NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCE
OPERATING SYSTEM QUIZ(A)

STUDENT ROLL NO: _____ SECTION:_____
TIME ALLOWED: 20 MINUTES

QUESTION # 1 (IDENTIFY WHETHER THE GIVEN STATEMENTS ARE TRUE OR FALSE. WRITE DOWN THE CORRECT STATEMENT AGAINST EACH FALSE STATEMENT)

1) (T/F) Cyclic dependency always leads towards deadlock?
   (F) It depends upon the number of resource instances.

2) (T/F) Memory mapped technique is efficient to be used for huge sequential file?
   (F) Memory space utilization may be a problem

3) (T/F) Page fault rate will be high if you observe fast clock tick rate in clock based second chance algorithm?
   (T) Refer lecture slide

4) (T/F) LRU takes benefits from spatial locality.
   (F) Temporal locality

5) (T/F) A blocking kernel-scheduled thread blocks all threads in the process.
   (F) Because kernel level threads are managed by operating system

6) (T/F) Threads are cheaper to context switch than processes.
   (T) Threads share the address space of process.

7) (T/F) The optimal page replacement algorithm is the best choice in practice.
   (F) It is hard to predict future.

QUESTION # 2

Consider a page is stored in column major order. How many page faults will each data structure incur?

a) i, j;

```
int[18][18] data;
for (j = 0; j < 18; j++)
for (i = 0; i < 18; i++)
data[i][j] = 0;
```

18

b)

```
int i, j;
int[18][18] data;
for (i = 0; i < 18; i++)
for (j = 0; j < 18; j++)
data[i][j] = 0;
```

18x18

QUESTION # 3

Consider the given code for reader writer problem that we discussed in class. Answer the questions given below.

```
Semaphore mutex  initialized to 1
Semaphore wrt  initialized to 1
Integer readcount  initialized to 0
WRITER
do {
 wait (wrt) ;
   //    writing is performed
 signal (wrt) ;
     } while (TRUE);

READER
    do {
                        wait (mutex) ;
                        readcount ++ ;
                          wait (wrt) ;
                        signal (mutex)

                                // reading is performed

                         wait (mutex) ;
                         readcount  - - ;
                            signal (wrt) ;
                         signal (mutex) ;
               } while (TRUE)
```

1. How many readers are allowed to enter in the critical region for above code fragment ?

Only one

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2. Above code fragment satisfy mutual exclusion criteria(T/F)? **T**

QUESTION # 4

Consider the snapshot of a safe system.

	Allocation	*Max*	*Available*
	A B C	*A B C*	*A B C*
P_0	0 1 0	7 5 3	3 3 2
P_1	2 0 0	3 2 2	
P_2	3 0 2	9 0 2	
P_3	2 1 1	2 2 2	
P_4	0 0 2	4 3 3	

Can we immediately grant the request to process P1(1,1,1) .If yes, then provide a safe state(Assume processes are executed sequentially) .

REFER BOOK

QUESTION # 5

Calculate number of page faults for the given string using FIFO(3 page frames) ?

A B C D A B E A B C D E B A B
