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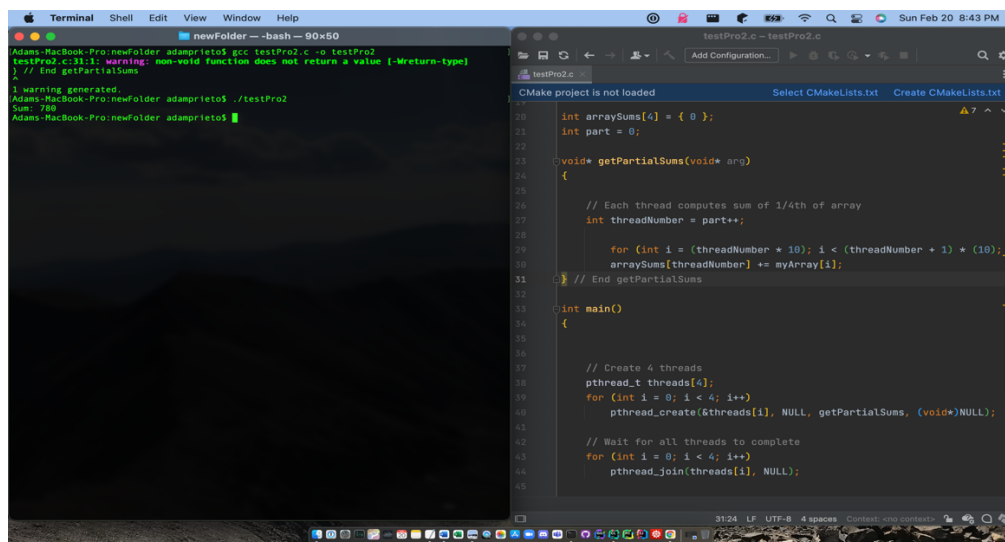
Professor Ranjidha Rajan

CS 3600 – Operating Systems

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Homework 2

1. Parent of all processes in UNIX OS is process 1; also known as *init*, this process is the ancestor of every other process in the system.
2. Parent of all App Processes in Android OS is *zygote*. Just like *init*, *zygote* has the job of launching other processes.
3. In the corresponding code, the value printed to the console is zero. Since the code is written to output the value of the child process, the process is automatically set to the default value: zero. That said, when the child process executes, the value of *count* is set to zero and is then printed out to the console. We can also test this hypothesis by executing the code segment, and we then see that the value of *count* is zero.
- 4.



The image shows a screenshot of a macOS desktop with two windows. The left window is a Terminal window titled 'newFolder - bash - 90x50'. It shows the following commands and output:

```
Adams-MacBook-Pro:~$ gcc testPro2.c -o testPro2
testPro2.c:31:1: warning: non-void function does not return a value [-Wreturn-type]
} // End getPartialSums
^
1 warning generated.
Adams-MacBook-Pro:~$ ./testPro2
sum: 789
Adams-MacBook-Pro:~$
```

The right window is a code editor titled 'testPro2.c - testPro2.c'. It shows the following C code:

```
20 int arraySums[4] = { 0 };
21 int part = 0;
22
23 void* getPartialSums(void* arg)
24 {
25
26     // Each thread computes sum of 1/4th of array
27     int threadNumber = part++;
28
29     for (int i = (threadNumber * 10); i < (threadNumber + 1) * 10; i++)
30         arraySums[threadNumber] += myArray[i];
31 } // End getPartialSums
32
33 int main()
34 {
35
36
37     // Create 4 threads
38     pthread_t threads[4];
39     for (int i = 0; i < 4; i++)
40         pthread_create(&threads[i], NULL, getPartialSums, (void*)NULL);
41
42     // Wait for all threads to complete
43     for (int i = 0; i < 4; i++)
44         pthread_join(threads[i], NULL);
45
```