Department of Computer Science
University of Massachusetts Lowell
COMP.4270/5460
Spring 2022

Programming Project [25 points]
Handed out on 2/9/2022
Due on 4/27/2022

Shape Editor

Implement a 2d-shape editor to support following shapes:

- Line
- Triangle
- Square
- Rectangle
- Circle
- Ellipse
- Curve
- Poly-line
- Polygon

It should be possible to do following operations:

- New – to clear and start a new diagram [should provide Save option if "dirty"]
- Selection
- Translation
- Scaling
- Rotation
- Unlimited Undo – via Undo button and ctrl-z
- copy object(s) via Copy button and ctrl-c
- paste object(s) via Paste button and ctrl-v
- Save diagram to file—JSON format
- Load diagram from file—JSON format
- Save as image—JPEG format
- Support multiple thickness
- Support multiple color

The editor should not limit the number of shapes drawn in a canvas. Design appropriate menus/selection mechanisms to support different shapes. Interaction should be intuitive and user friendly.

You may use an Editor such as the Chrome extension Gliffy (https://www.gliffy.com) as the basis for your implementation.

You can use any open source API for certain aspects of the project [eg. save as image, export as pdf, etc.] but will need to document it with full information.

Extra Credit

- [SMALL] Multi-select
- [SMALL] grouping objects and select

- [MEDIUM] operations on group as a whole
- [SMALL] Draw grid
- [SMALL] Snap to grid
- [SMALL] text
- [SMALL] zoom in/zoom out
- [SMALL] pan/scrollbar
- [SMALL] Additional shape families
- Export as pdf
- Export as Latex
- Clipboard copy-paste support
- etc

Deliverables

- Source files
- Sample Input/output
- 1-2 page report : Write about issues faced, lessons learned, any remaining bugs etc.

Deadline and Late Submissions

- The assignment is due on the date specified above at 11:59:59 PM
- Each day late will incur a penalty of 5% of the grade for the assignment; for example, if the assignment is 3 days late, the maximum grade will be 85 out of 100—15 will be subtracted from whatever grade is assigned.