

CS 70 离散数学 和 概率论

HW 00

春季 2026 Sinclair, Song

1 Administrivia

(a)

MakesureyouareonthecourseEd(forQ&A)andGradescope(forsubmittinghomeworks, includingthisone).

Findandfamiliarizyourselfwiththecoursewebsite.

Whatisitshome-

page'sURL?

(b) Readthepoliciespageonthecoursewebsite.

(i) Whatisthebreakdownofhowyourgradeiscalculated?

(ii) Isthereano-homeworkoption?

(iii) Whatistheattendancepolicyfordiscussions?

(iv) When are homeworks released, 和 when are they due? When

are self grades 对于 each

homeworkdue?

(v) Howmany"drops"doyougetforhomeworks?

Howmanymini-vitaminswillcontribute

toyourgrade?

(vi) Whenisthemidterm? Whenisthefinal?

(vii)

Whatpercentagescoreisneededtoearnfullcreditonahomework?

解答:

(a) Thecoursewebsiteislocatedat<https://www.eecs70.org/>.

(b) (i) 讨论 Attendance: 5%, Mini-vitamins: 5%, 作业: 15%,

Midterm: 30%,

Final: 45%.

(ii) CS70doesnothaveano-homeworkoptionthissemester.

(iii)

Youwillreceive1attendancepointforeverydiscussion,andwillneedatleast13points

inordertoreceivefullcreditfordiscussionattendance.

Youarewelcometoattendother

discussionsections,andmayreceivecreditforanysection,thoughitisstronglyencour-

aged

thatyouconsistentlyattendthediscussionthatyousignupforatthebeginningof

thesemester.

(iv) The 作业 对于 the current week is released on the course

website by 星期一. The

作业 is due on Gradescope on 星期六 at 4:00 PM (grace period 直到

6:00 PM);

thesolutionsforthat homeworkwillbereleasedonMonday.

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(v)

Youcandropthelowest3homeworkstheentiresemester,andthetop13minivitamins

will count 对于 a grade. 然而, please save these drops 对于

emergencies. We do 非

havethebandwidthtomakepersonalizedexceptionstothisrule.

(vi) MidtermDate: 03/12/26Thursdayfrom7 - 9pm

FinalDate: 05/14/25Thursday3 - 6pm

(vii) 73%.

2 Course Policies

Go to the course website 和 read the course policies

carefully. Leave a followup on Ed 如果 you

haveanyquestions.

Arethefollowingsituationsviolationsofcoursepolicy?

Write"Yes"或"No",

andashortexplanationforeach.

(a) Alice 和 Bob work on a 题目 in a study group. They write up a 解答 together 和

submitit, notingontheirsubmissionsthattheywroteuptheirhomeworkanswerstogether.

(b)

CarolgoestoahomeworkpartyandlistenstoDanddescribehisapproachtoaproblemonthe board, taking notes in the process. She writes up her 作业 submission from her notes, creditingDan.

(c)

Erincomesacrossaproofthatispartofahomeworkproblemwhilestudyingcoursematerial. She reads it 和 那么, after she has understood it, writes her own 解答 using the same approach. Shesubmitsthehomeworkwithacitationtothewebsite.

(d) Frank is having trouble with his 作业 和 asks Grace 对于 help. Grace lets Frank look

at her written 解答. Frank copies it onto his notebook 和 uses the copy as a reference to writeandsubmitthishomework, creditingGrace.

(e) Heidi has completed her 作业 using LATEX. Her friend Irene has been working on a 作业 题目 对于 hours, 和 asks Heidi 对于 help. Heidi sends Irene her PDF 解答,

andIreneusesittowriteherownsolutionwithacitationtoHeidi.

(f) Joe found 作业 solutions before they were officially released, 和 every time he got stuck, he looked at the solutions 对于 a 提示. He 那么 cited the solutions as part of his submission.

(g) Kai is struggling with one of their 作业 problems, 所以 they take a screenshot of the problemandaskChatGPTtosolveitforthem.

解答:

(a) Yes, this is a violation of course policy. All solutions must be written entirely by the student submitting the 作业. Even 如果 students collaborate, each student must write a unique, individualsolution.

Inthiscase,bothAliceandBobwouldbeculpable.

(b) No, this is 非 a violation of course policy. 当...时 sharing written solutions is 非 allowed,

sharing approaches to problems is allowed 和 encouraged.

Because Carol only copied

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down notes, 非 Dan' s 解答, 和 properly cited Dan' s contribution, this is an actively encouragedformofcollaboration.

(c) No, this is 非 a violation of course policy. Using external sources to help with 作业 problems, 当...时 less encouraged than peer collaboration, is fine as long as (i) the student makes sure to understand the 解答; (ii) the student uses understanding to write a new

解答, anddoesnotcopyfromtheexternalsource; 和(iii)thestudentcreditstheexternal source. 然而, looking up a 作业 题目 online is a violation of course policies;

thecorrectcourseofactionuponfindinghomeworksolutionsonlineistoclosethetab.

(d) Yes, this is a violation of course policy, 和 both Frank 和 Grace would be culpable. Even though Frank credits Grace, written solutions should never be shared in the first place, 和 certainly not copied down. This is to ensure that each student learns how to write and present clear and convincing arguments. To be safe, try not to let anybody see your written solutions

at any point in the course—restrict your collaboration to approaches and verbal communication.

(e) Yes, this is a violation of course policy. Once again, a citation does 非 make up 对于 the fact that written solutions should never be shared, in written 或 typed form. In this case, both Heidi and Irene would be culpable.

(f) Yes, this is a violation of course policy. Joe should 非 be reading solutions before they are officially released. Instead, Joe should ask 对于 help when he is stuck through Ed 或 Office Hours.

(g) Yes, this is a violation of course policy. Kai should 非 be directly asking ChatGPT to solve a 作业 问题. 如果 Kai really wanted to use an LLM 对于 作业 help, they should

ask it a conceptual question (that they' d reasonably ask at Office Hours or on Ed).

3 Use of Ed

Ed is incredibly useful 对于 Q&A in such a large-scale class. We will use Ed 对所有 important announcements. You should check it frequently. We also highly encourage you to use Ed to ask questions and answer questions from your fellow students.

(a) Read the Ed Etiquette 节 of the course policies 和 explain what is wrong with the following hypothetical student 问题: "Can someone explain the 证明 of 定理 XYZ to me?" (Assume Theorem XYZ is a complicated concept.)

(b) When are the weekly posts released? Are they required reading?

(c)

If you have a question or concern not directly related to the course content, where should you direct it?

解答:

(a) There are two things wrong with this question.

First, this question does not pass the 5-minute test. This concept takes longer than 5 minutes to explain, 和 因此 is better suited to CS70, Spring 2026, HW00 3

Office Hours. Second, this 问题 does 非 hone in on a particular concept with 其中 the student is struggling. Questions on Ed should be narrow, 和 should include every step of reasoning that led up to the 问题. A better 问题 in this case might be: "I understood every step of the 证明 of 定理 XYZ in 笔记 2, except 对于 the very last step. I tried to reason it like this, 但是 I didn' t see how it yielded the result. Can someone explain 其中 I went wrong?"

(b) The weekly posts are released every Monday.

They're required reading.

(c) Please send an email to sp26@eecs70.org.

4 Academic Integrity

Please write or type out the following pledge in print, and sign it.

I pledge to uphold the university's honor code:

to act with honesty, integrity, and respect

for others, including their work.

By signing, I ensure that all written homework I submit

will be in my own words, that I will acknowledge any

collaboration or help received,

and that I will neither give nor receive help on any examinations.

5 Propositional Practice

In parts (a) - (b), convert the English sentences into propositional logic.

In parts (c) - (d), convert the

Notel

propositions into English. 对于 parts (b) 和 (d), use the

notation $a|b$ to 表示 the statement “a

divides b”, and use the notation $P(x)$ to denote the statement “x

is a prime number”.

(a) For every real number k, there is a unique real solution to $x^3 = k$.

(b) 如果 p is a prime number, then for any two natural numbers a and b, 如果

p doesn't divide a and p

divides ab, 那么 p divides b.

(c) $(\forall x, y \in \mathbb{R}) [(xy=0) \iff ((x=0) \vee (y=0))]$

(d) $\neg((\forall y \in \mathbb{N}) [(\forall x \in \mathbb{N}) [(x > y) \iff ((y|x) \vee P(x))]])$

解答:

(a) The trickiest part of this 题目 is the word ‘unique’. We

can express the existence of a

unique 解答 in propositional logic with two statements 连通的

with an ‘和’: (1) A

解答 exists, 和 (2) Any two solutions have to be the same. 因此,

we can rewrite this

statement as “对于 every 实数 number k, 存在 a 实数 number x 满足 x^3

$=k$ 和 对于

all reals y and z, if both $y^3 = k$ and z^3

$=k$, then $y=z$.” This, in propositional logic, is below:

$(\forall k \in \mathbb{R}) (\exists x \in \mathbb{R}) (x^3 = k) \wedge (\forall y, z \in \mathbb{R}) ((y^3 = k) \wedge (z^3 = k)) \iff$

$(y=z)$ (cid:3) .

(b) This sentence can be written in propositional logic as

$(\forall p \in \mathbb{N}) [(P(p)) \iff ((\forall a, b \in \mathbb{N}) [(p|ab) \wedge \neg(p|a) \implies (p|b)])]$.

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(c) If the product of two real numbers is 0, then one of them must be 0.

(d)

There is no natural number that divides every composite number greater than it.

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