SYSTEMS EXAM
Spring 2022
90 minutes

Check which problems you are submitting:

#1
#2
#3

How many pages total?_____

Please do not write on the back of any pages.

_____
(print name)

_____
(signature)

_____
(NetId)

b) (10pts) Assume memory has **8 pages** and there are **4 page frames**. We have a page reference string of **2,6,5,7** to fill the first 4 frames. Complete the tables below by adding **three more page references** that will result in **LRU** having **fewer** page faults than **FIFO.**

LRU

pages	2	6	5	7	?	?	?
Frame 0	2	2	2	2			
Frame 1		6	6	6			
Frame 2			5	5			
Frame 3				7			

e) (4pts) What would be the **implementation** of a **block** and **wait semaphore** and how is the **value** of any semaphore modified?

f) (4pts) A computer system has a **36-bit virtual address space** with a **page size of 8K**, and **4 bytes per page table entry**. How many **pages** are in the virtual address space? What is the **maximum size** of addressable **physical** memory in this system?