse (division)

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 1. Propositional logic
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 3. Set theory, relations and functions
 4. Number theory
 5. Abstract algebra

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- Discrete Mathematics
 1. Propositional logic
 2. Mathematical induction
 3. Set theory, relations and functions
 4. Number theory
 5. Abstract algebra
 - (a) Units of \mathbb{Z}_p
 - (b) Fermat's little theorem
 - (c) Chinese remainder theorem
 - (d) Euler's phi-function

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 1. Propositional logic
 2. Mathematical induction
 3. Set theory, relations and functions
 4. Number theory
 5. Abstract algebra
 6. Counting

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- Discrete Mathematics
 1. Propositional logic
 2. Mathematical induction
 3. Set theory, relations and functions
 4. Number theory
 5. Abstract algebra
 6. Counting
 - (a) Permutation
 - (b) Combinatorial binomial coefficient
 - (c) Combination
 - (d) Pigeonhole principle
 - (e) Inclusion-exclusion principle

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 1. Propositional logic
 2. Mathematical induction
 3. Set theory, relations and functions
 4. Number theory
 5. Abstract algebra
 6. Counting
 7. Sequences and recurrence relations

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 1. Propositional logic
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 5. Abstract algebra
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 7. Sequences and recurrence relations
 - (a) Algebraic binomial coefficient
 - (b) Fibonacci sequence
 - (c) Solve recurrence relations
 - (d) Generating function

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1. C-syntax - statement, expression and printf

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2. Variables, data Types and identifier

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3. Control flow (Condition)- if-else and switch

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4. Control flow (Looping) - while, do-while and for

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5. Functions - pass by value

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6. Arrays, string and pointer

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7. Functions - pass by pointer

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8. Algorithm

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References:

- *Discrete Mathematics Notes*, David A. SANTOS
- *Number theory for Mathematical Contests*, David A. SANTOS
- Cprogramming.com Tutorial,
<http://www.cprogramming.com/tutorial/c/lesson1.html>
- C Programming Contents,
<http://gd.tuwien.ac.at/languages/c/programming-bbrowncstart.htm>

Useful links:

HKOI official site

<http://www.hkoi.org>

Mathematical Database

<http://www.mathdb.org>

C++ Examples with implementation

<http://www.fredosaurus.com/notes-cpp/>