

CSCE 3613 Operating Systems quiz two possible answer

Fork system call

[20 points] Briefly describe the fork system call (what it does, arguments, return value).

Fork() creates a new process (child) by **duplicating** the calling process (parent). It takes no argument. A successful call returns 0 to the new or child process and child process id to the calling process or parent process. A failed call returns -1.

[40 points] Determine how many times the word hello gets printed for the program below, assuming that fork call is successful.

```
void doit()
{
    fork();
    fork();
    printf("hello\n");
    return;
}
int main()
{
    doit();
    printf("hello\n");
    return 0;
}
```

8 times as the four processes created return to main.

[40 points] List all possible outputs (be complete) of the following code, assuming that fork call is successful. For each output, provide a short comment why you get it.

```
int main()                //  p,c  c,p  p,c,p
{                          //  x=11 x=9  x=11
    int x = 10;            //  x=10 x=11 x=9
                           //  x=9  x=10 x=10

    if (fork() != 0){
        x++;
        printf("x=%d\n", x);
    }
    x--;
    printf("x=%d\n", x);
    return 0;
}
```