

105 博士班資格考

科目：軟體工程

時間：4 小時 (Closed book)

作答時，請注意各題之比例配分，並清楚標示題號

Part I. (50 分)

1. “The Singleton Pattern gives us a global point of access, just like a global variable, but without the downsides.” What does that mean? (15%)
2. Please freely elaborate whatever you can in ways of class diagram, case description, code ... to answer the following question.
One of the reasons to use the Composite pattern is when we want to represent part-whole hierarchies of objects. The other is when we want clients to be able to ignore the difference between compositions of objects and individual. That means clients will treat all objects in the composite structure uniformly. (35%)

Part II. (50 分)

1. What are the advantages of providing static and dynamic views of the software process as in the Rational Unified Process? (10%)
2. Using your knowledge of how an ATM is used, develop a set of use cases that could serve as a basis for understanding the requirements for an ATM system. (10%)
3. Based on your experience with a bank ATM, draw an activity diagram that models the data processing involved when a customer withdraws cash from the machine. (10%)
4. Draw diagrams showing a conceptual view and a process view of the architectures of the following system:
A computer-controlled video conferencing system that allows video, audio, and computer data to be visible to several participants at the same time. (10%)
5. Briefly describe the three main types of software maintenance. Why is it sometimes difficult to distinguish between them? (10%)