

# Splash

Just Another Awesome Paint Program

Abdallah Elerian	2158
Anwar Mohamed	2491
Moataz Hammouda	2403
Yasmine El-Habashi	2083



## 1 Introduction

This paper contains the technical details and user manual for paint project assigned during Programming II Course.

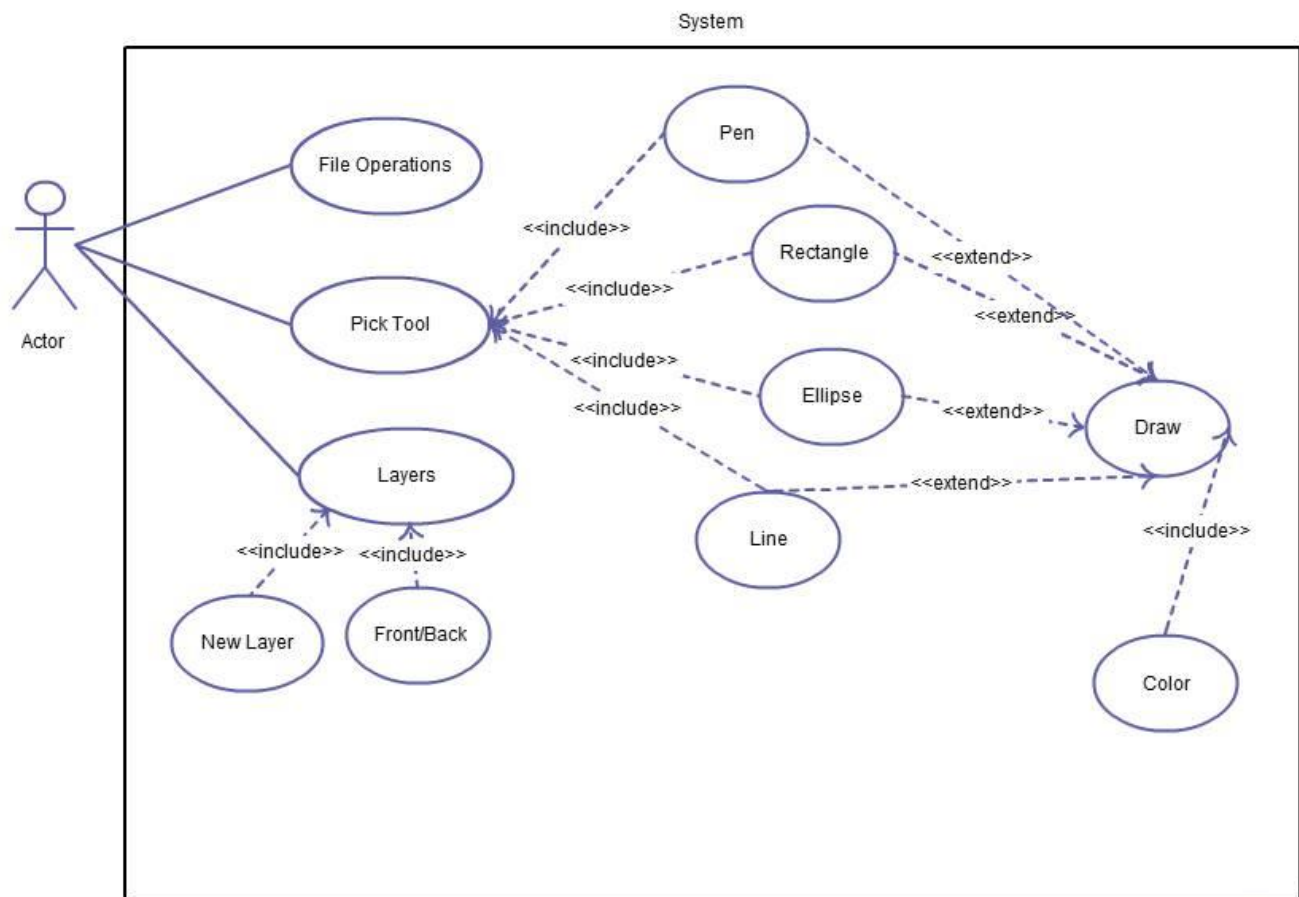
## 2 Getting Started

Splash is an image and photo editing software for PCs that run Java. It features an intuitive and innovative user interface with support for layers, unlimited undo, special effects, and a wide variety of useful and powerful tools.

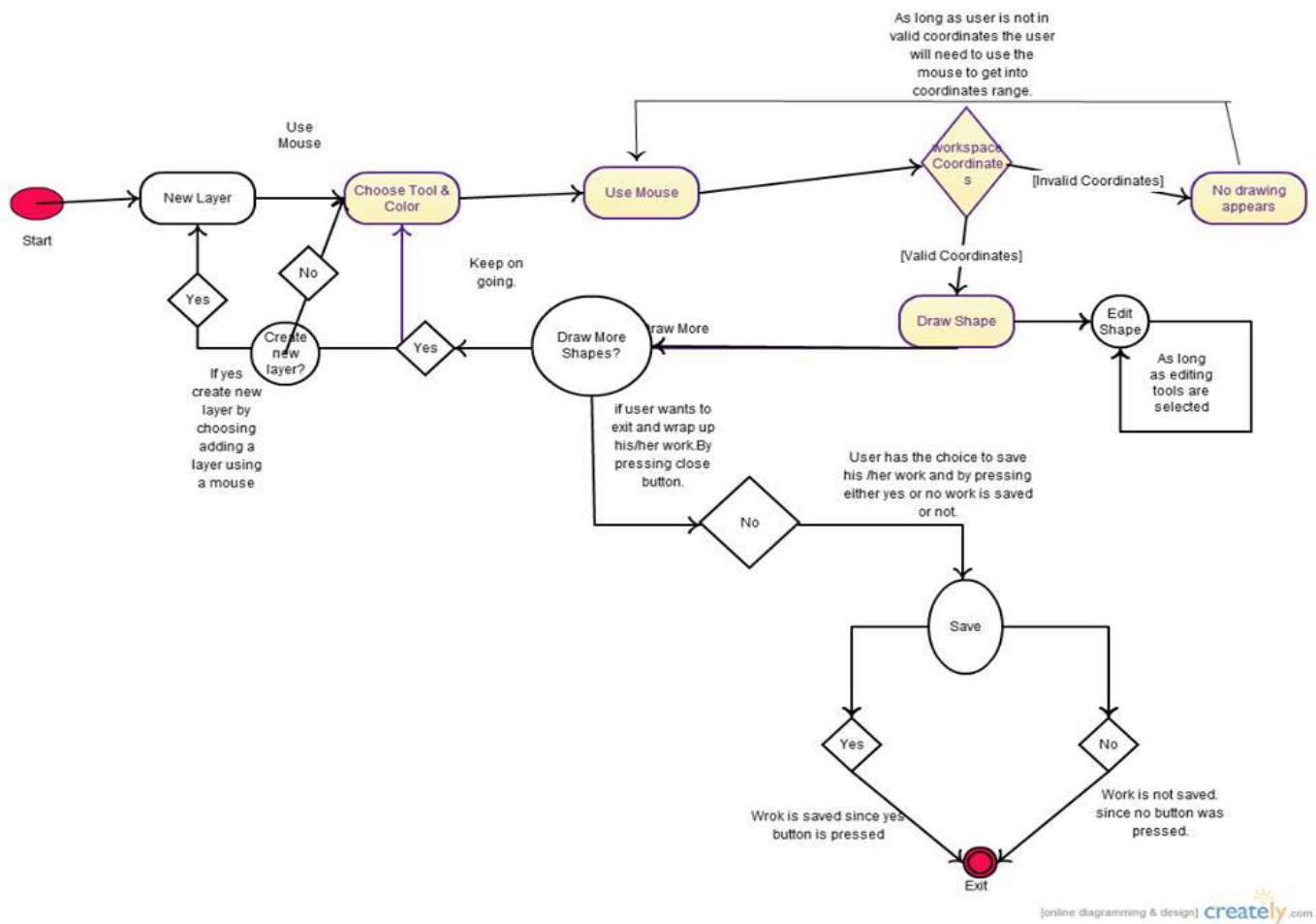


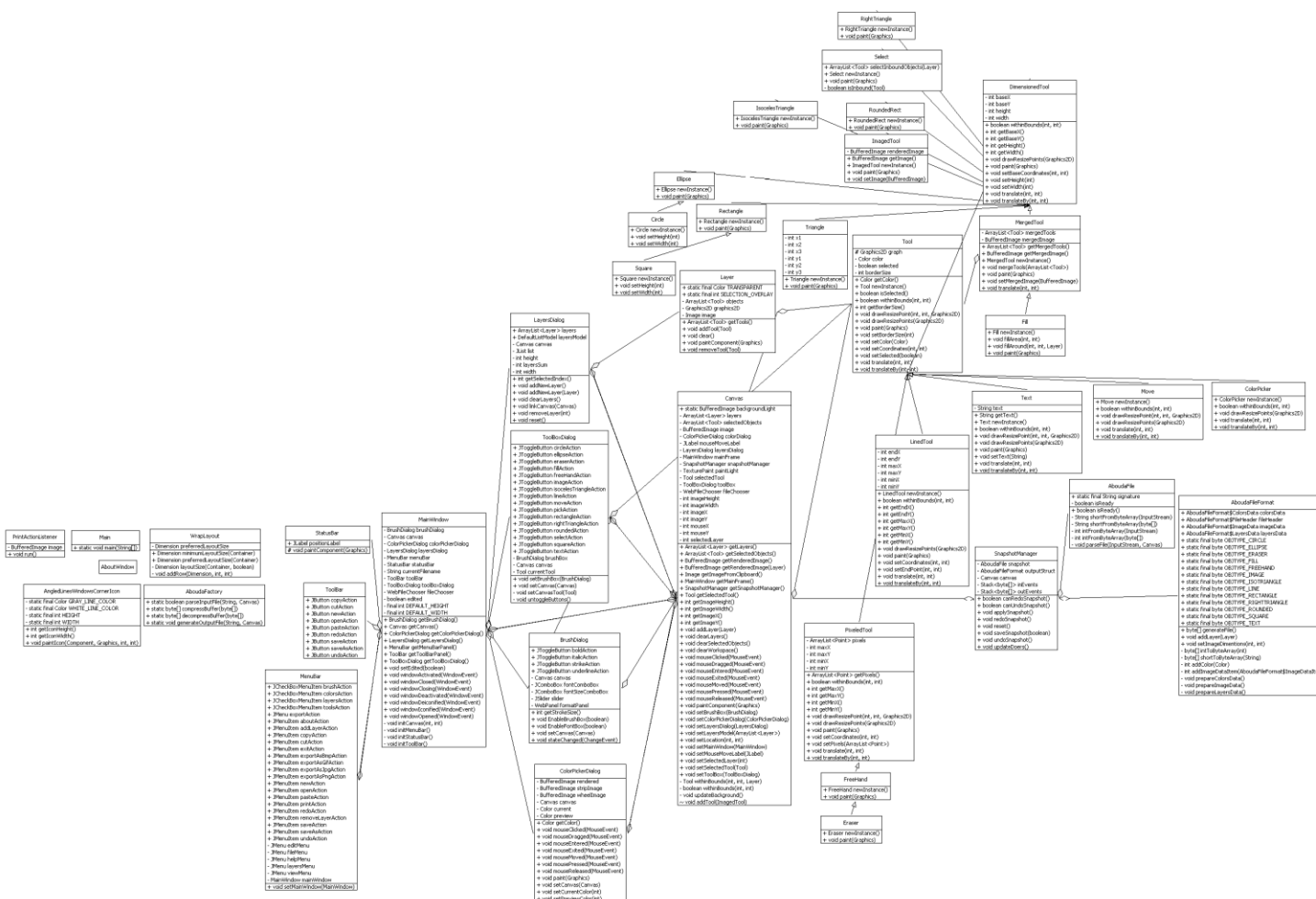
### 3 Sections

- UML Diagrams
  - Use-Case Diagram

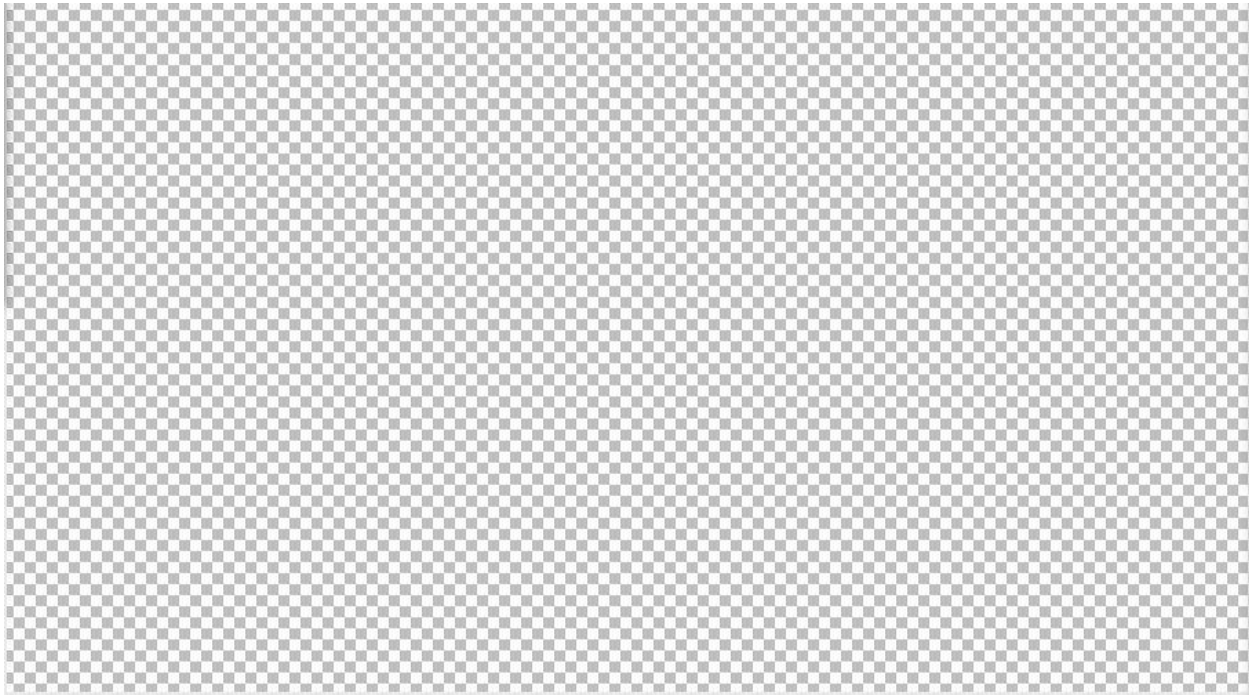


○ State Diagram





- Components
  - Canvas

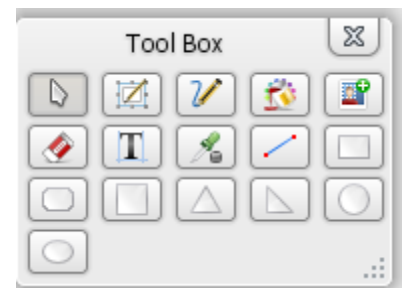


This is the place where all drawing operations are performed, what distinguishes this canvas is that it is transparent and multi-layered.

- Tool Box

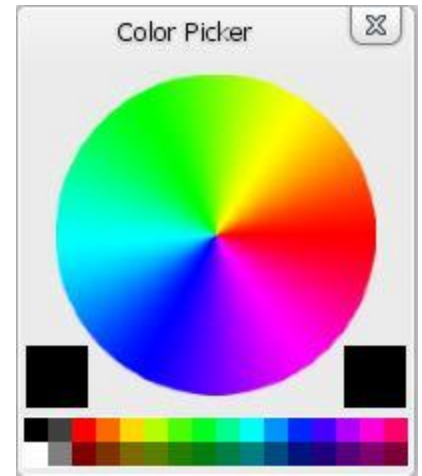
Our toolbox consist of various tools like:

Drawing a rectangle, drawing an ellipse, drawing a triangle, drawing a line, inserting external image, freehand drawing, and Selecting shapes, Filling shapes, Inserting text, Eraser and Picking current color where the cursor stands.



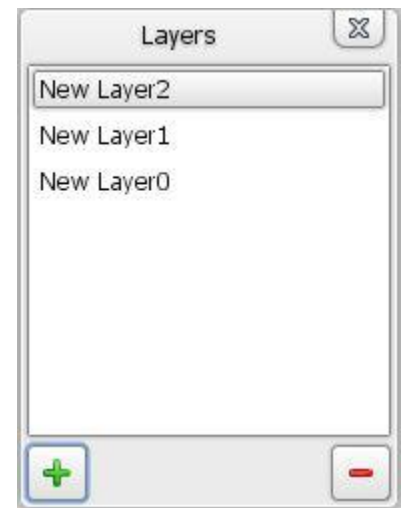
- Color Picker

Our color picker is split in to a color wheel and a color box. Also there is a box to preview current color cursor is above and the other to show current selected color.



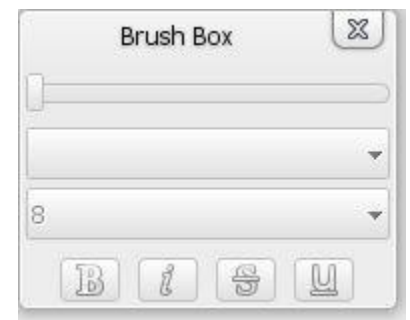
- Layers

It allows the user to draw on more than one layer; if you need to draw multiple levels you can add or remove layers according to your convenience.

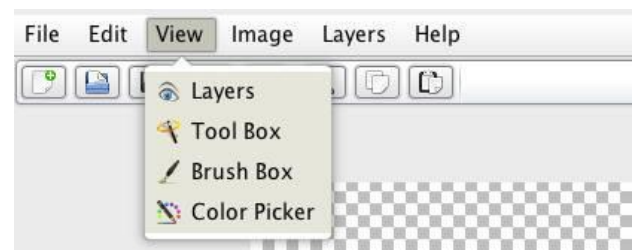


- Brush box

In this box we can control the thickness of each tool, type of font, size of font and font format.



Note: You can control the visibility of all the previous components - except Canvas - by selecting them from "View" menu in the menu bar.

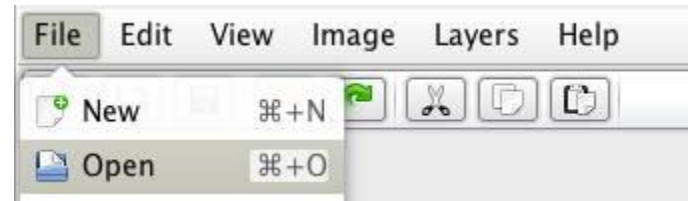


- File Operations

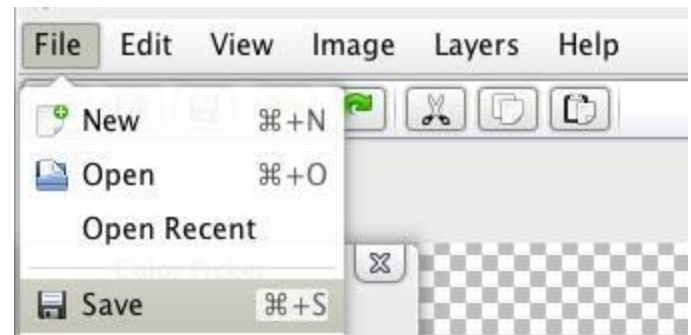
- Creating a new file.



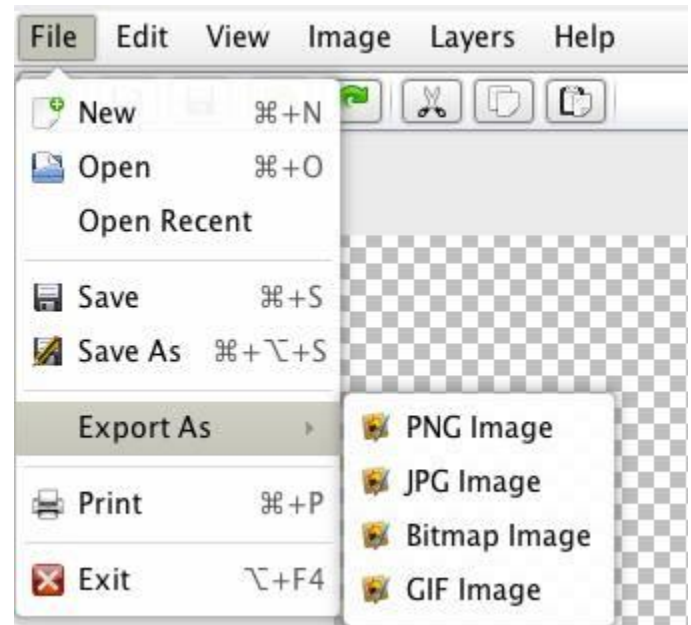
- Opening an existing file.



- Saving file as '.abouda'.



- Exporting file as .png .jpg .bmp .gif

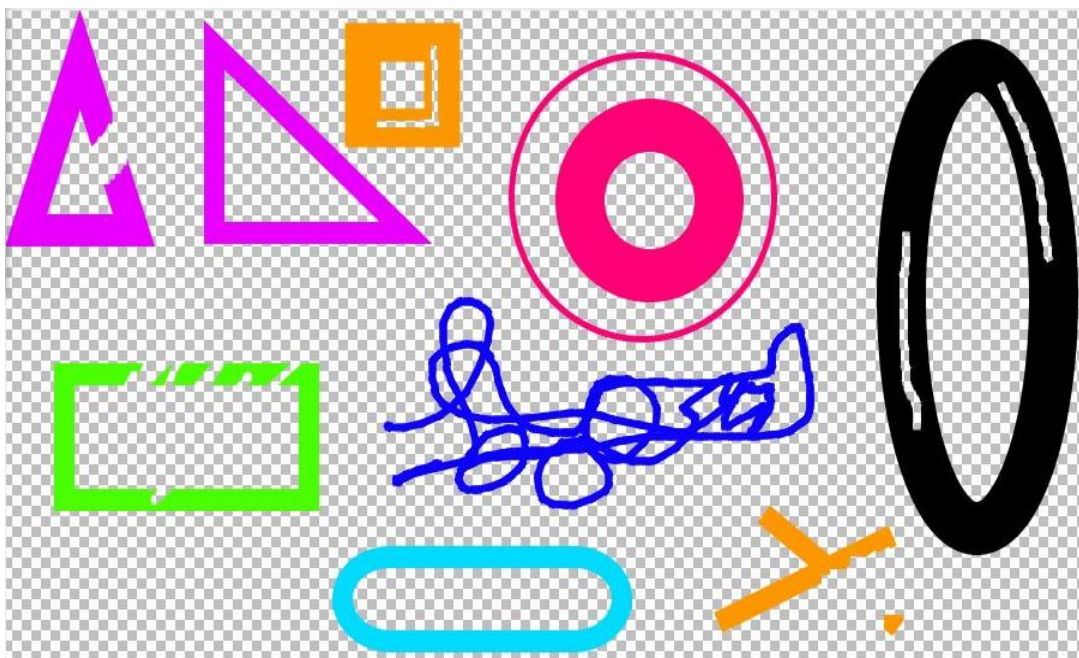


- Printing the output image.





- Canvas Operations



- Selecting Object/s.
- Moving Object/s.
- Resizing an Object.
- Changing Object/s Border Width.
- Changing Object/s Border Color.
- Filling Objects' Intersections.
- Merging Multiple Objects into Single Object.
- Drawing Objects on -/+ve XY co-ordinates.
- Pasting External Image Objects from Clipboard.
- Un/Redo features on drawing/changing Objects.



- **Undo & Redo Mechanism**

We have implemented a structure that manages saving snapshots every time an event occurs for any of the drawn objects. By using 2 stacks we could track every change and had the ability to redo/undo these occurred events.

- **Saved File Structure**

We have realized that saving any drawing for future editing is essential for any paint program, so we had to implement a saving mechanism to be used for this purpose. We had some choices of using JSON, XML or Serialized Objects but then we came up with a new optimized file format specially designed for our paint program.



# ABOUDA File Format

File Header
Signature
File Size
Colors Data Offset
Colors Data Size
Layers Data Offset
Layers Data Size
Image Data Offset
Image Data Size
Colors Data Header
Colors Size
...
...
Color ARGB
Color ARGB
Color ARGB
...
...
Layers Data Header
Layers Size
Layers Width
Layers Height
...
...
Layer Objects Size
...
Layer Object Offset
Layer Object Offset
...
Layer Objects Size
...
Layer Object Offset
Layer Object Offset
...
...
Image Data Header
Image Object
Image Object
...
...
Image Object

Image Object
Type
X Value
Y Value
Color
Border Size
Object Size
Image Object Options

OBJTYPE_CIRCLE
OBJTYPE_ELLIPSE
OBJTYPE_ROUNDED
OBJTYPE_ISOTRIANGLE
OBJTYPE_RECTANGLE
OBJTYPE_SQUARE
OBJTYPE_RIGHTTRIANGLE
Object Width
Object Height
OBJTYPE_LINE
Object EndX
Object EndY
OBJTYPE_ERASER
OBJTYPE_FREEHAND
OBJTYPE_FILL
OBJTYPE_IMAGE
Compressed Size
Compressed Buffer

