

CS 240 Exam 1 Written Answer Sheet

Print/type name (First Last):

Print/type NetID:

@wisc.edu

Print/type student ID:

Instructions:

Overview:

1. Get a copy of this sheet (you will put your answers to the “written” questions on your copy)
2. The actual questions you will answer will be available to you in the Exam 1 Canvas quiz once you start taking it. Put your answers on your copy of your sheet.
3. Upload your answer sheet as your answer to the last question of the Exam 1 Canvas quiz. You must upload a single PDF file.

More details:

Before starting the exam:

From the **File** tab in the upper-left corner, select **Make a copy**. You will not be able to edit this version.

Open up your answer sheet in your Google Drive (if it does not automatically open).

Fill out the name, NetID, and student ID information on the first page. Do not remove any of the text provided in this answer sheet. This will ensure that your exam is able to be uploaded and graded in GradeScope.

Filling in the answer sheet with your answers:

You may do any of the following:

- print the answer sheet and hand-write your answers in the appropriate locations
- write your answers on your own paper and copy-paste a picture of your work into the appropriate locations **Note:** if you use this option, make sure to delete the provided structure within each answer box (to avoid extra pages)
- use a tablet & stylus to hand-write your solutions electronically in the appropriate locations

Answers to free response questions **must** be hand-written.

To turn in your answer sheet:

Create a single pdf from your answer sheet and upload your file as your answer to the last question in the Exam 1 Canvas quiz.

Note: to create a pdf from within Google Docs,

From the **File** tab in the upper-left corner, select **Download**.

Select **PDF Document (.pdf)** and save your file to your computer.

If time expires before you have a chance to upload your file, upload your pdf file to the *Exam 1 late* assignment in Canvas. If your pdf is uploaded within 10 minutes of the ending time of your quiz, it will be accepted for grading.

Question 14

Write your answer for Question 14 in the box below:

Part a:

Part b:

1.

2.

3.

4.

Part c:

Question 15

Write your answer for Question 15 below:

[illegible]

Question 16

Write your answer for Question 16 in the box below:

Part a:

Part b:

Question 17

Write your answer for Question 17 in the box below:

Part a: Proof by induction: Some structure of a proof by induction is provided for you.

What is $P(n)$?

Base case: We want to prove _____

Proof:

Inductive step: We want to prove _____

(*inductive hypothesis*) Assume _____

Proof:

Conclusion: Therefore, by induction, $P(n)$ holds for all positive natural numbers n

Part b: