OPSYS VİZE 2019:

Q.1. Define the following terms and give an example:

a) Operating System:

b) Pipeline:

Q.2. True False Questions:

- A multi-threaded process has two program counters per thread

- The short-term scheduler controls the degree of multiprogramming

- Interrupt-driven I/O provides better performance when moving large amounts of data than DMA

- S@ symbol in a Makefile represents the left side of the : symbol

- A child process can only be an orphan process while its parent can be either orphan or a zombie process

- There must be a space character in the beginning of any command in a Makefile

- When using fork system call parent and child process have the same address space

- With NUMA, some parts of memory may take longer to access than other parts

- CD-R and DVD-R are examples for WORM devices

- CPU registers has faster access time than any other device including CPU cache memory

- Privilege escalation allows user to change file access permissions

- Emulation used when source CPU type different from target type

- Operations in Message Passing architecture is faster than shared memory architectures

Q.3. Fill in the blanks with appropriate terms

a) A ..... or ..... is a software-generated interrupt caused either by an error or user request.

b) When an interrupt occurs, the operating-system preserves the state of the CPU by storing every ..... and the .....

c) The ..... Instruction moves a byte or word from main memory to an internal register within the CPU while the..... Instruction moves the content of a register to main memory

d) the sequence of steps that the CPU follows to process instructions is called as ..... Cycle.

e) In a multiprocessor environment all CPUs must have the most recent value in their cache which is known as .....

f) In the context of Cloud Computing, Google Docs is an example for .....

g) One of the example Shell program in a Linux/UNIX system is .....

h) One method for system call parameter passing is to use .....

I) PID value of 1 is assigned to the ..... Process on Linux Systems.

Q.4. Explain the difference between the core dump and crush dump

Q.5. Write the manual compilation and linking steps to compile a project having main.c, plib.c, and plibh files into main.exe using gcc compiler.

Q.6 Draw a directed graph representing the process state model. Name all edges and vertices

Q.7. Considering the following code (Assume that fork does not fail.);

```
int main() {
        fork();
        if(fork())
                print(“ A ”);
        else
                fork();
        print(“  B  “);
        wait(NULL);
        return(0);
```

a) How many times “ A ” is printed on the screen.

b) How many times “ B ” is printed on the screen.

c) Draw the process tree shown parent (Pid) and child (Cid) processes where n is the ID of the process

Q.8 What could the output of the concurrent execution of process A and process B be? (State all possible outputs)

Initialization of shared variables Int x = 2; Int y = 0;

Process A	**Process B**

while(x == 2) {do-nothing};
printf(" E ");
y = 1;
y = 0;
printf(" M ");
y = 1;
	print(" L ");
	x = 1;
	while(y == 0) {do-nothing};
	printf(" A ");

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Q.9. Consider P1 and P2 processes that require T1 to happen before T2 Show a semaphore based solution to this problem using the semaphore variable S.

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