

Week 4(Threads)

Q1. What is the difference between Fork and Vfork.

Q2. Describe the action taken by kernel to context-switch between processes.

Q3. Consider the following statements about user level threads and kernel level threads. Which one of the following statement is FALSE?

- (A) Context switch time is longer for kernel level threads than for user level threads.
- (B) User level threads do not need any hardware support.
- (C) Related kernel level threads can be scheduled on different processors in a multi-processor system.
- (D) Blocking one kernel level thread blocks all related threads.

Q4. What are the similarities and differences between process and threads?

Q5. Compare the actions performed by kernel to context switch among the threads and the processes?

Q 6. When a multi-threaded process receives a signal, to what thread should that signal be delivered?

Q 7. In the following program the parent send the message “Hello my child” to the child. Modify this program so that the parent creates a second pipe for the child to send the message “Hello my parent” to the parent. Thus the program output should be:

**Hello my child
Hello my parent**

```
int main(void)
{
    pid_t pid;
    int fd1[2];

    char buf[100];
    pipe(fd1);

    pid = fork();
    if (pid > 0) {
        close(fd1[0]);
        write(fd1[1], "Hello my child\n", 12);
        close(fd1[1]);

    }
    else {
        close(fd1[1]);
        read(fd1[0], buf, 100);
    }
}
```

```

        printf("%s\n",buf);
        close(fd1[0]);
    }
}

```

Q 8. What is the output of the following program?

```

int main()
{
    int* var = (int *) malloc(sizeof(int));
    *var = 10;

    pid_t pid = fork();

    if (pid == 0) {
        (*var)++;
        printf("Hello, I am the child, var=%d\n", *var);
        exit(0);
    }
    wait(NULL);
    printf("Hello, I am the parent, var=%d\n", *var);
}

```

Q 9. In Linux thread, clone() allows for varying degrees of sharing between the parent and child tasks, controlled by flags. Write the meaning of each flag?

flag	Meaning
CLONE_FS	
CLONE_VM	
CLONE_SIGHAND	
CLONE_FILES	

Q 10. What is Process Contention Scope(PCS) and System Contention Scope(SCS). Write their advantages.