IE-B6 OS-lab 01

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1 Task1

1.1 Shell Script

In this task a shell script was written to toggle the gpio pin 136. The gpio pin 136 was connected to the oscilloscope and the voltage level analyzed.

As can be seen from the figure 1, the frequency was approximately 1.972kHz. The duty

Figure 1: Oscilloscope display for shell application

cycle is the measure of the latency of the system.

1.2 C script

Just like the shell script, a script was written in c to toggle the gpio pin 136 and the result view on an oscilloscope. The result was capture in the following image. It could
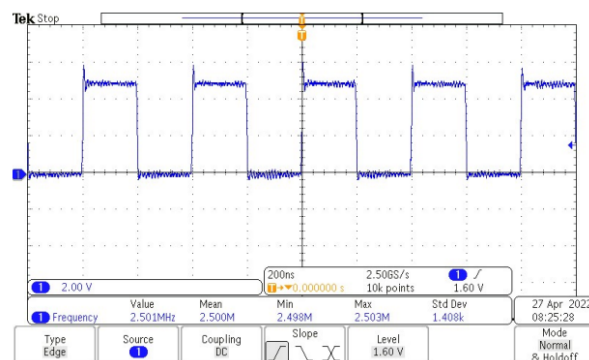

Figure 2: Oscilloscope display for C application[1]

be observed that the frequency was a little higher than that of the shell script. Meaning the C application was more faster as the duty cycle was less than that of the shell script.

2   Scheduling

A single function was made and duplicated using the fork(). The code was adjusted so that the execution of one thread was clear distinguished from the other thread. This was done by printing separate statements to the console.
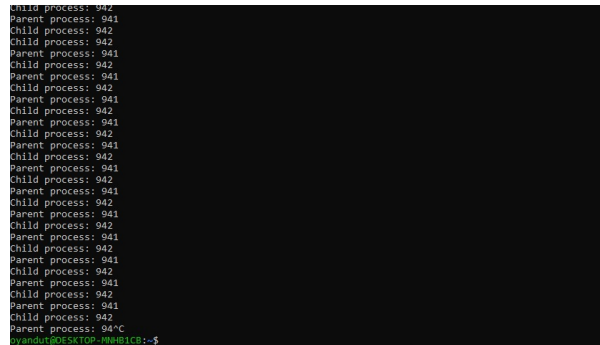Below is a screen capture.

Figure 3: Output of parent and slave thread created from fork()

2.1   Using nice and renice commands

The priority of the created c program was changed using the nice command. The following capture was made. It could be observed that changing the priority of the program did

Figure 4: Output of program with priority 20

not make significant change in the frequency of the execution of the threads.
The priority of the child thread was changed with renice. It could be observed that the child thread had a frequency of 5 or 6 times that of the parent process.
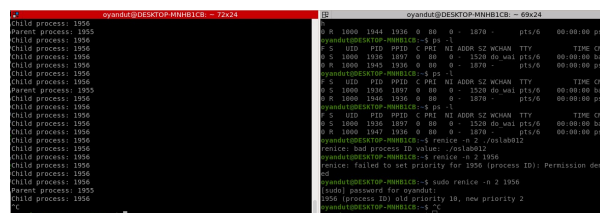

Figure 5: Child process having higher priority

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2.2 With 1 ms delay

With a delay of 1 ms, the frequency of the output was observed to decrease.

Figure 6: Output with delay of 1 ms

2.3 With time consuming process

With the time consuming process, the frequency of the child and parent process reduced significantly.

Figure 7: With time consuming process

3 References

References

[1] O. E. Bruna Maria de Freitas Torres Nunes, Mohammad Sadikur Rahman. Operating system lab 1 report. 2022.

- Georg, W./Holger, G., 2023, Operating Systems lecture slides, IE, HAW Hamburg.