

CS 480 Distributed Systems Sample Exam 1
February 7, 2018

Name:

There are 100 points in five question. You must show your work for full credit. Guessing or simply “knowing” the answer will only be worth partial credit. You may not be able to show all your work on the actual exam so write your name and student number on each sheet you turn in. You are allowed **one** sheet of notes (front and back). You do not need to turn in your notes sheet.

1. Define the following terms (5 points each):

a) Distributed System.

b) Safety Property.

c) Liveness Property.

d) Atomic Statement or Action

e) Critical Section

f) Guard

g) Clock drift (ρ)

h) FIFO

2. Given the following statement

1. **do** $x = 0 \rightarrow x := x + 1$
 2. \square $x = 3 \rightarrow x := 0$
 3. \square $0 \leq x \leq 5 \rightarrow x := x + 1$
 4. \square $x > 5 \rightarrow x := -1$
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a) (10 points) Is this loop guaranteed to end if the scheduler is unfair? Explain.

b) (10 points) Is this loop guaranteed to end if the scheduler is fair? Explain.

c) (10 points) Is this loop guaranteed to end if the scheduler is completely fair? Explain.

