

Department of Computer Science & Engineering

University of Asia Pacific (UAP)

Program: B.Sc. in Computer Science and Engineering

Final Examination

Spring 2021

3 Year 1st Semester

Course Code: CSE 309

Course Title: Object Oriented Programming
II: Visual and Web Programming

Credits: 3

Full Marks: 120* (Written)

Duration: 2 Hours

* Total Marks of Final Examination: 150 (Written: 120 + Viva: 30)

Instructions:

1. There are **Four (4)** Questions. Answer all of them. All questions are of equal value. Part marks are shown in the margins.
2. Programmable calculators are not allowed.

1.
 - a)
 - i. Take a 4-digit number as year (example 2021) from user. 2+5+5+8
 - ii. Check if the input year is leap year or not. [Use nested if]
 - iii. Write the same program using multiple conditions. [do not use nested if]
 - iv. Write the same program in 2 using shorthand if statement.
 - b)
 - i. Write a function which takes 3 integers as user input and returns the summation and multiplication of these integers. 5+5
 - ii. Write a Lambda function which takes 3 numbers as input and returns the summation of these 3 numbers.
2.
 - a) Explain the concept of Association, Aggregation, Composition in your own language and draw appropriate diagrams. 5+5+5
 - b) Suppose we have 4 classes named Car, Owner, Wheel, License. What is the relation between the following pair of classes according to the concept of Association, Aggregation, Composition? Explain your co-responding answer. 5+5+5
 - i. Car and Owner
 - ii. Car and Wheel
 - iii. Car and License
3.
 - a) Suppose Point class has 3 private variables x, y, z which represent the x, y, z axis components of a point in 3D co-ordinate system. To add two points (object of Point class), we have to add the x, y, z axis components of them. Define the class constructor and write a function to overwrite the `__add__` function so that we can add the two object of Point class. 15

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| | b) | Which one has more access ability between static method and class methods? Explain your answer briefly. | 7 |
| | c) | Which one is faster between abstract class and interface? your answer briefly. | 8 |
| 4. | a) | Explain each type of inheritance by drawing appropriate diagram. [No need to write any code]
i. Multiple Inheritance
ii. Multilevel Inheritance
iii. Hierarchical Inheritance
iv. Hybrid Inheritance | 20 |
| | b) | What is Method Resolution Order? Explain with a code. | 10 |
| | | OR | |
| | a) | Suppose we have a class named Car which has a private variable called model. Now write a setter, getter, and deleter methods for model variable. | 20 |
| | b) | What is Diamond Problem? Explain with a diagram. [No need to write any code] | 10 |