BONUS ACTIVITY
+3 POINTS

In the first part, you will develop a Student Engagement application (with **NO database**). This application is very similar to the one you have developed for the lab assignment of Module 9. The **user interface is already created**. Please download the zipped project file provided and use it to develop your application.

Users will be able to add two types of engagement: Reading and Video. Both engagement types have id and name properties in common. The engagement is measured with different indicators depending on the type. These indicators for each engagement type is listed below:
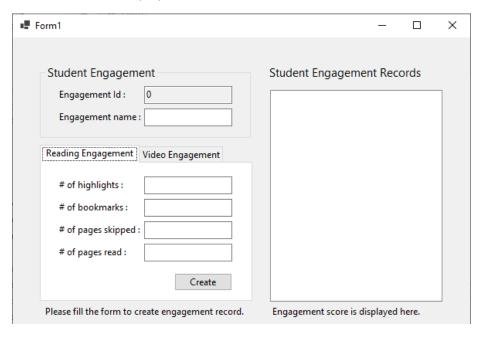
Reading Engagement:

- Number of highlights,
- Number of bookmarks,
- Number of pages read,
- Number of pages skipped.

Video Engagement:

- Number of pauses,
- Number of plays,
- Minutes skipped (in seconds),
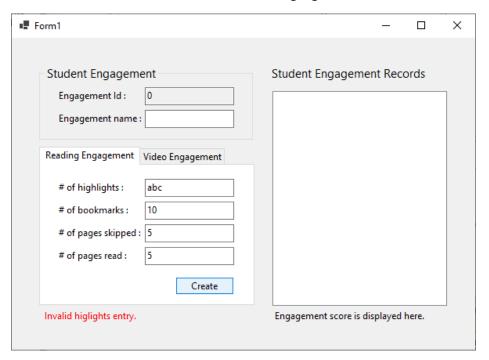- Minutes watched (in seconds).

You are supposed to create **three** classes and apply the **INHERETINCE** concept. As shown below, the users should be able to create reading or video engagement records through different tab pages. Engagement records should be displayed in the list box.
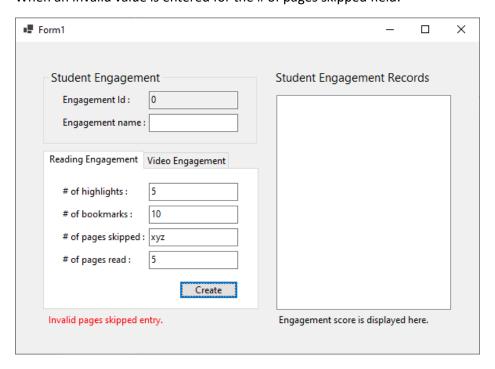
Error Handling

When a non-numeric value is entered in any of the fields, an error message should be displayed to inform the user about which field has an invalid entry. Below are two examples. <u>You have implemented a similar functionality for the lab assignment of Module 4.</u>

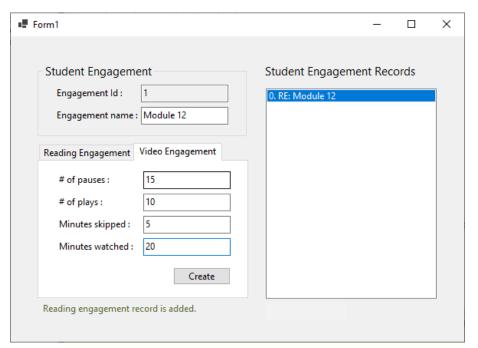When an invalid value is entered for the # of highlights field:

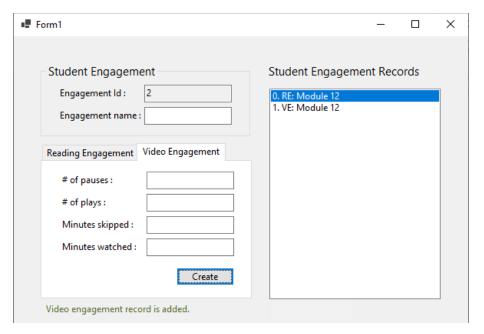When an invalid value is entered for the # of pages skipped field:

Adding and listing new records

Once valid values are provided, the user should be able to create a new engagement record. The screen below shows a screen when entering values for a new video engagement record. All existing engagement records should be displayed in the listbox.

After the Create button is clicked, the newly added record should be displayed in the list box immediately:

Please pay attention to the display text when items are listed. RE or VE are added between the engagement id and name. RE indicates it is a reading engagement, VE indicates it is a video engagement. We have done something quite similar in the in-class exercises of Module 9.

Calculating the engagement scores

An engagement score should be computed based on the engagement indicators. The formula for this calculation is different for each engagement type. The formulas are provided below:

Reading Engagement:

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(# of Highlights + #  of Pages Read + # of Bookmarks) / (# of Pages Skipped + 1);
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Video Engagement:

```
(Minutes Watched + # of Pauses + # of Plays) / (Minutes Skipped + 1);
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When a single item is selected from the list, whether it is a Reading Engagement or Video Engagement, the correct formula should be applied. <u>We have done something very similar in the in-class and lab assignment of Module 9</u>.

For example, in the screen below, the engagement score for the second item is shown under the list box.