Department of Computer Science & Engineering

University of Asia Pacific (UAP)

Program: B.Sc. in Computer Science and Engineering

Final Examination **Spring 2020** **3rd Year 2nd Semester**

Course Code: CSE 321 **Course Title: Software Engineering** **Credits: 3.0**

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 allowed.

1. a) The size of the code for the project in KLOC (kilo lines of code) is last four digit of your registration no. Calculate the effort, scheduled time for development. Also, calculate the average resource size and productivity of the software for Organic and Embedded type project. [If your registration no. is 17201001, then KLOC will be 1001] **[20]**

   b) What types of errors are unlikely to discover through the program inspection process? Describe those errors briefly. **[10]**

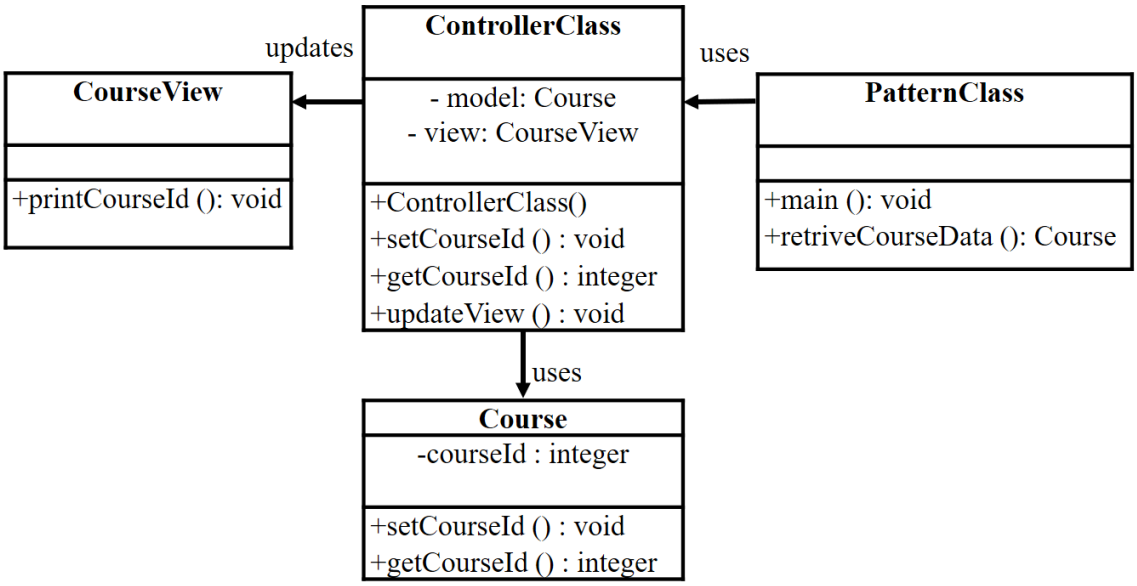
2. a) A defect, which could have been removed during the initial stage, is removed in a later stage. **[20]**
   I. How does this affect the cost? Justify every SDLC level of cost.
   II. What are the relationships with verification and validation process?

   b) Under what circumstances do you think that software be re-engineered rather than re-written? **[10]**

3. a) The reuse of software raises a number of copyright and intellectual property issues. If a customer pays a software contractor to develop a system. **[12]**

   I. Who has the right to reuse the developed code?
   II. Does the software contractor have the right to use that code as a basis for a generic component?
   III. What payment mechanisms might be used to reimburse providers of reusable components?
   IV. Discuss these issues and other ethical issues associated with the reuse of software.

b) Can you use MVC Design Pattern in this scenario? If your answer is positive then write a java or python program to convert this scenario according to MVC Design Pattern. **[18]**



4. a) Giving reasons for your answer, suggest an appropriate structural model for the following systems: **[10]**

   I. A stand-alone robot floor-cleaner that is intended to clean relatively clear spaces such as corridors. The cleaner must be able to sense walls and other obstructions.

   b) How does a web browser work? Justify each step with figure according to Client-Server Model. **[20]**

Or

4. a) Giving reasons for your answer, suggest an appropriate structural model for the following systems: **[10]**

   I. A computer-controlled video conferencing system that allows video, audio and computer data to be visible to several participants at the same time.

   b) How does SOA work? Describe each level with appropriate diagram. **[20]**