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| **C:\Users\sram\OneDrive - Unitec NZ\ShiuRam\Unitec\Unitec Logos\UnitecHorizontalLogo.jpg** | ISCG6426  Data Structures and Algorithms  **Lab 5**  **Semester 2, 2019** |
| **School of Computing and Information Technology** | **Due Date:** 11:00am 01/Nov/2019 |
|  | **Total Marks:** 6  **Course Weighting:** 6% (5 of 5) |

Lab Exercise 5

# Aim

Solve basic programming problems to develop abilities on data structures problem solving.

# Instructions

Code one C/C++ function to build binary heap from array: the task is to build a binary heap from a given array. The heap is a min-heap.

Prototype:

HBH \*CreateBinaryHeap(int \*heap, int n);

**n** is a positive integer and is the size of the heap, in other words, the number of elements on the heap rather than the size of the array,

**heap** is an array of k integers, where k>n, and

**HBH** is a data type for the head of a binary heap

Function receives an array and returns the reference to a binary heap.

Output the minimum value of the heap.

Output the total number of comparisons.

# Delivery

* The submission of your source code is required.
* Code should be commented.

# Marking Schedule

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| --- | --- | --- |
| **Task** | **Marking Criteria** | **Marks** |
| CreateBinaryHeap( ) | Function is properly defined to build binary heap from array. | 2 |
| Results of the function | The function returns the correct binary heap. | 2 |
| Output the minimum value of the heap | Display the correct number | 1 |
| Output the total number of comparisons | Display the correct number | 1 |
| **Total Marks** | | **6** |

**Late Submission of Assignments:**

Assignments submitted after the due date and time without having received an extension through Special Assessment Circumstances (SAC) will be penalised according to the following:

* 10% of marks deducted if submitted within 24hrs of the deadline,
* 20% of marks deducted if submitted after 24hrs and up to 48hrs of the deadline,
* 30% of marks deducted if submitted after 48hrs and up to 72hrs of the deadline,
* No grade will be given for an assignment that is submitted later than 72hrs after the deadline.

**Special Assessment Circumstances:**

A student, who due to circumstances beyond his or her control, misses a test, final exam or an assignment deadline or considers his or her performance in a test, final exam or an assignment to have been adversely affected, should complete the Special Assessment Circumstances (SAC) form available from the Student Central.

When requesting an SAC for an assignment, the SAC must be submitted (along with work completed to date) within the time frame of the extension requested; i.e. if the Doctor’s certificate is for one (1) day, then the SAC and work completed must be submitted within one (1) day.

**Assistance to other Students:**

Students themselves can be an excellent resource to assist the learning of fellow students, but there are issues that arise in assessments that relate to the type and amount of assistance given by students to other students. It is important to recognise what types of assistance are beneficial to another’s learning and also what types of assistance are unacceptable in an assessment.

**Beneficial Assistance:**

* Study Groups
* Discussion
* Sharing Reading Material
* Reading the available online and library resources

**Unacceptable Assistance:**

* Working together on one copy of the assessment and submitting it as own work
* Giving another student your work
* Copying someone else’s work, this includes work done by someone not on the course
* Changing or correcting another student’s work
* Copying from books, the Internet etc. and submitting it as own work; anything taken directly from another source must be acknowledged correctly; show the source alongside the quotation