Exam 4 Instructions

COP3035 – Intro to Python Programming

Instruction page – please read very carefully.

Date: Friday, August 2, 2024
Time Window: 9:00 AM - 9:00 PM

Format:
Location: This test is administered remotely; there's no need to come to the classroom.
The test will be accessible on Canvas during the designated window.
This is an open-book test. You may use textbooks, lecture notes, personal notes, formulae pages, handouts, other supplementary materials prepared in advance. These materials can be either paper or electronic format.
You might be required to write code and produce output. Ensure you have a working Python environment ready.
Individual Work: This test is meant to be completed independently. Collaboration is strictly prohibited. Do not discuss or share any details about the test or its solutions with anyone.

Submission:
Download the test and print it to answer. If you cannot print it, write your answers clearly on separate sheets of paper. (You can submit handwritten, typed, or mixed).
Clearly show and explain your work for each question, where necessary.
After completion, scan your test and submit it online via Canvas. Set aside at least 10 minutes for this process.
Use a scanning app to convert your test into a single PDF.
Ensure your submission is in the form of a single PDF file.
Clearly write your name and Z number on your test.
File Naming Convention: [Your Name] _[Z Number].pdf
While Canvas does allow multiple submissions, only the last one will be considered for grading.
Do Not share any information about the test or its solutions with others.
Exclude the instruction page from your submission.

Note: No late submissions will be accepted after the time window expires and after the solution key has been published.

Please review these instructions thoroughly to ensure a smooth testing experience. Best of luck!

Exam 4

COP3035 – Intro to Python Programming

Questions

1. **(10 points) What is a class in object-oriented programming (select one)?**
   a) A specific blueprint for creating objects.
   b) A single instance of an object.
   c) A function within an object.
   d) A type of data structure.

2. **(20 points) Given the Python class below, complete the tasks that follow the code snippet:**

```
class Vehicle:
    vehicle_count = 0  # Task a: Comment this line to explain what it does.

    def __init__(self, brand, model):
        self.__brand = brand  # Task b: Explain why '__' is used before 'brand'.
        self.__model = model
        Vehicle._______ += 1  # Task c: Fill in the blank for the class variable.

    def display_info(self):
        print(f"Brand: {self.__brand}, Model: {self.__model}")

    @_________  # Task d: Fill in the blank to define a method that doesn't alter the
                          class or its instances.
    def get_vehicle_count():
        return Vehicle.vehicle_count  # Task e: Comment about what it returns.
```

   a)
   b)
   c)
   d)
   e)

3. **(60 points) Coding problem**
   Create a Python class named **Grades** that computes the course grades. Write the code to produce an output like the example provided. **Ensure you also display the results, not just the code.**
   Note: For grading, use the following percentages: Homework = 40%, Exams = 50%, Labs and Participation = 5% each. Assume full participation points are 100, and for labs, 100 points are awarded if there are more than 6 sessions, with a proportional decrease otherwise.

   Example Usage:

```
grade = Grades(0.4, 0.5, 0.05, 0.05)  # Percentages
grade.addHomework([100, 110, 90, 100, 110, 90, 86]) # List of homework
grade.addExams([70, 100, 80, 105])  # List of exam scores
grade.setLabs(3) # Number of lab sessions
```

```
grade.report()
```

Output:

```
-------------------------------------------------
GRADE REPORT
-------------------------------------------------
1. Homework     Points
   Homework 1     100
   Homework 2     110
   Homework 3      90
   Homework 4     100
   Homework 5     110
   Homework 6      90
   Homework 7      86
   Total = 686, Num = 7, Average = 98.00
-------------------------------------------------
2. Exams        Points
   Exam 1          70
   Exam 2         100
   Exam 3          80
   Exam 4         105
   Total = 355, Num = 4, Average = 88.75
-------------------------------------------------
3. Lab sessions = 3, Points = 50.00
-------------------------------------------------
4. Class Participation Points = 100
-------------------------------------------------

SUMMARY
-------------------------------------------------
Homework          98.00 x  40% = 39.20
Exams             88.75 x  50% = 44.38
Labs              50.00 x   5% =  2.50
Participation    100.00 x   5% =  5.00
Final Grade Points               91.08
-------------------------------------------------
```

4. **BONUS (10 points) Add additional code in the Grades class to convert to a letter grade. Show the output results.**

Example:

```
Final Grade Points               91.88
-------------------------------------------------
Final Grade Letter                  A-
-------------------------------------------------
```