CS 280
Spring 2023
Recitation Assignment 9
April 20, 2023

Due Date: Monday, April 24, 2023, 23:59
Total Points: 5

A Publishing House publishes stories in three categories and has strict requirements for page counts in each one. Create an **abstract class** called *Story*, which has the following data members: story title (`title`), author name (`author`), number of pages (`pages`), type of story book (`type`), and a string message (`msg`). Include get and set member functions for each field. Follow the naming convention for the setter and getter functions for each data member, such as `setTilte(), getTitle()`, etc. The Story abstract class has a constructor that accepts the type of story book as a parameter to initialize its type field. The type of story books considered are Novel, Novella and Short Story. The function that sets the number of pages (`setPages()`) is abstract. The `setPages()` function accepts one parameter for the number of words per page.

Create three *Story* subclasses called *Novel, Novella,* and *ShortStory*. The three child classes represent three types of stories, each with a specific page requirement. Each subclass has extra data members as constants for the page lower and upper limits in that category, and an extra data member for the number of words in the book. For the *Novel* subclass, the lower limit of pages is 101. For the *Novella* subclass, the lower limit is 51 pages and the upper limit is 100. For the *ShortStory*, the lower limit is 5 and the upper limit is 50 pages. Include a constructor for each subclass that may be passed two parameters for initializing the number of words in the book and the type of story book; and include get and set member functions for the subclass data member. The `setPages()` member function should compute the possible number of pages in the book based on the number of words and the number of words per page passed as a parameter. The function should check whether the candidate book needs to be cut by a certain number of pages, or added certain number of pages to qualify for the type of story requirement. Otherwise, the book would be accepted. Accordingly, the function sets the `msg` data member with the required message to be used for display. See the example below for the format and contents of the messages.

Implement each class in a separate header file that carries the class's name, such as: "Story.h", "Novel.h", etc.

Vocareum Automatic Grading
- Upload your class implementation files to Vocareum.
- The driver program "RA9prog.cpp" will be used to test your implementations. The program reads book information from a file and displays the list of candidate books along with possible messages to adjust the book to the book category requirement. An example of the expected output is shown below.

```
List of candidate story books to be published:
1. Title: Goodbye Columbus
Author:  Philip Roth
Pages: 47
Story Category: Novella
Pages must be added to the book to satisfy the requirements of a
Novella: 4

2. Title: The Pit and the Pendulum
Author:  Edgar Allan Poe
Pages: 31
Story Category: Short Story
Book is accepted.
.    .    .    .
4. Title: Of Mice and Men
Author:  John Steinbeck
Pages: 107
Story Category: Novella
Pages must be cut from the book to satisfy the requirements of
a Novella: 7

5. Title: Breakfast at Tiffany's
Author:  Truman Capote
Pages: 120
Story Category: Novel
Book is accepted.
.    .    .    .
```

Submission Guidelines

- Please upload your implementations to Vocareum in separate files one for each class, such as: "Story.h", "Novel.h", etc.
- **Submissions after the due date are accepted with a fixed penalty of 25%. No submission is accepted after Wednesday 11:59 pm, April 26, 2023.**

Grading Table

Item	Points
Compiles Successfully	1
Implementation of Classes	4
Total	5