



CS335FZ
Software Engineering and Software Process

General (*Enter Details*)

QUESTION 1

[20 marks]

- (a) In eXtreme Programming (XP), what are slack tasks? Explain why we need them. (6 marks)
- (b) Given a class diagram as shown in Figure 1.1, convert the diagram to its corresponding code implementation in Java. (14 marks)

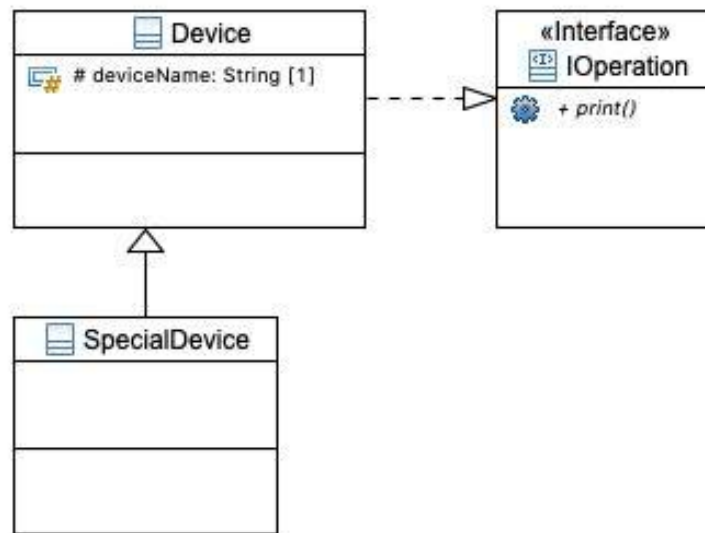


Figure 1.1

QUESTION 2

[20 marks]

- (a) Ethnography is a technique used during the requirements elicitation and analysis stage of requirements engineering. State the importance of using the technique in requirements engineering. (Make three main points and use an example to support your answer). (6 marks)
- (b) In Object-Oriented Design, what does the Interface Segregation Principle suggest? Given a design as shown in the class diagram below (Figure 2.1), use the Interface Segregation Principle to improve the design (show your improved design using a class diagram). (14 marks)

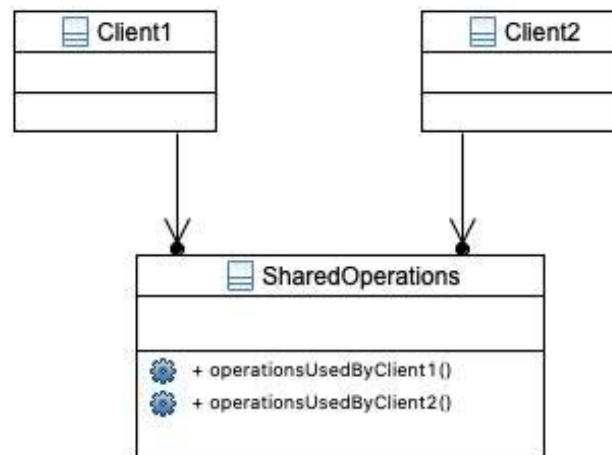


Figure 2.1

QUESTION 3

[20 marks]

- (a) Explain briefly the GRASP principles of *Pure Fabrication* and *Protected Variation*. (6 marks)
- (b) An online flight reservation system is being designed that will include classes representing customers, journeys, airlines, schedules, bookings, tickets, payments, and include methods supporting various functions including journey planning, ticket booking, ticket purchase. The system can be accessed on a desktop, smartphone or at an airport kiosk.
- (i) Identify three important use cases and two main actors of the system. Draw a Use Case diagram to illustrate the interactions between the actors and the use cases identified. (6 marks)
- (ii) If the *customer* and the *journey* were modelled as two classes in the design, which type of relationship (association, aggregation or composition) you would suggest for the two classes? Draw a class diagram to illustrate your answer, and explain why your choice is appropriate. (8 marks)

QUESTION 4

[20 marks]

- (a) The Model-View-Controller (MVC) pattern is widely used in user interface libraries. Give *one* advantage and *one* disadvantage of using MVC. (6 marks)
- (b) Given a project schedule as shown in Table 4.1 below, build the activity network for the project schedule and identify the critical path in the activity network. (14 marks)

Activity/Task	Duration (days)	Dependencies
T1	3	
T2	9	T1
T3	26	
T4	7	T2, T3
T5	12	T2
T6	5	T5

Table 4.1