UNIVERSITY OF Baguio
SCHOOL OF INFORMATION TECHNOLOGY
General Luna Road, Baguio City Philippines 2600

Telefax No.: (074) 442-3071 Website: www.ubaguio.edu E-mail Address: ub@ubaguio.edu

DATA STRUCTURES AND ALGORITHMS 1
1st Semester SY 2024-2025
First Grading Examination (Laboratory)

SCORE

Name: _____ Date: _____

Course and Year: _____ Section: _____

GENERAL INSTRUCTIONS

1. Use blue or black permanent ink for answering.
2. Mind your own test papers. Anyone caught cheating will automatically be given a 0 in his/her test, suspended or expelled as stated in the Students Handbook, Article XIII Section 1Bc.
3. Turn off ALL gadgets.
4. If there are any questions or concerns, approach the proctor/instructor.

I. Algorithm Simulation. Follow the instructions indicated for each item to simulate the List/Array Operations and Sorting Algorithms to create the needed solutions for each item. **5 points for each simulation. (15 points in total). 1 point deduction is imposed for every mistake/error found in your simulation.**

1. Suppose we have a list of elements **x = [1, 2, 3, 4, 5]** and **y = [ ]** and **z = [ ].** The final output for your simulation should be as follows:
x = [ ]
y = [5, 4]
z = [1, 2, 3]
Simulate the different operations (**List Operations, Return Values and List Contents**) using pen and paper such that all of the elements from **list x** are moved into the **lists y and z**, the contents of the list should be the same as the final output shown above. **5 points is allotted for the List/Array simulation.**

2. Suppose we have a list **X = [1, 2, 21, 33, 45, 65, 12]**. Simulate the **Insertion Sort Algorithm** to sort the list in **descending order** and simulate the **Selection Sort Algorithm** to sort the list in **ascending order**. **5 points is allotted for the Insertion Sort Algorithm and 5 points is allotted for the Selection Sort Algorithm for a total of 10 points.**

II. Algorithm Implementation. Implement and create Python Programs for the simulations of your algorithms from **Test 1**. **40 points each (80 points in total).**

Rubrics for the Program:

	40% of the points	**60% of the points**	**80% of the points**	**100% of the points**
Coding Standards 10 points	No name, date or assignment title included. Poor use of whitespace (indentation, blank, lines) Disorganized and messy Poor use of variables(many global variables, ambiguous naming)	Includes name, date, and assignment title. White space makes program fairly easy to read. Organized Work Good use of variables.	Includes name, date and assignment title. Good use of whitespace. Organized work. Good use of variables (no global variables, unambiguous naming).	Includes name, data and assignment title. Excellent use of variables (no global variables, unambiguous naming) Excellent use of white space. Creatively organized work.

Runtime 20 points	Does not execute due to errors. User prompts are misleading or non-existed. No testing has been completed or no input validation.	Executes without errors. User prompts contain little information, poor design. Some testing or input validation has been completed.	Executes without errors. User prompts are understandable, minimum use of symbols or spacing in output. Most testing or input validation completed.	Executes without errors, excellent user prompts, good use of symbols, spacing in output. Thorough and organized testing or input validation has been completed.
Efficiency 10 points	A difficult to understand and inefficient solution. Code is huge and appears to be patched together.	A logical solution that is easy to follow but it is not the most efficient.	The code is fairly efficient without sacrificing readability and understanding.	Solution is efficient, easy to understand and maintain.

"First say to yourself what you would be; and then do what you have to do."
-Epictetus

Prepared by:

JEREMY MOSES T. EBREO
Instructor

Reviewed By:

CHERRIE L. ALMAZAN
Program Chair, CS

DIVINE L. AGUILAR-AGUDONG
Program Chair, IT