

# Phân tích thiết kế hướng đối tượng

## Bài 11b: Bài tập

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# Câu hỏi

1. True or false: the use case approach is concerned primarily with which methods a class uses. **F**
2. Use cases are used to (among other things)
  - a** summarize problems encountered in program code.
  - b. discover what constructors a class may have.
  - c. help select appropriate class attributes.
  - d** deduce what classes may be necessary in a program.
3. A use case is basically a a written description of how users will perform tasks on your application.
4. True or false: After a use case diagram is created, new use cases can be added after coding has begun.
5. A use case description is sometimes written in two separate levels of detail: brief description and fully developed description.
6. An actor might be
  - a. a different system that interacts with the system being developed.
  - b. a software entity that helps the developer solve a particular coding problem.
  - c** a person who interacts with the system being developed.
  - d. the designer of the system.

# Câu hỏi

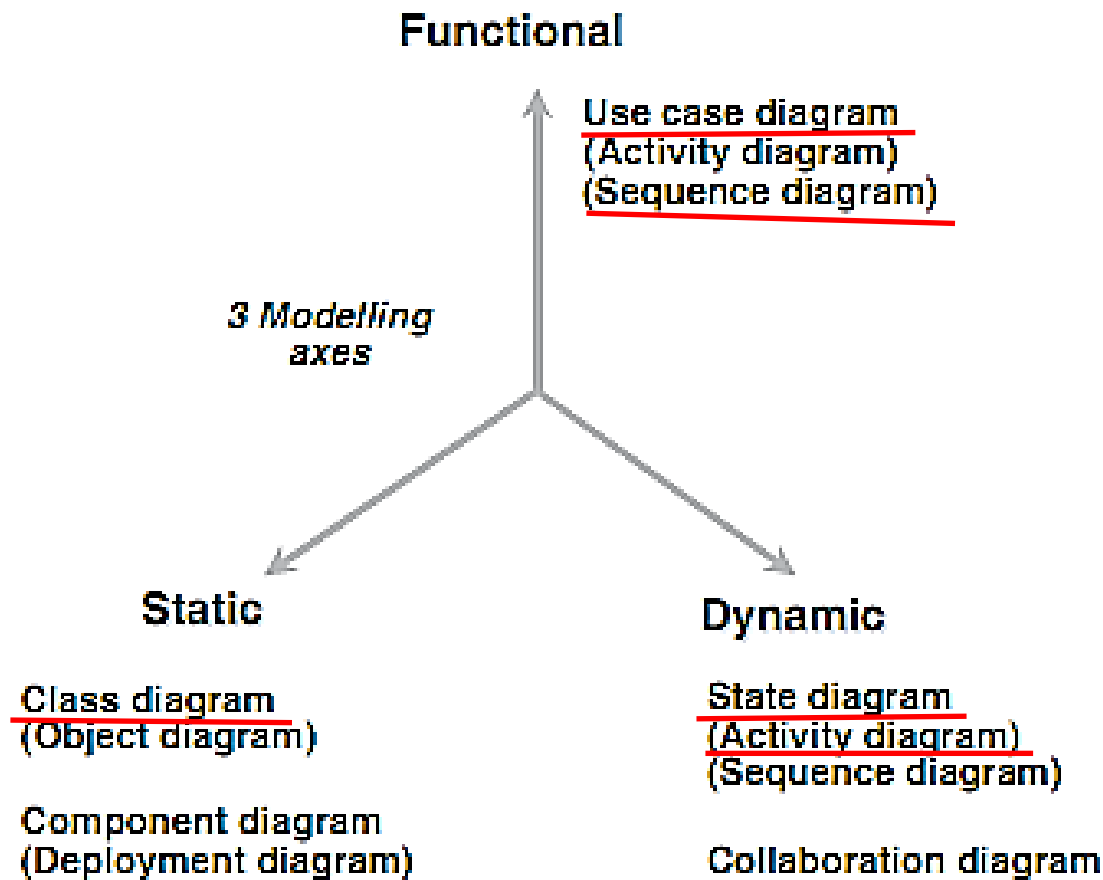
associati on

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7. Classes may be related by (among others) g\_\_\_\_\_, a\_\_\_\_\_, or a\_\_\_\_\_.
8. The waterfall process \_\_\_\_\_
- ☒ a consists of distinct phases.
  - b. was never actually used.
  - c. became untenable because of water shortages.
  - ☒ d. could go in only one direction.
9. True or false: If the UML is used, the Unified Process must also be used.
10. Classes in a program may correspond to
- a. nouns in use case descriptions.
  - b. use cases.
  - c. associations in a UML diagram.
  - d. names of famous programmers.
11. True or false: Vague, general entities (such as “the system”) in a use case descriptions are not good candidates for classes in the program.
12. True or false: Entities with a single attribute and no methods are good candidates for classes.

# Câu hỏi

17. True or false: Attribution is one of the major class relationships.
18. Assume there is an association between class A and class B. Also, objA is an object of class A, and objB is an object of class B. Which of the following applies?
  - a. objA may send a message to objB.
  - b. Class B must be a subclass of class A, or vice versa.
  - c. objB must be an attribute of class A, or vice versa.
20. True or false: In a class diagram, an association is shown as a relationship between objects.
21. In a sequence diagram
  - a. time goes from left to right.
  - b. associations go from right to left.
  - c. horizontal arrows represent messages.
  - d. vertical dotted lines represent lifetime.
22. A sequence diagram shows messages from one \_\_\_\_\_ to another.
23. True or false: A sequence diagram often describes a single use case.
24. In a sequence diagram, when a new class instance is created
  - a. a rectangle with its name is drawn at the appropriate vertical coordinate.
  - b. a large X marks the point in time.
  - c. its activity box begins.

# Các loại mô hình



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# **Use Case diagram**

Biểu đồ ca sử dụng

# Bài tập

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1. Hãy vẽ biểu đồ ca sử dụng của hệ thống được mô tả như sau:

Mr Major, the town's only dentist, has a computer system to help him keep track of patients' appointments and dental treatment. Mr Major's receptionist makes appointments with patients either when they phone up or when they are back in the waiting room after treatment. Sometimes patients phone to cancel appointments or to change them. Mr Major keeps notes on the system about his patients' treatments — these are updated each time he sees a patient. The receptionist also makes out bills for patients and records payments on the system.

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## 2. Chỉnh lại biểu đồ ca sử dụng cho hệ thống Dentist's nếu:

sometimes patients phone up to talk to the receptionist about their treatment or to complain of toothache. In these cases the receptionist adds comments to the patient's notes and advises Mr Major that she has done so. You also discover that on the receptionist's day off Mr Major makes the appointments.

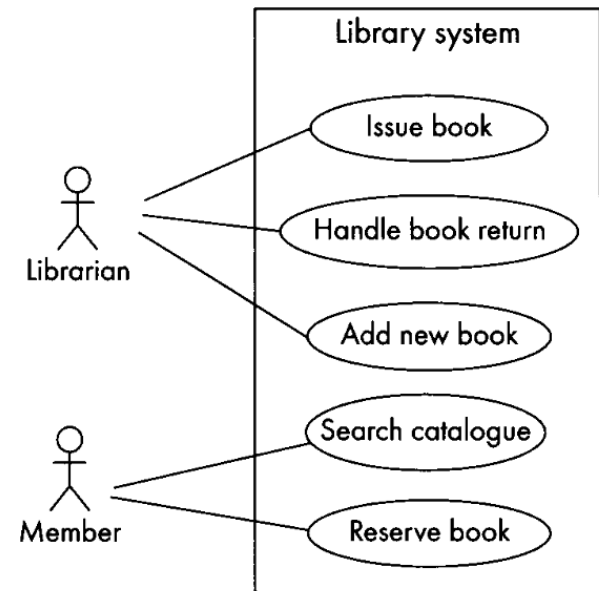
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# Bài tập

3. Trong Quản lý thư viện có 5 ca sử dụng, trong đó có hai ca sử dụng "Search catalogue" và "Reserve book" được mô tả như dưới đây. Hãy điều chỉnh lại biểu đồ sao cho hợp lý hơn

- A library member looks up the online catalogue for a book  
She finds the title she wants
- She checks the title availability and finds that there is a copy in the library
- She notes down the library reference number for the book.
- A library member looks up the online catalogue for a book  
She finds the title she wants
- She checks the title availability and finds that all copies are out on loan
- She makes an online reservation for the book.



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# **Class diagram**

Biểu đồ lớp

# Bài tập

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1. Xác định các lớp từ bài tập tình huống sau:

~~Mr Major~~, the town's only dentist, has a computer system to help him keep track of patients' appointments and dental treatment. Mr Major's receptionist makes appointments with patients either when they phone up or when they are back in the waiting room after treatment. Sometimes patients phone to cancel appointments or to change them. Mr Major keeps notes on the system about his patients' treatments – these are updated each time he sees a patient. The receptionist also makes out bills for patients and records payments on the system.

# Bài tập

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## 2. Vẽ biểu đồ lớp

- a The Keep Well Medical Centre is run by five doctors with three practice nurses. When a patient calls for an appointment, he or she usually sees the same doctor, but at busy times patients may see any of the doctors or nurses. Once a patient has been seen by the doctor or nurse, the medical records are updated and the doctor may also write out a prescription for the patient. Draw a class diagram to represent this information.

# Bài tập

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- a The Keep Well Medical Centre is run by five doctors with three practice nurses. When a patient calls for an appointment, he or she usually sees the same doctor, but at busy times patients may see any of the doctors or nurses. Once a patient has been seen by the doctor or nurse, the medical records are updated and the doctor may also write out a prescription for the patient. Draw a class diagram to represent this information.
- b Sometimes the doctor considers that the patient needs further tests. These tests may be routine or intensive, they are carried out at one of the local hospitals. Extend the diagram that you drew for part (a) to include this extra information.

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This exercise will help you to construct a class diagram. Build up the diagram by drawing the separate parts according to the information given below.

3. a A football club has two grounds.
- b Each ground consists of two or three pitches and a club-house.
- c The football club has lots of members.
- d A member may be a playing member or a social member, and a playing member may be an adult member or a junior member.
- e A playing member may be chosen to play for one or more teams, and each team has 11 playing members.
- f Each team plays a number of fixtures.
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# **State Machine Diagram**

## Biểu đồ trạng thái

# Bài tập

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## 1. Tea and coffee machine.

A tea and coffee machine in an office is initially idle, until a user inserts 50p. At this point the user can press the tea button to select tea, which the machine then dispenses, or the user can insert a further 20p. When 70p has been inserted, the user can press the coffee button to select coffee, which the machine dispenses, before returning to the idle state. The machine may break at any time. Draw a state diagram to represent the behaviour of the tea and coffee machine.



# Bài tập

2.

Vẽ biểu đồ trạng thái của đối tượng lớp **Bike**, trong đó có các sự kiện (events) và các trạng thái (states) như hình bên →

<i>Event</i>	<i>State</i>
	start state
bike purchased	New bike
bike number is assigned	Available for hire
customer hires bike	On hire
customer returns bike	Available for hire
minor damage to bike	Under repair
major damage to bike	stop state
bike repaired	Available for hire
bike lost or stolen	stop state
bike sold	stop state
bike scrapped	stop state

# Bài tập

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3. Hãy vẽ biểu đồ trạng thái mô tả hoạt động của một đối tượng thang máy:

- Thang máy bắt đầu hoạt động từ trạng thái ở *tầng 1*
- Khi đang ở tầng 1 và có người ở tầng trên nhấn nút yêu cầu thang máy thì nó chuyển sang trạng thái *dịch chuyển* (đi lên)
- Khi chuyển đến tầng được yêu cầu thì nó chuyển sang trạng thái *dừng* và để mở cửa cho người vào/ra thang máy
- Đang ở trạng thái *dừng*, nếu có ai ở tầng khác yêu cầu thì nó lại sang trạng thái *dịch chuyển* (lên hoặc xuống)
- Khi hết giờ thang máy sẽ dịch chuyển về tầng 1 để nghỉ

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# **Activity Diagram**

## Biểu đồ hành động

# Bài tập

- Xác định các mệnh đề sau đúng/ sai?

- a Customer details must be recorded before the amount owing is calculated.
- b If the title is not available, a new title is input.
- c The transaction must always be confirmed immediately after the credit card details are recorded.
- d The credit card details must be recorded before the transaction is confirmed.
- e Customer details are only recorded if the title chosen is available.

