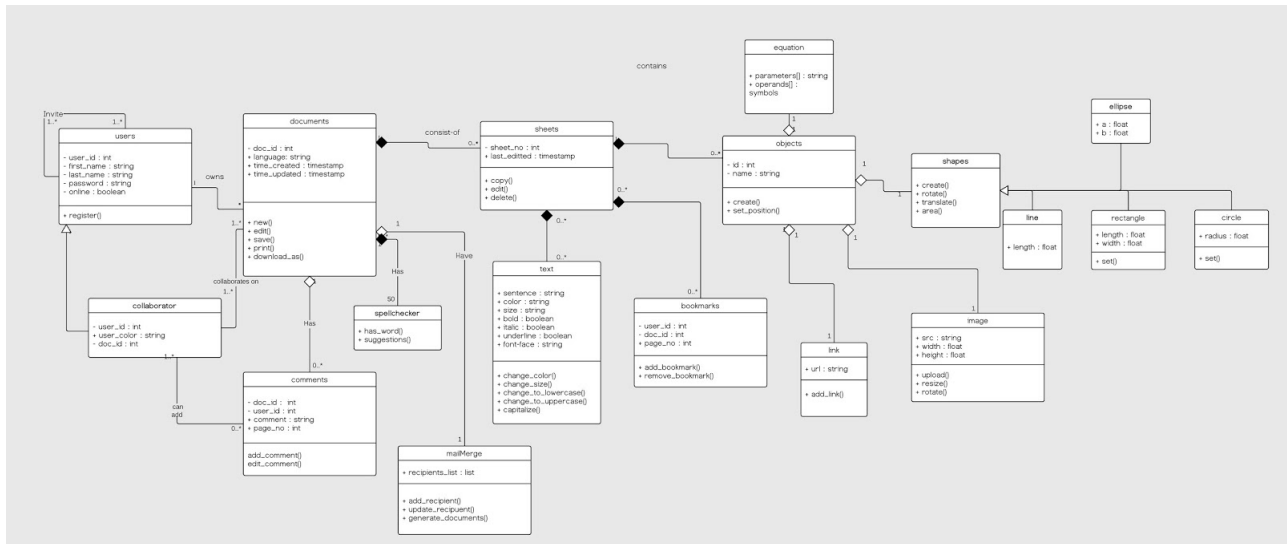# Ssad Assignment 4
Shrenik Jain(201403006), Vishal Gupta(201403010)

Tool used: draw.io, lucidchart

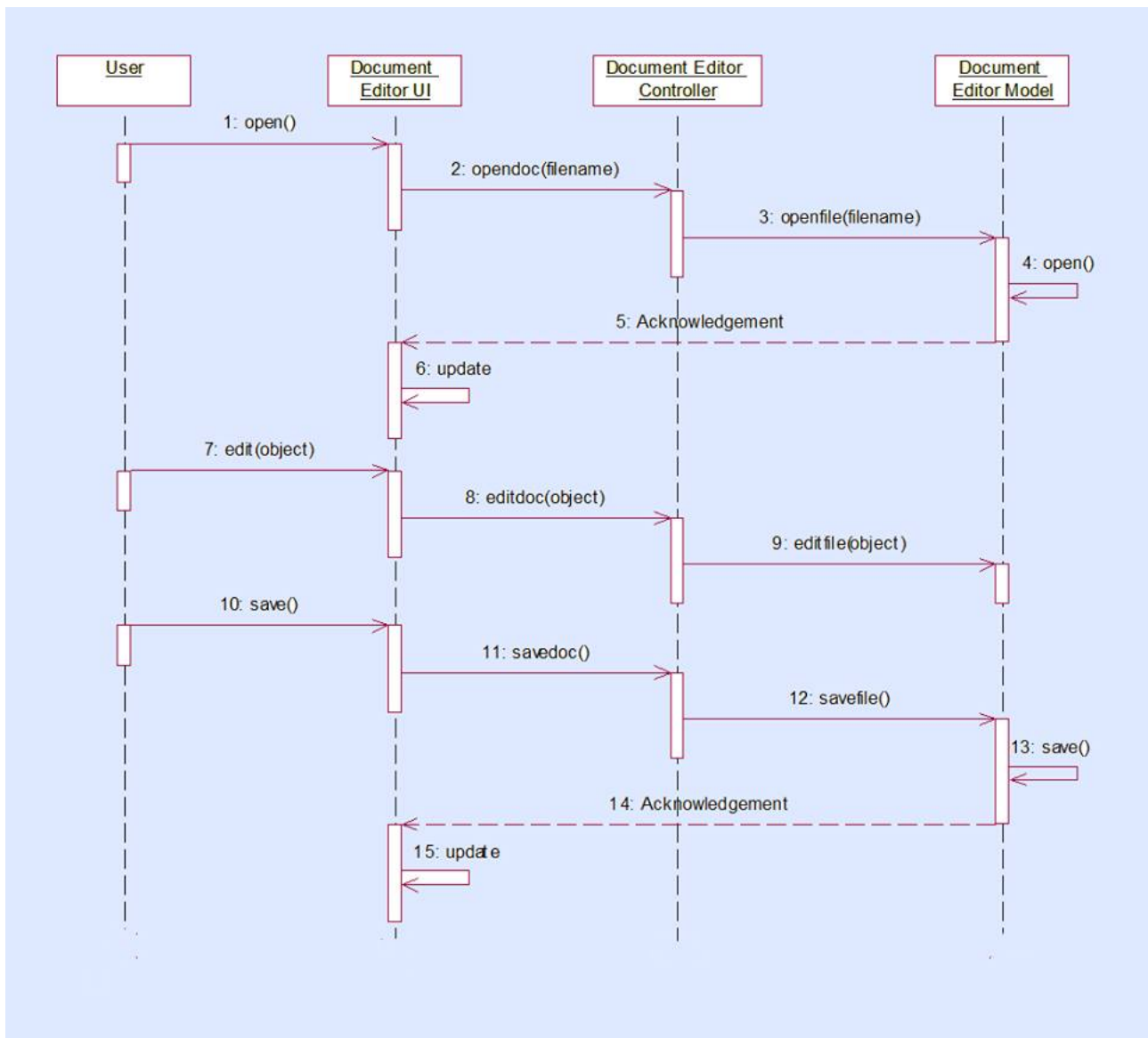**Class Description**

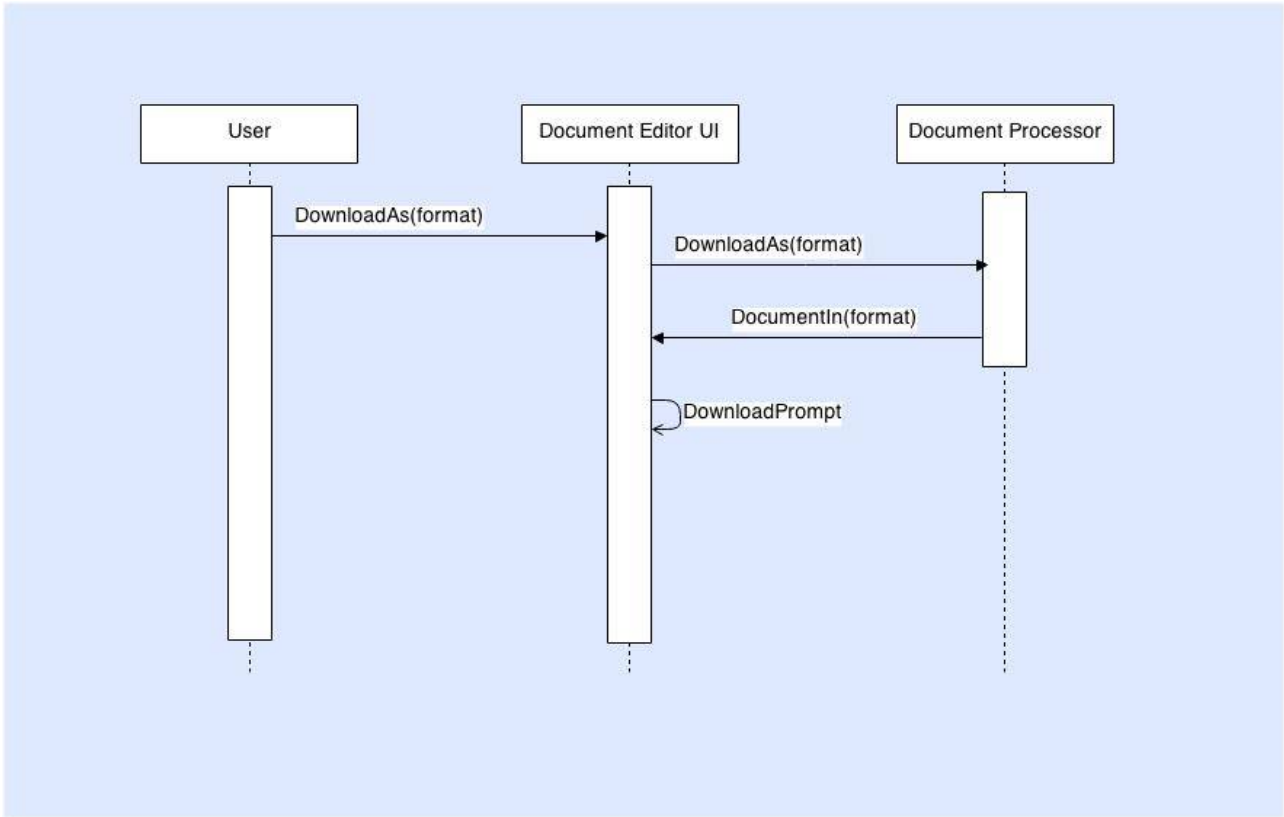| Class	Responsibility
User	A user of the online word processor. He can be the owner of one or more documents on the online word processor.
Collaborator	A particular user who is collabrating on a particular document. He is provided a unique colour from the other collaborators.
Documents	The document to be worked upon by the collaborators and the owner.
Sheets	The individual sheets which the document contains.
Objects	The document may contain objects like shapes,links,images etc.
Shapes	The document may contain shapes like circle, rectangle etc.
Circle	Used to draw a circle of given radius.
Rectangle	Used to draw rectangle of given length and height.
Line	Used to draw line of specified length.
Ellipse	Used to draw ellipse given the length of major and minor axes.
Text	The text section of the sheet where all the textual data is written which can be edited.
Mail Merge	It is used to implement the mail merge facility in the editor.
Comments	A collaborator and owner can comment on a document.
SpellChecker	The spell checker facility check the spelling errors of 50 languages.
Bookmark	A bookmark can be made on the document.
Link	Used to create a link in the document.
Image	Used to insert an image.
Equation	Includes an equation in the document.

Class Diagram

equation
+ parameters[] : string
+ operands[] :
symbols

ellipse
+ a : float
+ b : float

users
- user_id : int
- first_name : string
- last_name : string
- password : string
- online : boolean
+ register()

documents
- doc_id : int
- language: string
+ time_created : timestamp
+ time_updated : timestamp
+ new()
+ edit()
+ save()
+ print()
+ download_as()

sheets
- sheet_no : int
+ last_editted : timestamp
+ copy()
+ edit()
+ delete()

objects
- id : int
- name : string
+ create()
+ set_position()

shapes
+ create()
+ rotate()
+ translate()
+ area()

line
+ length : float

rectangle
+ length : float
+ width : float
+ set()

circle
+ radius : float
+ set()

collaborator
- user_id : int
+ user_color : string
- doc_id : int

spellchecker
+ has_word()
+ suggestions()

text
+ sentence : string
+ color : string
+ size : string
+ bold : boolean
+ italic : boolean
+ underline : boolean
+ font-face : string
+ change_color()
+ change_size()
+ change_to_lowercase()
+ change_to_uppercase()
+ capitalize()

bookmarks
- user_id : int
- doc_id : int
+ page_no : int
+ add_bookmark()
+ remove_bookmark()

link
+ url : string
+ add_link()

image
+ src : string
+ width : float
+ height : float
+ upload()
+ resize()
+ rotate()

comments
- doc_id : int
- user_id : int
+ comment : string
+ page_no : int
add_comment()
edit_comment()

mailMerge
+ recipients_list : list
+ add_recipient()
+ update_recipient()
+ generate_documents()

Relationships / labels: contains, Invite, owns, consist-of, collaborates on, Has, Have, can add, 1..*, 0..*, 50, 1
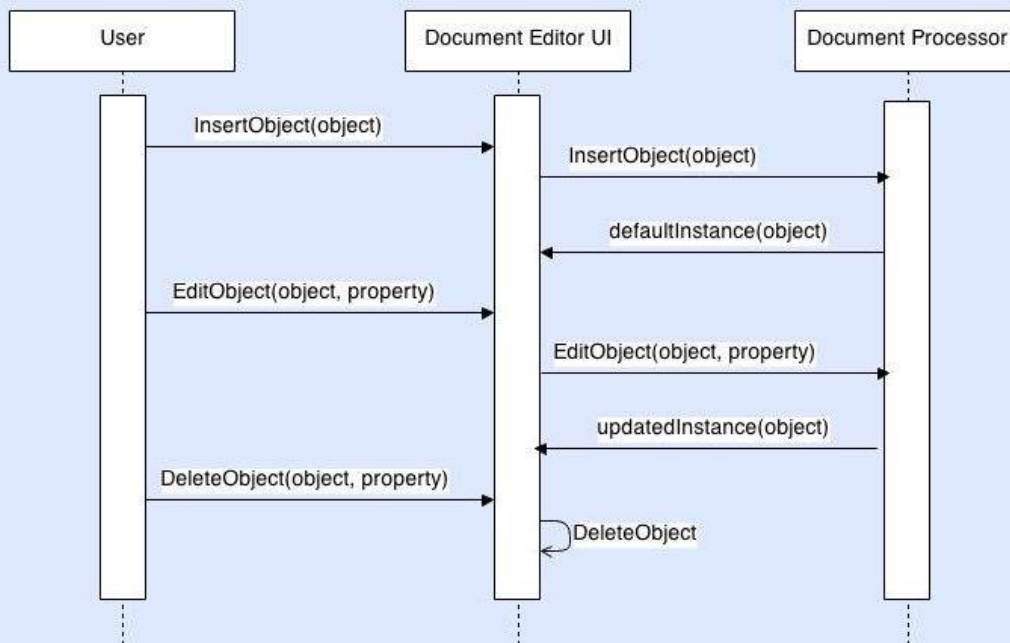
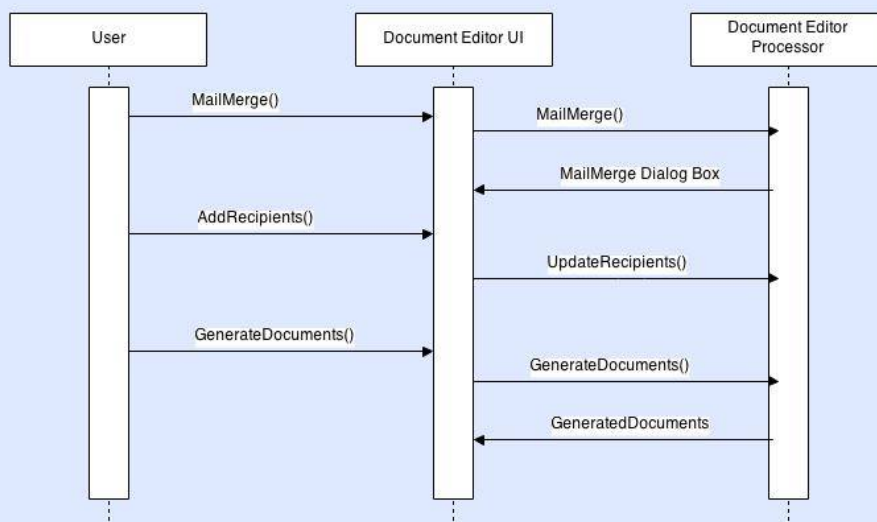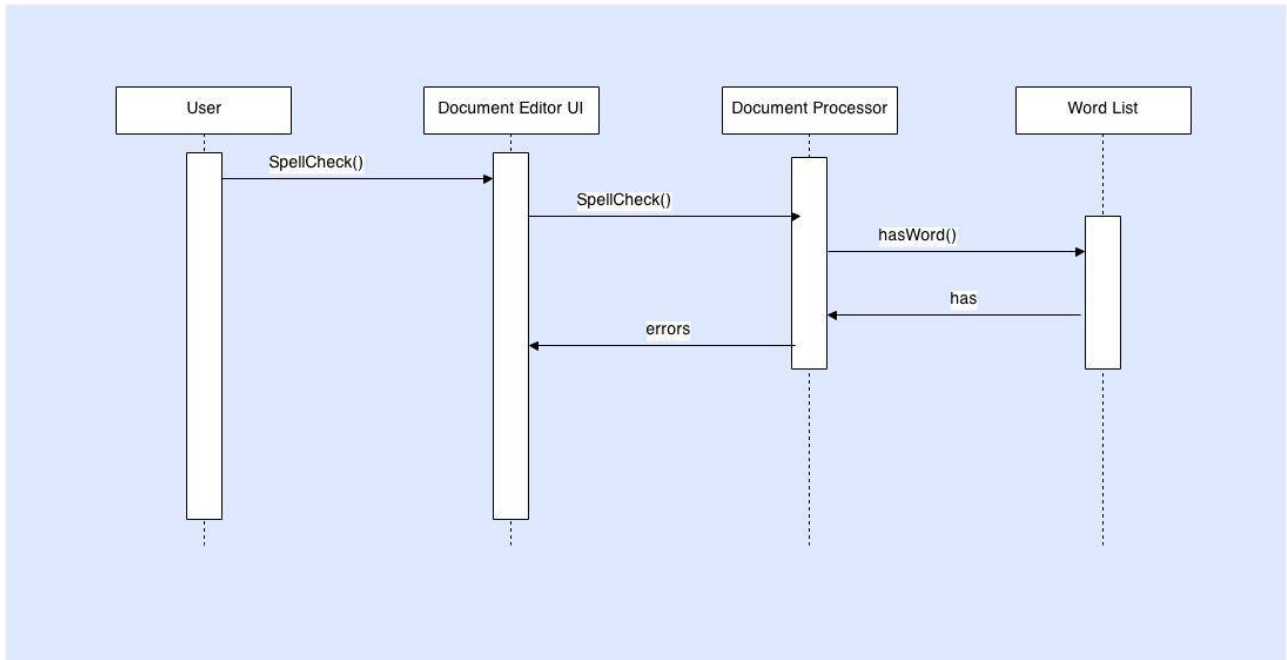# Sequence Diagrams

1.Edit document

2. Export

3. Insert an object

4. Mail Merge

5. Spell-Checker

Discussion Of Design Pattern:

1. This design has the two most important properties of a good design- Low Coupling and high Cohesion. One class is maximum dependent on two classes- therefore coupling is low. Also, each class has functions which are related to that class only- therefore cohesion is high.
2. Information hiding is implemented as a lot of data members are private, thus hiding unnecessary data.
3. Classes are quite general - therefore design is pretty much extensible.
4. Reusability is also implemented as there are different functions. Therefore, we need not write the same lines of code again and again while implementing the design. A function call would be enough.

Strong Points

1. The design is extensive as in covers all the aspects required for the application of Online Word Processor.
2. The design takes care of aspects like coupling, cohesion, inheritance.

Weak Points

1. The class Document has a greater number of member functions and data members than advised theoretically.
2. Another weak point pertaining to the design is the lack of adequate inherited classes as there are classes that do have common attributes and have some logical derivation whose advantage can be taken.