



UNIVERSITY of the
WESTERN CAPE

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DEPARTMENT OF COMPUTER SCIENCE



UWC Computer Science

COS311 2025

Term 2 _ Practical 2 [20 marks]

Final Mark

This practical will have 2 questions. You will be required to work with threads in C using the Pthread library.

Use the online compiler https://www.tutorialspoint.com/compile_c_online.php

Submit your answers on Ikamva. Follow the instructions on each question on how to upload.

Student No.	Name	Surname

Exercise 1 – p1.c

Mark
10

Write a C program which implements Pthreads.

Use #include <pthread.h>

The program must create 2 threads calling different function. The functions must include some arbitrary calculation which takes processing time. Use the following code:

Function 1 sample code:

```
long sum = 0;
for (long i = 0; i < 10000000000; i++){
    sum += 1;
}
```

Function 2 sample code:

```
long sum = 0;
for (long i = 0; i < 50000000; i++){
    sum += 1;
}
```

Successfully compile and run 2 threads using the sample code above for each function (8 Marks).

After each thread completes print out that it has completed (2 Marks).

Save your code as p1.c and zip it. Upload it in Ikamva.

Expected Output:

Thread 1 complete

Thread 2 complete

Exercise 2 – p2.c

Mark
10

Use your code from p1.c and implement a timer which will count how many seconds each thread has taken. Print out the following:

1. Thread 1 duration (1 Marks)
2. Thread 2 duration (1 Marks)
3. Total duration (how long it takes both process to complete) (1 Marks)
4. Average time taken for a process to complete (1 Marks)

In addition, modify the code to use IPC share memory(pointers) to pass a long variable from the parent to child process and print it in the child process.

1. For Thread 1 pass and print the number 1. (3 Marks)
2. For Thread 2 pass and print the number 2. (3 Marks)

Save your code as p2.c and zip it. Upload it in Ikamva.

Expected Output:

Thread1: 1 Thread2:

2

thread1 took 0.000075 seconds to execute thread2

took 1.533661 seconds to execute

thread1 and thread2 took 1.533661 seconds to execute average
time taken was 0.766830