Faculty of Computing, Engineering and Science

Assessment Cover Sheet and Feedback Form 2021-22

Module Code: CS3S666	Module Title: Parallel and Concurrent Programming	Module Team: Marius Miknis, Gaius Mulley
Assessment Title and Tasks: Practical Written Work 1: Parallel Reversi		Assessment No. 1
Date Set: 24-Sep-2021 23:55	Submission Date: 12-Nov-2021 23:55	Return Date: 10-Dec-2021 23:55

IT IS YOUR RESPONSIBILITY TO KEEP RECORDS OF ALL WORK SUBMITTED

Marking and Assessment
This assignment will be marked out of 100% This assignment contributes to 50% of the total module marks.
Learning Outcomes to be assessed (as specified in the validated module descriptor https://icis.southwales.ac.uk/): 1) Demonstrate comprehension and analysis in the effective application of parallel and concurrent programming techniques.
Provisional mark only: subject to change and / or confirmation by the Assessment Board

Marking Scheme:

	Fail	Narrow Fail	3rd Class / Pass	Lower 2nd Class / Pass	Upper 2nd Class / Merit	1st Class / Distinction
overall system produced 20%	• Very poor overall system produced	• Poor overall system produced	• Satisfactory overall system produced	• Good overall system produced	• Very good overall system produced	• Excellent overall system produced
analysis and future improvements 30%	• Very poor analysis and future improvements	• Poor analysis and future improvements	• Satisfactory analysis and future improvements	• Good analysis and future improvements	• Very good analysis and future improvements	• Excellent analysis and future improvements
code quality 20%	• Very poor code quality	• Poor code quality	• Satisfactory code quality	• Good code quality	• Very good code quality	• Excellent code quality
line by line commentary 30%	• Very poor line by line commentary	• Poor line by line commentary	• Satisfactory line by line commentary	• Good line by line commentary	• Very good line by line commentary	• Excellent line by line commentary

Description

Your task is to convert a sequential version of the game Reversi into a parallel program. You must use the game found in the git url below as a starting point. Some of the tutorials will support the coursework.

Your task is to parallelise the first level game tree (ply 0). All moves positions evaluated above ply 0 will be evaluated using the original sequential algorithm. You need to implement a small mailbox library which will provide a simple message passing primitives and you also need to convert the sequential move selection function to a parallel solution. Parallelism will be restricted to the ply 0 only. The parallel solution should limit the parallelism to the number of cores available on the host machine. The parallel solution should fork a producer process which will attempt to fork a process for every possible move. However the producer process must be limited to only allow parallelism up to the number of available cores.
Once a move result has been found the result is passed back to the original process.

A set of instructions on how to download and build the sequential program can be found on:
http://floppsie.comp.glam.ac.uk/Southwales/gaius/parallelconcurrent/reversi.html

The git repository can be found at: https://github.com/gaiusm/reversi.