Instructions: All Questions are based on the following case study.

SomeWeirdCompany Inc. is trying to break into the note taking market by bringing a new offering. They will allow users to take notes on their application, which has a mobile version, a web version as well as a version where notes can be added via sending an SMS to a particular number. A user can use their application on multiple devices, and it is expected that the notes will be synchronised in pseudo real time.

Apart from taking notes, users can also share notes with other users, either by browsing the application user directory, or by adding collaborators from other applications. Initially only Facebook will be supported, but there are plans to include Google, Instagram and other 3rd party applications in the future. The application design must support these future additions. Notes can be shared in view mode and edit mode. Notes shared in view mode can only be seen by collaborators, whereas in edit mode the same note can be edited by the creator as well as collaborators.

Note contents can be text, images, videos, sound clips, URLs and other future types. Content may be nested at arbitrary levels. Actions, i.e. hiding, showing, marked as important, underline, italicising etc., can be done at a level of individual content, as well as in a hierarchical manner.

It is also desirable that actions should also be undoable, in a LIFO manner.

North South University

Department of Electrical and Computer Engineering

CSE327 - Software Engineering

Final, Summer 2018 (Special Early Exam)

Total Marks - 40, Time - 1 hour

Name:	
Student ID:	
Section:	
Date:	

Assessment of Course Outcomes

Sl.	CO Description	Question#
CO3	**Choose** an appropriate design pattern for a particular scenario to solve the problem.	**2,3**
CO5	**Devise** test cases to test functions and/or functionality of software system against a set of requirements	**4**

Questions:

Q1. Draw a use case diagram of the system for the *user* actor. (10)

Q2a. What design pattern(s) will you use to design the hierarchical structure and behaviour of note contents described in lines 17-21? Choose a maximum of three patterns (working together) for your solution. (4)

Q2b. Draw a high-level UML class diagram depicting the design of the hierarchical structure and behaviour of note contents described in lines 17-21. Your design must incorporate the patterns you mentioned for the answer to question 2a. (6)

Q3a. What design pattern(s) will you use to design the functionality to undo Actions as mentioned in line 23.Choose a maximum of three patterns (working together) for your solution. (4)

Q3b. Draw a high-level UML class diagram of depicting the design of the functionality to undo actions as mentioned in line 23. Your design must incorporate the patterns you mentioned for the answer to question 3a and has to be consistent with the design done for 2(b). (6)

Q4. Given the following code snippet: (10)

```
Class SoundClipUploadController {

    /* Only sound clips recorded at a bitrate of 16000 or higher
    will be kept. Others will be discarded */
    public boolean isSoundClipValid( SoundClip clip ) {

        If ( clip.getBitRate() < 160000 )
        {
            return true;
        }
        return false;
    }
}
```

Write down test cases and their corresponding expected behaviour to thoroughly test the method *isSoundClipValid.* Assume that the behaviour outlined in the comments is correct.