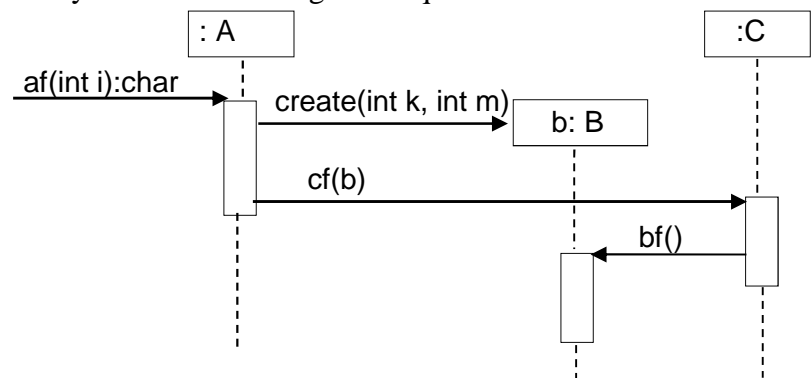


QUESTION 1:

a) Draw the UML class diagram of the system that has the given sequential interaction diagram on the right.

b) What kind of visibilities exists among these classes?

c) Re-design the classes A,B and C by taking the “low coupling” pattern into account and draw the UML sequential diagram again.



QUESTION 2:

A class X, to fulfill its responsibility r(), gets service from (sends message m() to) class A. There is a possibility, that in the future class A can be replaced by class B, which has a different interface. Class A will be completely removed from the system and class B will be used instead of it. It is not possible to use more than one class at the same time to get the service.

- Design this part of the system according to design principles and patterns. Draw the class diagram and mention the principles and patterns used in this solution.
- Is the polymorphism necessary for this solution? Explain shortly.
- Assume that Class A will not be removed from the system and class X will get the same service sometimes from class A and sometimes from B. In the future a new class C can also be added to the system. Design this part of the system, draw the class diagram and mention the principles and patterns used in this solution.

QUESTION 3:

The advice proposed by the creator pattern of GRASP is that “Assign class B the responsibility to create an instance of class A if B has the initializing data that will be passed to A when it is created”.

- Show an exemplary case where this advice of the creator pattern contradicts to other principles and patterns.
- Show how the system should be designed in such a case by drawing a UML communication diagram.