Introduction to Programming II Project Log (Week 14)
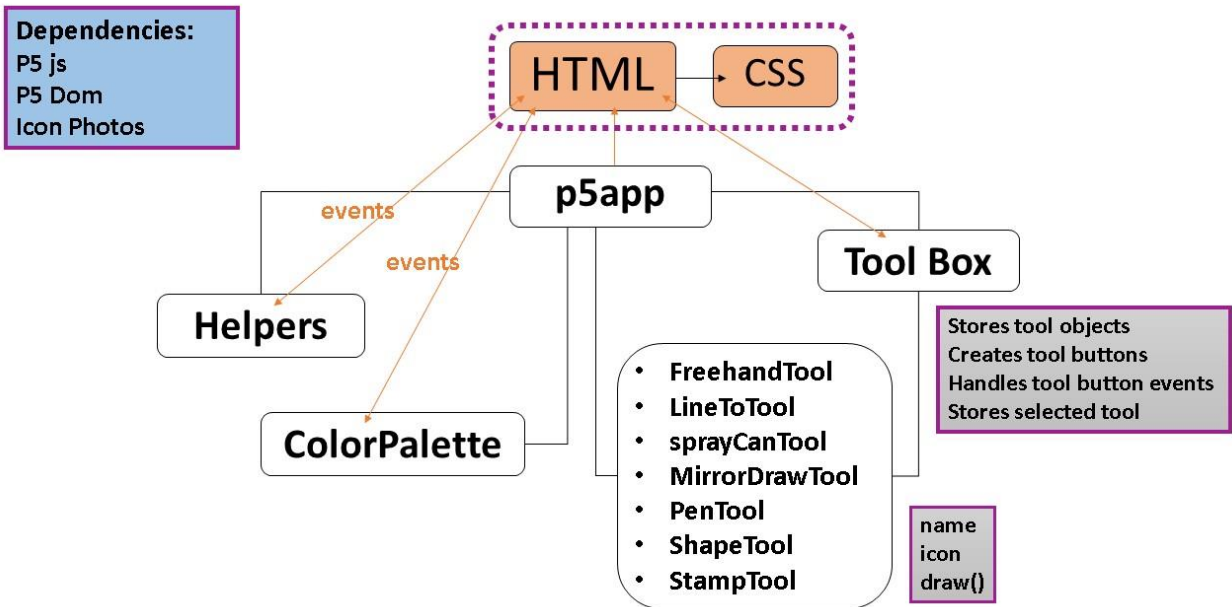
Project title:	Drawing App
Topic:	**Topic 7 Extending the apps, part 3**

What progress have you made this topic?

I added few extensions in this week. Here are the ideas of how the extensions works.

The first extension for the drawing app is Shape Tool. The shape tool allow user to choose shape model from a list of new icons. The user can choose different model shape ranging from rectangle, triangle and circle. In this extension, new buttons for different shapes need to be created. The new buttons are icon button rather than text button, the challenge will be how to implement them and where to place them. Also, for the size of the shape sample, I consider to make a new adjustment bar for user to change the size before starting to use. The color for the sample shape can be applied for the outline stroke and the shape fill.

The second extension for the drawing app is Stamp Tool. From the lessons, I learned that we can make a star stamp in the canvas which all user to adjust the size and adjust the number of the stamp. I would like to more stamp such us heart stamp and smile stamp. For this extension, to show case the size slider and number slider will be a challenge because they were in the setup function in the practice exercise, how to integrate them together in the final drawing app will be a question. Also, the nested looping for the star slider will be included in the app.

The last extension for the drawing app is a tool that can plot out shape. It is the extension from the lecturer, the user can edit the vertices by using a mouse drag. There are two new text buttons for user to edit during the draw line, the user can adjust the vertices when the edit mode is on. When the edit mode is off, the user can continue to draw. And the user can press the finish button to start a new drawing. To make it work, the loadpixels( ), arrays of objects and nested looping will be applied. I expect the challenge will be how to control the line to be a fine line rather than mixing the fill colour line. It happened once when I practice in the classwork.

code diagram 1

```
PUBLIC:
Tools
selectedTool
addTool(tool)          ◄------  Add tool to tools
selectTool(toolName)           Calls addToolIcon()

PRIVATE:                ◄------  eventHandler
toolbarItemClick()
addToolIcon(icon, name) ◄------  Creates HTML
                                 Adds handler toolbarItemClick
```

code diagram 2

Dependencies:
P5 js
P5 Dom
Icon Photos

HTML → CSS

p5app

events

events

Helpers

ColorPalette

- FreehandTool
- LineToTool
- sprayCanTool
- MirrorDrawTool
- PenTool
- ShapeTool
- StampTool

Tool Box

Stores tool objects
Creates tool buttons
Handles tool button events
Stores selected tool

name
icon
draw()

I modified the code diagram again to refresh my mind.

What problems have you faced and were you able to solve them?

At the moment, the extensions in the drawing app I made are not fully function after the integration of the original code and extension code. Therefore, I will do some debugs and check the details of the local and global variables carefully. If the application is not functioning at the end, I will try to turn off some of the extensions to test which part of the drawing app caused the problem. Another method will be to simplify some of the extension code if need be.

What are you planning to do over the next few weeks?

I have written around 50% code of the project so far. In the following weeks I will continue to do research regarding the extensions. During the development in the project, I watched again the lecture videos. But I think it is not enough for me, I went to search from internet for more information. I found that some platform such as hashnode, codepan, YouTube or online free courses website are good place to gain more knowledge as some of the creators are actually experienced computer scientist. .

Interface design is 35% in this week. I haven't completed much at the moment as I would like to keep it simple before the completion of the coding. Next few weeks I will focus more on the coding and testing. For the interface design will be at the later stage as I need to learn more about the CSS skills.

Are you on target to successfully complete your project? If you aren't on target, how will you address the issue?

In this week, I only fulfill the research element. For the testing, coding and Interface design are not on target yet. At the moment, I wanted to focus on the research of all the information and try to apply in the app.

As the code I wrote are not that much so I don't think I need to test it so frequently. Actually, every time I finish a small part of the code, I have tested it. But I will spend more time with the integration test.

Introduction to Programming II Project Log (Week 16)

Project title:	Drawing App
Topic:	**Topic 8 Callbacks**

What progress have you made this topic?

I added three extensions last week. And this week I changed one of the extensions to be an enhancement for some existed tools. The editable pen tool can be applied in different tools such as Freehand tool, lineTo tool, Mirror Tool, Spray Tool and the Shape Tool.

The first extension -- Shape Tool. The idea of shape tool is to allow user to choose shape model from a list of new icons. The user can choose different model shape ranging from rectangle, triangle and circle. But that's a unresolve problem that I have some difficulty to apply image inside in the `select(".options").html().`Therefore, I use text button instant of the icon button. I implied only circle shape as other shape cannot be added due to some problem in the code.

The second extension -- Stamp Tool. The adjustable stamp slide bar allow user to change the size and the number of the stamp. This week I managed to add the function and it integrate well except the slide bar is out of the canvas.

This is the design interface in week 16.

What problems have you faced and were you able to solve them?

I have some difficulty to add new shape in Shape Tool. When I click the button for triangle nor rectangle is not working. I searched from internet but I still can't figure out how to change the variable in the shapeTool constructor. I seek help in the discussion forum in Coursera, my online tutor suggested to use switch statement to check the value.
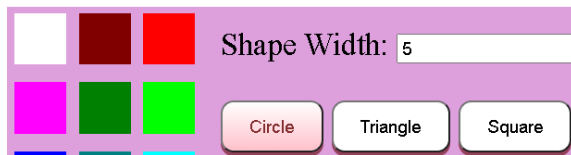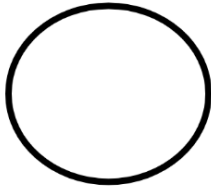
What are you planning to do over the next few weeks?

I did some testing for the new function but not a big testing for all the integration. When I switched to another tool, that is still some bugs. I will continue next week for the coding and testing.

Next week, I will focus more on the code and test them at the same time.
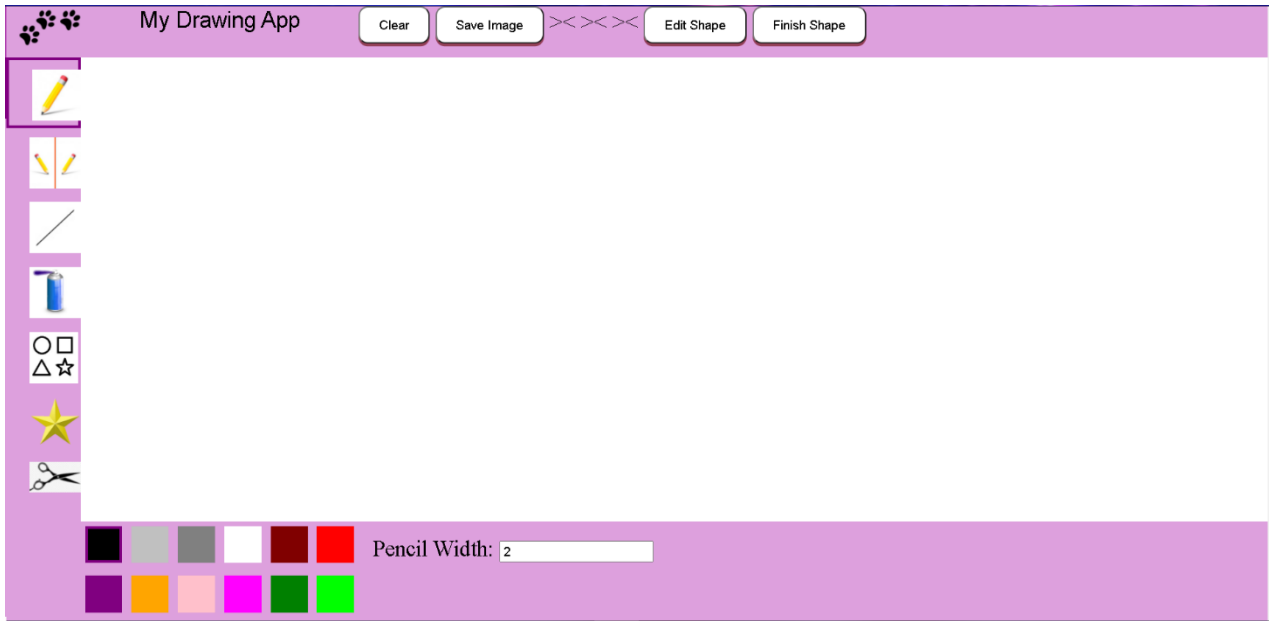
Are you on target to successfully complete your project? If you aren't on target, how will you address the issue?

This week, I reached the target for research as I mainly focus on studying skills this week and implement the code.

For the rest are not meet the target yet as the focus in the week is research, I will fasten the speed next week for the rest.

Introduction to Programming II Project Log (Week 18)

Project title:	Drawing App
Topic:	**Topic 9 Testing for stability**

What progress have you made this topic?

This week I added one more extension—Eraser Tool.

Eraser Tool allow user to erase the drawing in the app. In this extension, I added also the adjustable input button for changing the width of the eraser. If user accidentally click the color palette, it won't change color as in the setting of this extension I added the fill color is always in white color.

And I modified the freehand tool with the editable shape. When the user clicks the Edit mode button, vertexes show up, the user can change the vertexes for new shapes. By clicking off the button, user can continue to draw new line.

This is the design interface in week 18.

What problems have you faced and were you able to solve them?

As I added a new modified function in the freehand tool, some unstable drawing line occurred. In this freehand tool, user can adjust the width and edit the line shape by clicking the button. The problem is when I tried to switch to another tool, the drawing disappeared. But when I click back to freehand tool, it appeared. After some testing, I found out that this was the issue due to the missing updatePixes() and loadPixes(). At the end this problem has fixed.

What are you planning to do over the next few weeks?

I will make the interface design next week. As I want to make a new theme color and change the tool bar icons, I will work on the CSS design and add some new id and classes in the function.

And I will send out the drawing app to 10 people for testing the app. At the same time, I will so a final testing and make some test record in the excel file.

I will probably debug some of the code and make the app more stable.

Are you on target to successfully complete your project? If you aren't on target, how will you address the issue?

I did lots of research this week and it meet the target. And the coding is still not meeting the target as that is some bug to be solved. For the rest, it is still fine at the moment as I will focus on them the next week.

Introduction to Programming II Project Log (Week 20)

Project title:	Drawing App
Topic:	**Topic 10 Testing with users**

What progress have you made this topic?

In this week, I changed the interface of this app.

I changed the background color of the header, footer and side bar. Added the icon and added some new grid in order to add an icon. Also, I designed new side bar icons to fit the theme. The button color changed to gradient color. And the curser also changed when hover in different areas.

This week, the app is almost ready. So, I shared to the app to 6 of my friends to have their feedback about the app. I asked them to draw a picture from a template and see how if they can manage to draw the same results.

I also made my testing log in the excel file in this week.
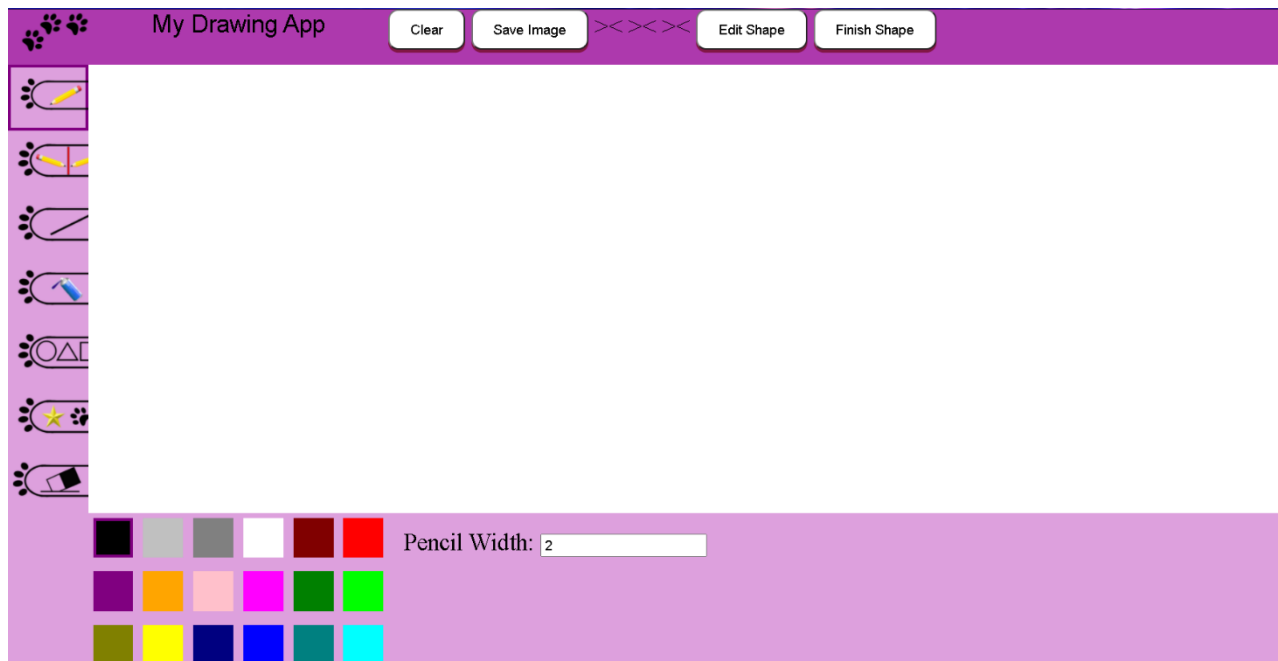
This is the design interface in week 20.

Drawing App Testing Log with 6 users

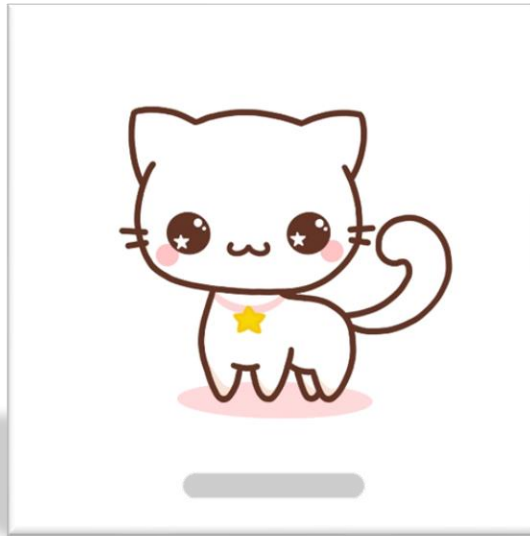**Demo photo:**

From the responses of the users, they all pointed out that they have difficulty using FreeHandTool. Some users suggested to add a undo and redo button when I think is a very good idea for the future development.
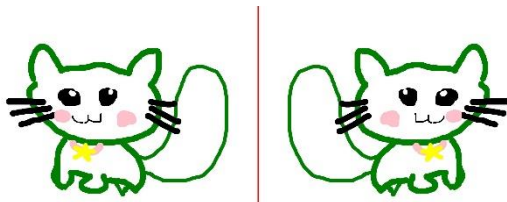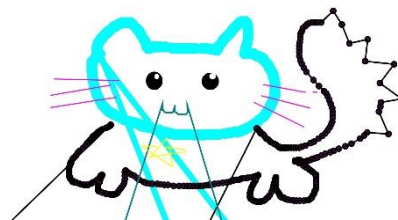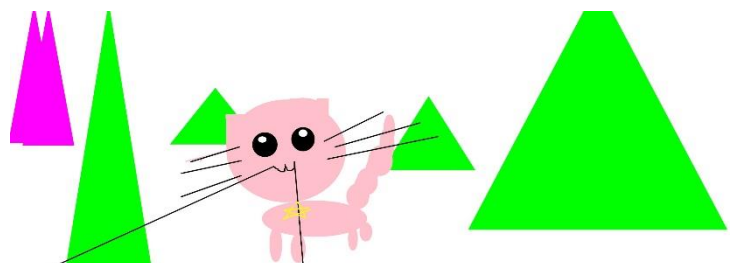
User 1

User 2

User 3

User 4

User 5

User 6

The following are the testing log (8 pages in total) I have done in this week.

Freehand tool width enhancement

Test Id	1				
Test name	Freehand tool width enhancement				
Description	Validate that the freehand width enhancement changes the line thickness for the freehand tool only and correctly handles invalid input				
Test Status	Completed				
Test case #	Scenario	Steps	Expected Output	Actual output	Pass /Fail
1.1	That the default 2 pixels is set when the tool is chosen	1. Select the freehand tool 2. Verify the selected line width 3. Draw a line 4. Visually verify a width of 2px.	A line of 2px drawn to the canvas and the edit field contains a 2.	As expected	Pass
1.2	That when the user move the slider that the line is drawn at the correct width	1. Select the freehand tool 2. Enter a width of '1' 3. Draw a line 4. Visually verify the width of the line 5. Repeat steps 1-3 width widths: 25 and 50	A series of lines of width 25, 50	As expected	Pass
1.3	When a new tool is selected the line width is set correctly for that tool.	1. Select the freehand tool 2. change the width to 50 and draw on the canvas 3. Change to the mirror tool 4. visually verify the stroke width when using the mirror tool	Mirror tool draws at 1px stroke width	As expected	Pass
1.4	When the pencil tool is reselected the previous width should be restored.	1. Select the freehand tool 2. Change the width to 50 3. Change to the mirror tool 4. Change back to the freehand tool and verify width of pencil is 50px	The freehand tool draws a line of width 50 after being reselected	As expected	Pass

Freehand tool Edit shape enhancement

Test Id	2				
Test name	Freehand tool width enhancement				
Description	Validate that the vertices appeared after click the Edit shape button and able to change the shape and disappear after click the Add vertices button,				
	draw a new line after click the Finish Shape button				
Test Status	Completed				
Test case #	Scenario	Steps	Expected Output	Actual output	Pass /Fail
1.1	That when the user click on the edit Shape button the purple point appear	1. Select the freehand tool 2. Draw a line of 2px 3. Click on the Edit Shape 4. Visually verify purple point appear	A line of 2px drawn to the canvas and the edit field contains purple points.	As expected	Pass
1.2	That when the user move the points, it was moved	1. Select the freehand tool 2. Draw a line 3. Click on the Edit Shape 4. Visually verify the point was moved	The purple points were moved	As expected	Pass
1.3	That when the user click on the Add Vertices button the purple point disappear	1. Select the freehand tool 2. Draw a line 3. Click on the Edit Shape 4. Click on the Add vertices 5. Visually verify the point was disappeared	The purple points disappear	As expected	Pass
1.4	That when the user click on the Finish Shape button the purple point disappear	1. Select the freehand tool 2. Draw a line 3. Click on the Edit Shape 4. Click on the Finish Shape 5. Visually verify the point was disappeared	The purple points disappear	the purple point is still here	Fail
1.5	That when the user click on the Finish Shape button can draw a new line separately	1. Select the freehand tool 2. Draw a line 3. Click on the Finish Shape 4. Visually verify the new line show	The new line work well	The line is still connect with the previous line	Fail

Student Number: 200594390

MirrorDraw tool width enhancement

Test Id	3
Test name	MirrorDraw tool width enhancement
Description	Validate that the MirrorDraw width enhancement changes the line thickness for the MirrorDraw tool only and correctly handles invalid input
Test Status	Completed

Test case #	Scenario	Steps	Expected Output	Actual output	Pass /Fail
1.1	That the default 2 pixels is set when the tool is chosen	1. Select the MirrorDraw tool 2. Verify the selected line width 3. Draw a line 4. Visually verify a width of 2px.	A line of 2px drawn to the canvas and the edit field contains a 2.	As expected	Pass
1.2	That when the user move the slider that the line is drawn at the correct width	1. Select the MirrorDraw tool 2. Enter a width of '1' 3. Draw a line 4. Visually verify the width of the line 5. Repeat steps 1-3 width widths: 25	A series of lines of width 25, 50	As expected	Pass
1.3	When a new tool is selected the line width is set correctly for that tool.	1. Select the MirrorDraw tool 2. change the width to 50 and draw on the canvas 3. Change to the mirror tool 4. visually verify the stroke width	Mirror tool draws at 1px stroke width	As expected	Pass
1.4	When the pencil tool is reselected the previous width should be restored.	1. Select the freehand tool 2. Change the width to 50 3. Change to the mirror tool 4. Change back to the freehand tool and verify width of pencil is 50px	The freehand tool draws a line of width 50 after being reselected	As expected	Pass
1.5	When the pencil tool is reselected the previous width should be restored.	1. Select the freehand tool 2. Change the width to 50 3. Change to the mirror tool 4. Change back to the freehand tool and verify width of pencil is 50px	The freehand tool draws a line of width 50 after being reselected	As expected	Pass

LineTo tool width enhancement

Test Id	4
Test name	LineTo tool width enhancement
Description	Validate that the line width enhancement changes the line thickness for the LineTo tool only and correctly handles invalid input
Test Status	Completed

Test case #	Scenario	Steps	Expected Output	Actual output	Pass /Fail
1.1	That the default 2 pixels is set when the tool is chosen	1. Select the LineTo tool 2. Verify the selected line width 3. Draw a line 4. Visually verify a width of 1px.	A line of 1px drawn to the canvas and the edit field contains a 1.	As expected	Pass
1.2	That when the user move the slider that the line is drawn at the correct width	1. Select the LineTo tool 2. Enter a width of '1' 3. Draw a line 4. Visually verify the width of the line 5. Repeat steps 1-3 width widths: 25	A series of lines of width 25, 50	As expected	Pass
1.3	When a new tool is selected the line width is set correctly for that tool.	1. Select the LineTo tool 2. change the width to 50 and draw on the canvas 3. Change to the LineTo tool 4. visually verify the stroke width	LineTo tool draws at 1px stroke width	As expected	Pass
1.4	When the pencil tool is reselected the previous width should be restored.	1. Select the LineTo tool 2. Change the width to 50 3. Change to the mirror tool 4. Change back to the LineTo tool and verify width of pencil is 50px	The LineTo tool draws a line of width 50 after being reselected	As expected	Pass

SprayCan tool width enhancement

Test Id	5
Test name	SprayCan tool width enhancement
Description	Validate that the SprayCan width enhancement changes the line thickness for the SprayCan tool only and correctly handles invalid input
Test Status	Completed

Test case #	Scenario	Steps	Expected Output	Actual output	Pass /Fail
1.1	That when the user move the slider that the line is drawn at the correct width	1. Select the SprayCan tool 2. Enter a width of '1' 3. Draw with spray 4. Visually verify the width of the line of width 10 and 20	A series of lines of width 10, 20	As expected	Pass
1.2	That when the user move the slider that the line is drawn at the correct point	1. Select the SprayCan tool 2. Enter a point of '10' 3. Draw with spray 4. Visually verify the width of the line of width 30 and 60	A series of lines of width 30, 60	As expected	Pass
1.3	That when the user move the slider that the line is drawn at the correct spread	1. Select the SprayCan tool 2. Enter a point of '5' 3. Draw with spray 4. Visually verify the width of the line of width 25 and 50	A series of lines of width 25, 50	As expected	Pass
1.4	When a new color is selected the spay color is changed	1. Select the SprayCan tool 2. Draw with spray 3. Change to red color 4. Draw again with spray, visally verify a new color is appiled	The new spray will be in red color	As expected	Pass
1.5	When the spray tool is reselected the previous widths should be restored.	1. Select the SprayCan tool 2. Change the width to 20, point to 60, spread to 50 3. Change to the mirror tool 4. Change back to the Spray tool and verify width of width is 20px, point is 60px, spread is 50	The spray tool draws a spray line of width 50, point 60 and spread 50 after being reselected	As expected	Pass

Shape tool width enhancement

Test Id	6
Test name	Shape tool width enhancement
Description	Validate that the shape width enhancement changes the line thickness for the Shape tool only and correctly handles invalid input
Test Status	Completed

| Test case #	Scenario	Steps	Expected Output	Actual output	Pass /Fail
1.1	That when the user click with a selected shape is drawn	1. Select the shape tool 2. Select circle button 3. Draw a circle 4. Visually verify the circle is drawn	A cicrle shape of 5px stroke drawn to the canvas	As expected	Pass
1.2	That when the user click with a selected shape is drawn	1. Select the shape tool 2. Select triangle button 3. Draw a triangle 4. Visually verify the circle triangle is drawn	A triangle shape of 5px stroke drawn to the canvas	The shape of triangle is successfully drawn with some uncontralable length	Fail
1.3	That when the user click with a selected shape is drawn	1. Select the shape tool 2. Select square button 3. Draw a square 4. Visually verify the square is drawn	A square shape of 5px stroke drawn to the canvas	As expected	Pass
1.4	That the default 5 pixels circle shape is set when the tool is chosen	1. Select the shape tool 2. Verify the selected stroke width 3. Draw a cicrle without select any button 4. Visually verify a width of 5px.	A stroke of 5px drawn to the canvas and the edit field contains a 5.	As expected	Pass
1.5	That when the user move the slider that the shape is drawn at the correct width	1. Select the Shape tool 2. Enter a width of '1' 3. Draw a circle 4. Visually verify the width of the shape	A series of shape of width 25, 50	As expected	Pass
1.6	When the shape tool is reselected the previous width should be restored.	1. Select the Shape tool 2. Change the width to 1 3. Change to the mirror tool 4. Change back to the Shape tool and verify width of shape is 1px	The Shape tool draws a circle of width 1 after being reselected	As expected	Pass

Stamp tool extension and stamp number enhancement

Test Id	7
Test name	Stamp tool extension and stamp number enhancement
Description	Validate that the Stamp number changes the stamp number for the Shamp tool only and correctly handles invalid input
Test Status	Completed

| Test case #	Scenario	Steps	Expected Output	Actual output	Pass /Fail
1.1	That the default number and size is set when the tool is chosen	1. Select the stamp tool 2. Verify the selected number and size of the stamp 3. Draw a stamp line 4. Visually verify two stamp is drawn with a number of 1and size of 20 of	A stamp line of number is 1 and size is 20 drawn to the canvas	As expected	Pass
1.2	That when the user move the slider that the stamp line is drawn at the correct stamp number	1. Select the Stamp tool 2. Enter a number of stamp '1' 3. Draw with stamp 4. Visually verify the width of the stamp line of number 15 and 30	A series of lines of width 15, 30	As expected	Pass
1.3	That when the user move the slider that the stamp line is drawn at the correct stamp size	1. Select the Stamp tool 2. Enter a size of stamp '5' 3. Draw with stamp 4. Visually verify the width of the stamp line of size 25 and 50	A series of lines of width 25, 50	As expected	Fail
1.4	When the stamp tool is reselected the previous width should be restored.	1. Select the stamp tool 2. Change the number to 30, size to 50 3. Change to the mirror tool 4. Change back to the stamp tool and verify number of stamp is 30 and size of stamp is 50	The stamp tool draws a stamp line of stamp size 30 and stamp number 50 after being reselected	As expected	Pass
1.5	That when the user click the star button the stamp change to draw only star line	1. Select the stamp tool 2. Select the star button 3. Draw a stamp line 4. Visually verify star stamp is drawn	A star stamp line is drawn to the canvas	The stamp icon remind the same with two icons	Fail
1.6	That when the user click the paw button the stamp change to draw only paw line	1. Select the stamp tool 2. Select the paw button 3. Draw a paw line 4. Visually verify paw stamp is drawn	A paw stamp line is drawn to the canvas	The stamp icon remind the same with two icons	Fail

Eraser tool extension and width enhancement

Test Id	8
Test name	Eraser tool extension and width enhancement
Description	Validate that the Eraser width enhancement changes the line thickness for the Eraser tool only and correctly handles invalid input
Test Status	Completed

Test case #	Scenario	Steps	Expected Output	Actual output	Pass /Fail
1.1	That the default 30 pixels is set when the tool is chosen	1. Select the spray tool 2. Draw 8 lines 3. Select eraser tool 4. Erase the line 5. Visually verify the width of the eraser is 30px	Lines is removed by 30px of eraser tool to the canvas	As expected	Pass
1.2	That when the user move the slider that the eraser is set at the correct width	1. Select the spray tool 2. Draw 8 line 3. Select eraser tool 4. Enter a width of '1' 5. Visually verify the width of eraser 6. Repeat steps 1-3 width widths: 50	A series of eraser of width 50, 100	As expected	Pass
1.3	When a new color is selected the spray is set correctly for that tool.	1. Select the spray tool 2. Draw 3 lines 3. Select eraser tool 4. Change a color 5. Visually verify the eraser is still working and remove the lines	Lines is reomoved by the eraser without new color	As expected	Pass
1.4	When the eraser tool is reselected the previous width should be restored.	1. Select the eraser tool 2. Change the width to 100 3. Change to the mirror tool 4. Change back to the eraser tool and verify width of eraser is 100px	The Eraser tool remove a line of width 100 after being reselected	As expected	Pass

What problems have you faced and were you able to solve them?

I wanted to make an enhancement for the shape tool but it seems fails. The idea is by clicking the button, the shape will be filled with color. But at the end I still can not solve it. I am considering to drop this idea if I still can't make it at the end.
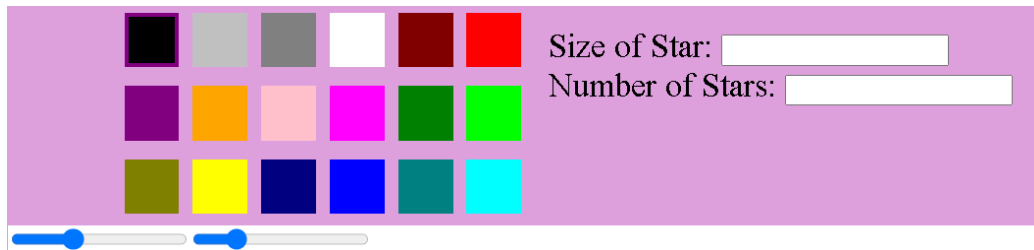
For the stampTool, it has some problem for the slider bar, it is outside of the option bar. I managed to fix it at the end.
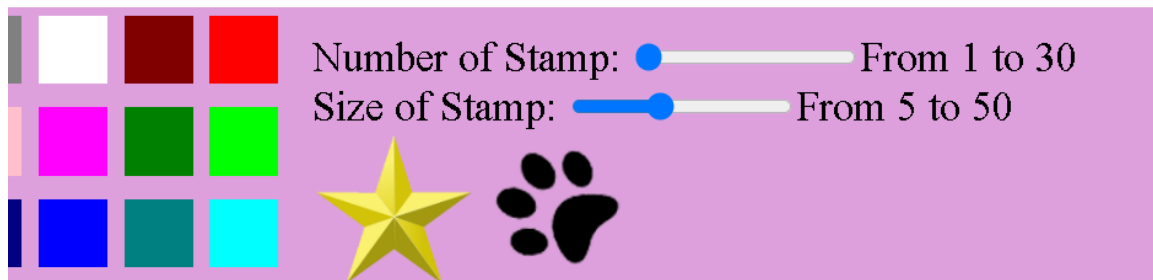
What are you planning to do next weeks?

Next week is the last week for this coursework, I will do the debugging and some more research for something that I haven't solve before. If I can manage to enhance something for the app, I will continue to do it.
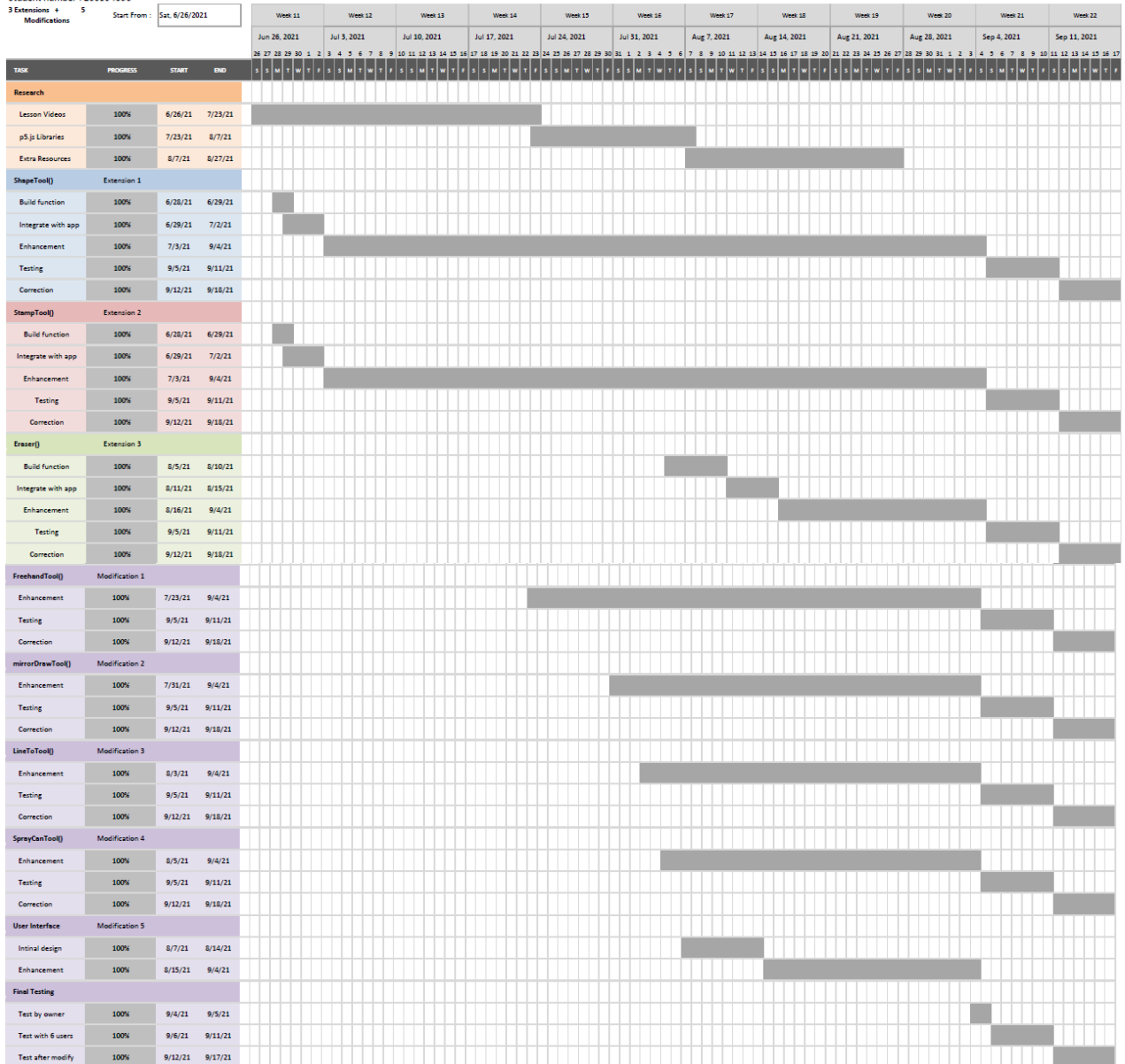
And I am working on the report and tidying up all the works and photos for the final submission and I will keep doing them the next week. Basically, it is all done.

Drawing App -- GANTT CHART

Student number : 200594390

3 Extensions + 5 Modifications   Start From : Sat, 6/26/2021

TASK	PROGRESS	START	END
Research			
Lesson Videos	100%	6/26/21	7/23/21
p5.js Libraries	100%	7/23/21	8/7/21
Extra Resources	100%	8/7/21	8/27/21
ShapeTool()	Extension 1		
Build function	100%	6/28/21	6/29/21
Integrate with app	100%	6/29/21	7/2/21
Enhancement	100%	7/3/21	9/4/21
Testing	100%	9/5/21	9/11/21
Correction	100%	9/12/21	9/18/21
StampTool()	Extension 2		
Build function	100%	6/28/21	6/29/21
Integrate with app	100%	6/29/21	7/2/21
Enhancement	100%	7/3/21	9/4/21
Testing	100%	9/5/21	9/11/21
Correction	100%	9/12/21	9/18/21
Eraser()	Extension 3		
Build function	100%	8/5/21	8/10/21
Integrate with app	100%	8/11/21	8/15/21
Enhancement	100%	8/16/21	9/4/21
Testing	100%	9/5/21	9/11/21
Correction	100%	9/12/21	9/18/21
FreehandTool()	Modification 1		
Enhancement	100%	7/23/21	9/4/21
Testing	100%	9/5/21	9/11/21
Correction	100%	9/12/21	9/18/21
mirrorDrawTool()	Modification 2		
Enhancement	100%	7/31/21	9/4/21
Testing	100%	9/5/21	9/11/21
Correction	100%	9/12/21	9/18/21
LineToTool()	Modification 3		
Enhancement	100%	8/3/21	9/4/21
Testing	100%	9/5/21	9/11/21
Correction	100%	9/12/21	9/18/21
SprayCanTool()	Modification 4		
Enhancement	100%	8/5/21	9/4/21
Testing	100%	9/5/21	9/11/21
Correction	100%	9/12/21	9/18/21
User Interface	Modification 5		
Intinal design	100%	8/7/21	8/14/21
Enhancement	100%	8/15/21	9/4/21
Final Testing			
Test by owner	100%	9/4/21	9/5/21
Test with 6 users	100%	9/6/21	9/11/21
Test after modify	100%	9/12/21	9/17/21

Are you on target to successfully complete your project? If you aren't on target, how will you address the issue?

All the testing, coding and interface design are meet the target. Only the research is not at 92%, I think there are too much information to watch, there are some videos I planned to watch but still in the waiting list. For this coursework, I have only chosen the information that I think can help to development a better app. I think as long as the drawing app work well together with all the function, it is fine to skip some very advance function.

But I will learn it anyway even after the submission of the coursework. It is important to keep learning and understand the logic behind.