1ST STUDENT'S NAME:	
1ST STUDENT'S ID NO:	
2ND STUDENT'S NAME:	
2ND STUDENT'S ID NO:	
UNIT CODE AND TITLE:	FIT3143 PARALLEL COMPUTING
SEM/YEAR:	2/2021
CAMPUS:	CLAYTON/MALAYSIA
ASSIGNMENT 2 - DEMONSTRATION WITH Q&A (18 MARKS)	
ASSESSOR:	
DATE:	18 October, 2021

PART A: ASSIGNMENT DEMONSTRATION - GROUP MARKING

	Criteria	Marks	0 (Fail)	1 (Pass, 50-59%)	2 (Credit, 60-69%)	3 (Distinction, 70-79%)	4 (High Distinction, 80% - 100%)	Rating Awarded by Assessor (0-100%)	Scaled marks
1	Simulting tsunameter sensor node	5	No program to execute	Basic implementation of part 1.0 of Section II - WSN description in the assignment specifications. - Program partially works for a fixed value of m x n nodes. - Program crashes midway during simulation or does not terminate properly. - A node fails to generate proper random values to simulate sea water column heights. - The generated random values are not pushed into a moving average. - A node is unable to communicate with its adjacent nodes to obtain and compare moving average readings. - A node is not able report an alert to the base station.	On top of Pass: - Program terminates properly with no crashes during runtime. However, each node runs for a fixed number of iterations which is set during compile time. - Program only works for a fixed value of m x n nodes. - A node generates proper random values to simulate sea water column heights. - The generated random values are pushed into a moving average. - A node communicates with its adjacent nodes to obtain and compare moving average readings. **However, the communication rule is not aligned with the assignment specifications. For instance, a node will send a request to its immediate adjacent neighbourhood nodes to acquire their readings for comparison purposes regardless if its average value exceeds the threshold or otherwise.** - A node is able report an alert to the base station.However, the node requires multiple MPI sends when reporting an alert to the base station.	On top of Credit: - Program only works for a fixed value of m x n nodes. - A node communicates with its adjacent nodes to obtain and compare moving average readings based on the assignment specifications. **That is, each node will send a request to its immediate adjacent neighbourhood nodes to acquire their readings for comparison purposes if its current moving average value exceeds a threshold value.** - Sensor node terminates properly by receiving a termination message from the main process (or base station). - A node calls MPI send (or an equivalent function) once when reporting an alert to the base station. - The program uses a fixed or constant predefined sea water column height threshold value, which is set during compile time.	A) On top of Distinction: - Program works for a dynamic value of m x n nodes. At start up, the program allows the user to specify the grid size (m x n). - Allows the user to specify a sea water column height threshold value at program start up. **B) On top of High Distinction, for Upper HD (i.e., above 90%):** **- A node uses a thread (i.e., POSIX or OPENMP) to send or receive MPI messages between its adjacent nodes. This thread is created by the sensor node and terminates properly at the end of the program.**	100	5
2	Simulating Satellite Altimeter	2	No program to execute	Basic implementation of part 2.0 of Section II - WSN description in the assignment specifications. - Did not use POSIX or OpenMP thread. - Thread crashes midway during simulation or does not terminate properly. - Shared global array is **not protected** from race condition. - Instead of using FIFO, the entire array content is cleared once its full. No proper method included as an alternative to FIFO.	On top of Pass: - Thread terminates properly with no crashes during runtime. However, the thread runs for a fixed number of iterations. - **Protects** the shared global array from race condition.	On top of Credit: - Thread terminates properly by receiving a termination signal from the main process.	On top of Distinction: - Proper usage of FIFO or an equivalently suitable method, which generates the random sea water column height values for a coordinate value or for the entire Cartesian grid, and then pushes this data into a shared global array. **Note:** Students may propose and discuss with the lab tutor for an alternative approach which is of an equivalent merit to the aforementioned criteria.	100	2

3	Simulating base station	5	No program to execute	Basic implementation of part 3.0 of Section II - WSN description in the assignment specifications. - Program crashes midway during simulation or does not terminate properly.	On top of Pass: - Program terminates properly with no crashes during runtime. However, the based station runs for a fixed number of iterations which is set during compile time. - Insufficient comparison between data from sensor node and data from the satellite altimeter. - Limited content when logging an alert.	On top of Credit: - Proper comparison (based on timestamp) between data from sensor node and data from the satellite altimeter to validate an alert. - Good amount of content logged when reporting an alert. - At start up, the user is able to specify the number iterations for the base station to run. Once the iterations are complete, the base station sends a termination signal/message to satellite altimeter and sensor nodes.	A) On top of Distinction: - Excellent amount of content logged when reporting an alert. Logs includes details of reporting node and adjacent nodes which reported a similar reading, comparisons with the satellite altimeter and node details (e.g., coordinates). - Log file content demonstrates usage of MonARCH with the processor name included next to the IPv4 address. **Note: Loopback address (127.0.0.1) is not allowed.** - Log file includes an automatically generated summary before the program terminates. The summary includes number of (alerts and false alerts), average communication time, time taken for the base station program. - The base station program allows the user to specify a sentinel value at runtime to allow a proper shutdown of the base station, satellite altimeter and sensor nodes. **Note: CTRL+C is not allowed**. **B) On top of High Distinction, for Upper HD (i.e., above 90%):** **- The base station uses a thread (i.e., POSIX or OPENMP) to send or receive MPI messages from the sensor nodes. This thread is created by the base station and terminates properly at the end of the program.**	100	5
4	Overall code structure and code comments	2	No submitted code	Poorly structured code with weak or no modularity, no proper code indentation and little or no comments	Some form of proper code structure and modularity is visible, code is properly indented, basic comments included.	Proper code structure and modularity is visible, code is properly indented, detailed comments included. Limited usage of MAKEFILE or jobscript fro MonARCH.	Excellent code structure and modularity is visible (e.g., multiple C files with each file containing module/s representing a base station or node), code is properly indented, detailed comments included - Proper use of MAKEFILE to compile multiple C files, run the program and clean up. - Proper use of a job script to execute the program in MonARCH.	100	2
Sub-Total (14 marks)									**14**

	PART B:Q&A - INDIVIDUAL ASSESSMENT								
	1ST STUDENT'S NAME:								
	1ST STUDENT'S ID NO:								
	Criteria	**Marks**	**0 (Fail)**	**1 (Pass, 50-59%)**	**2 (Credit, 60-69%)**	**3 (Distinction, 70-79%)**	**4 (High Distinction, 80% - 100%)**	**Rating Awarded by Assessor (0-100%)**	**Scaled marks**

1	Code demonstration and Q&A	4	The student has not prepared, cannot answer event the most basic questions and likely has not even seen the code before.	The student may have seen the code before and can give some very basic answers. However, the student clearly can't engage in a serious discussion of the code and demonstrates a poor understanding of the algorithm/code	The student may have seen the code before and can give answers that are partially correct but he/she clearly can't engage in a serious discussion of the algorithm/code	The student is reasonably well prepared and can consistently provide answers that are mostly correct. The student may lack confidence or speed in answering.	The student has clearly prepared and understands the code. The student can answer questions correctly and concisely with little to no prompting.	100	4
Sub-Total (4 marks)									**4**

	PART B:Q&A - INDIVIDUAL ASSESSMENT								
	2ND STUDENT'S NAME:								
	2ND STUDENT'S ID NO:								
	Criteria	**Marks**	**0 (Fail)**	**1 (Pass, 50-59%)**	**2 (Credit, 60-69%)**	**3 (Distinction, 70-79%)**	**4 (High Distinction, 80% - 100%)**	**Rating Awarded by Assessor (0-100%)**	**Scaled marks**
1	Code demonstration and Q&A	4	The student has not prepared, cannot answer event the most basic questions and likely has not even seen the code before.	The student may have seen the code before and can give some very basic answers. However, the student clearly can't engage in a serious discussion of the code and demonstrates a poor understanding of the algorithm/code	The student may have seen the code before and can give answers that are partially correct but he/she clearly can't engage in a serious discussion of the algorithm/code	The student is reasonably well prepared and can consistently provide answers that are mostly correct. The student may lack confidence or speed in answering.	The student has clearly prepared and understands the code. The student can answer questions correctly and concisely with little to no prompting.	100	4
Sub-Total (4 marks)									**4**