**Sprint review**

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**Story point planned :** 42

**Story point completed :** 41

**Completed user stories at the end of the fourth Sprint:**

[21. Cut Operation](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.4i7ojhp)

### [24. Undo Operation](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.3whwml4)

[25. To the front operation](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.2bn6wsx)

[26. To the back operation](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.qsh70q)

[28. Zoom of the drawing window](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.1pxezwc)

[29. Scrollable drawing surface](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.49x2ik5)

[30. Show or hide grid](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.2p2csry)

[31. Size of the grid](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.147n2zr)

[33. Insert text string](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.23ckvvd)

[34. Size of the characters](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.ihv636)

[35. Rotate a shape](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.32hioqz)

[36. Mirror a shape](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.1hmsyys)

[37. Stretch a shape](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.41mghml)

[47. Grid](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.2p2csry)

[48. Paste menu](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.5y56ahkeesw8)

**Uncompleted user stories at the end of the fourth Sprint:**

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**User stories refused by the Product Owner:**

[32. Insert arbitrary polygon](https://docs.google.com/document/d/13bM1OhyFiVBdkJY-Tx-fIQsGaU55rzri/edit#heading=h.3o7alnk)

* The polygon shape had a few problems interacting with the other functions, of which the worst one was that it would not be saved or copied correctly.

**Solved Technical Debts:**

* D5 - Fix the technical debt related to the management of the input/output of the shapes

**Solved bugs:**

* [B3 - Void color](https://docs.google.com/document/d/1iXihezI4xtZz8B5F7Un1lDz9PH83AQ12/edit#heading=h.ox27slimsot)
* [B4 - Focus over insertion](https://docs.google.com/document/d/1iXihezI4xtZz8B5F7Un1lDz9PH83AQ12/edit#heading=h.pszvpqd4nd0s)
* [B5 - Focus saved on file](https://docs.google.com/document/d/1iXihezI4xtZz8B5F7Un1lDz9PH83AQ12/edit#heading=h.tgb2sdfqe9fr)
* B7 - Stretch after copying a rectangle

**Estimated initial Project Velocity :** 42

**Measured Project Velocity :** 41

**User stories added by the Product Owner in this Sprint:**

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**Technical Debts found in the fourth Sprint:**

* D5 - Fix the technical debt related to the managing of the input/output of the shapes
  + The class FileIO required as parameter of the constructor an ObservableList<ShapeInterface>, which isn’t useful for the meaning of the class and led the instances of this one to be associated with a specific list of shapes.

**Bugs found in the fourth Sprint:**

* B6 - Undo after Load
  + Given that the user has performed some action and then he loads an already existing file, then the list of actions associated with the invoker isn’t cleared.
* B7 - Stretch after copying a rectangle
  + After performing a copy/cut and then paste operation, then the user isn’t able to perform a stretch operation on the pasted rectangle.