RasterGraphic in C++ using Container Classes and Overloaded Operators

Purpose: This is a development of the addition of a two ready-made container class templates and overloaded operators. It works in a very similar way. It is a console application that holds the GraphicElements of an RasterGraphic application (there is no actual graphics in this project) using a `forward_list` class template of unspecified length in dynamic memory. The `forward_list` is a container class that supports fast insertion and removal of elements and is implemented as a singly-linked list.
In addition a GraphicElement now has set of Image objects associated with it. You can think of them as the separate graphical components of a GraphicElement that combine the make the complete image (– they might be green/blue-screen overlays as in chroma keying). A Image object holds the pixel location that it is to be overlayed in the GraphicElement and also the duration for which it should be Imaged. The set of Image objects is held in a `vector` , another common container class template, more flexible but not (for some applications) as fast the forward list which is designed to be minimal. In addition the `string` class is used to hold strings. A `string` is essentially a vector of `char`s.

The RasterGraphic is a series of GraphicElements held in a `forward_list`. Each GraphicElement holds its list of Image objects in a `vector`. An Image object contains its Image time which is set by the user - therefore the fixed GraphicElement Image time of 1 second that was used in previous assignments is gone and is replaced by the individual Image times that the user specifies. You can:

- Add a new GraphicElement to the RasterGraphic at a position in the forward list selected by the user
- Delete the first GraphicElement in the RasterGraphic
- Run the RasterGraphic to show the list of Image details of each GraphicElement one after another at the Image intervals specified by the user when the Image was entered – note that the output counts up the seconds
- concatenate two GraphicElements to make a single GraphicElement with combined Images that is automatically added to the start of the `forward_list`
- Quit

Example Output

```
MENU
 1. Insert a GraphicEleme
 2. Delete the first GraphicElemen
 3. Concatenate two GraphicElemen
 4. Run the RasterGraph
 5. Qu

1
Insert a GraphicElement in the RasterGraphic
Please enter the GraphicElement filename: Graphic_Element_1
Entering the GraphicElement Images (the sets of dimensions and durations)
Please enter the number of Images: 2
Please enter pixel x for Image #0 pixel_x:0
Please enter pixel y for Image #0 pixel_y:0
Please enter the duration sec for this Image: 2
Please enter the name for this Image: Image_1
Please enter pixel x for Image #1 pixel_x:8
Please enter pixel y for Image #1 pixel_y:16
Please enter the duration sec for this Image: 3
Please enter the name for this Image: Image_2
This is the first GraphicElement in the list

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1
Insert a GraphicElement in the RasterGraphic
Please enter the GraphicElement filename: Graphic_Element_2
```

```
Entering the GraphicElement Images (the sets of dimensions and durations)
Please enter the number of Images: 1
Please enter pixel x for Image #0 pixel_x:64
Please enter pixel y for Image #0 pixel_y:128
Please enter the duration sec for this Image: 2
Please enter the name for this Image: Image_3

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4
RasterGraphic A
Run the RasterGraphic
GraphicElement #0:
        fileName = Graphic_Element_1
        Image #0:       name = Image_1; pixel_x = 0; pixel_y = 0; duration =  2
        Counting the seconds for this Image: 1, 2,
        Image #1:       name = Image_2; pixel_x = 8; pixel_y = 16; duration =  3
        Counting the seconds for this Image: 1, 2, 3,
GraphicElement #1:
        fileName = Graphic_Element_2
        Image #0:       name = Image_3; pixel_x = 64; pixel_y = 128; duration =
        Counting the seconds for this Image: 1, 2,

Output finished

MENU
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1
Insert a GraphicElement in the RasterGraphic
Please enter the GraphicElement filename: Graphic_Element_3
Entering the GraphicElement Images (the sets of dimensions and durations)
Please enter the number of Images: 3
Please enter pixel x for Image #0 pixel_x:1
Please enter pixel y for Image #0 pixel_y:2
Please enter the duration sec for this Image: 3
Please enter the name for this Image: Image_4
Please enter pixel x for Image #1 pixel_x:4
Please enter pixel y for Image #1 pixel_y:5
Please enter the duration sec for this Image: 6
Please enter the name for this Image: Image_5
Please enter pixel x for Image #2 pixel_x:6
Please enter pixel y for Image #2 pixel_y:7
Please enter the duration sec for this Image: 8
Please enter the name for this Image: Image_6
There are 2 GraphicElement(s) in the list
Please specify the position, between 0 and 1 to insert after : 0

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4
RasterGraphic A
Run the RasterGraphic
GraphicElement #0:
        fileName = Graphic_Element_1
        Image #0:       name = Image_1; pixel_x = 0; pixel_y = 0; duration =  2
        Counting the seconds for this Image: 1, 2,
        Image #1:       name = Image_2; pixel_x = 8; pixel_y = 16; duration =  3
        Counting the seconds for this Image: 1, 2, 3,
GraphicElement #1:
        fileName = Graphic_Element_3
        Image #0:       name = Image_4; pixel_x = 1; pixel_y = 2; duration =  3
        Counting the seconds for this Image: 1, 2, 3,
        Image #1:       name = Image_5; pixel_x = 4; pixel_y = 5; duration =  6
        Counting
        Image #2:       name = Image_6; pixel_x = 6; pixel_y = 7; dura
        Counting                this Im
GraphicElement #2:
        fileName = Graphic_Element_2
        Image #0:       name = Image_3; pixel_x = 64; pixel_y = 128; duration =
        Counting the seconds for this Image: 1, 2,

Output finished

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```

```
3
Concatenating two GraphicElements
Please enter valid indexes of the two GraphicElements to concatenate (0 to 2)
2
0

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4
RasterGraphic A
Run the RasterGraphic
GraphicElement #0:
        fileName = Graphic_Element_2_Graphic_Element_1
        Image #0:       name = Image_3; pixel_x = 64; pixel_y = 128; duration =  2
        Counting the seconds for this Image: 1, 2,
        Image #1:       name = Image_1; pixel_x = 0; pixel_y = 0; duration =  2
        Counting the seconds for this Image: 1, 2,
        Image #2:       name = Image_2; pixel_x = 8; pixel_y = 16; duration =  3
        Counting the seconds for this Image: 1, 2, 3,
GraphicElement #1:
        fileName = Graphic_Element_1
        Image #0:       name = Image_1; pixel_x = 0; pixel_y = 0; duration =  2
        Counting the seconds for this Image: 1, 2,
        Image #1:       name = Image_2; pixel_x = 8; pixel_y = 16; duration =  3
        Counting the seconds for this Image: 1, 2, 3,
GraphicElement #2:
        fileName = Graphic_Element_3
        Image #0:       name = Image_4; pixel_x = 1; pixel_y = 2; duration =  3
        Counting the seconds for this Image: 1, 2, 3,
        Image #1:       name = Image_5; pixel_x = 4; pixel_y = 5; duration =  6
        Counting
        Image #2:       name = Image_6; pixel_x = 6; pixel_y = 7; dura
        Counting
GraphicElement #3:
        fileName = Graphic_Element_2
        Image #0:       name = Image_3; pixel_x = 64; pixel_y = 128; duration =
        Counting the seconds for this Image: 1, 2,

Output finished

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2
Delete the first GraphicElement from the RasterGraphic
GraphicElement deleted

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4
RasterGraphic A
Run the RasterGraphic
GraphicElement #0:
        fileName = Graphic_Element_1
        Image #0:       name = Image_1; pixel_x = 0; pixel_y = 0; duration =  2
        Counting the seconds for this Image: 1, 2,
        Image #1:       name = Image_2; pixel_x = 8; pixel_y = 16; duration =  3
        Counting the seconds for this Image: 1, 2, 3,
GraphicElement #1:
        fileName = Graphic_Element_3
        Image #0:       name = Image_4; pixel_x = 1; pixel_y = 2; duration =  3
        Counting the seconds for this Image: 1, 2, 3,
        Image #1:       name = Image_5; pixel_x = 4; pixel_y = 5; duration =  6
        Counting
        Image #2:       name         6; pixel_x = 6; pixel_y = 7; duration =  8
        Counting
GraphicElement #2:
        fileName = Graphic_Element_2
        Image #0:       name = Image_3; pixel_x = 64; pixel_y = 128; duration =
        Counting the seconds for this Image: 1, 2,

Output finished

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