Software Quality & Testing – COMP – 10066 – 03 Lab Report 2 – Specifications with Black Box Testing

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# Introduction

The purpose of this lab exercise is to test a program called Vector Draw using the black box testing method. I will be this software’s primary and only tester for the duration of this exercise. This lab report will review the software’s specification/documentation quality, command functions’ correctness. The review will be based on the accuracy, redundancy and completeness of the specifications. Command functions will use test to pass and test to fail cases to evaluate the expected outputs of the software. A list of bugs will be compiled and arranged by severity from the results of the test cases.

# Specification/Documentation Review

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= Specifications

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|  |

= Evaluations

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| **The position parameters (x,y,w,h,rx,ry ...) are expressed in percentage terms.** |
| Sufficient description |
| **The pw, sp are specified in pixels.** |
| Sufficient description |
| **Parameters specified within square brackets [] are optional. All optional parameters are provided with a default value in braces {}.** |
| Description redundancy, would consider rephrasing to shorten description.  e.g.  Parameters within [] are optional  Optional parameters have default values in {} |
| **x - Upper Left corner (x-coordinate)** |
| Incomplete description  Need a little more detail to describe what x values are acceptable. |
| **y - Upper Left corner (y-coordinate)** |
| Incomplete description  Need a little more detail to describe what y values are acceptable. |
| **w - Width of object** |
| Sufficient description |
| **h - Height of object** |
| Sufficient description |
| **c - Colour of object (colour name or RGB as [R:G:B] with R,G,B being values between 0 and 255)**  **Notes: any integer value below 0 or above 255 will be limited to 0 or 255.**  **The following color names are recognized: black, white, lightgray, darkgray, darkbrown**  **red, blue, green, yellow, orange, gray, cyan, limegreen, magenta, pink** |
| Description redundancy, would consider rephrasing to shorten description, reformatting for readability.  e.g.  Value range [0 – 255] only  Color names recognized:   * black * white * lightgray * etc |
| **pw - width of frame** |
| Description accuracy, incomplete  fw (frame width) would be more accurate as the description.  Width of frame for what exactly? |
| **f - Fill attribute of object [options recognized: FILL/NOFILL]** |
| Sufficient description |
| **font - font name [options recognized: SERIF/SANSSERIF/MONOSPACED]** |
| Sufficient description |
| **fa - Font attribute [options recognized: NORMAL/BOLD/ITALIC]** |
| Sufficient description |
| **ex - Lower Right corner (x-coordinate)** |
| Description accuracy  Would recommend renaming to x2. |
| **ey - Lower Right corner (y-coordinate)** |
| Description accuracy  Would recommend renaming to y2. |
| **d - Direction [options recognized: LEFT/RIGHT/UP/DOWN]** |
| Sufficient description  \*Was never mentioned in function commands |
| **n - number of points** |
| Sufficient description |
| **(x, y)n - A collection of points - used to create an array of points (see POLYGON)**  **n is used to indicate the number of pairs** |
| Description redundancy  Remove “n is used to indicate the number of pairs” as it has already been stated earlier. |
| **sp - Pixel spacing** |
| Description accuracy  Rename to ps to match description. |
| **r - radius** |
| Sufficient description |
| **rx - X radius** |
| Incomplete description  Need a little more detail to describe what x is. |
| **ry - Y radius** |
| Incomplete description  Need a little more detail to describe what y is. |
| **text - Text to output**  **Notes: Text supports subscripts and superscripts by using [+] for superscript and [-] for subscript. [o] is used to return the text to the base line.** |
| Description redundancy, would consider rephrasing to shorten description, reformatting for readability.  e.g.  Notes: Text supports  [+] superscript  [-] subscript  [o] baseline |
| **size - Size of Text (relative to Box (0-100) - 100 = One letter would take size of box)** |
| Description redundancy, would consider rephrasing to shorten description, reformatting for readability.  e.g.  Size of Text 0 – 100(size of box) |
| **startAngle - Start angle for Ellipse (used for arcs)** |
| Sufficient description  \*Was never mentioned in function commands |
| **degrees - Number of degrees (360 degrees in a full ellipse/circle)** |
| Sufficient description |

# Test Cases for Command functions

The following functions are being tested with white background and no frames. All RGB combinations are checked with a RGB colour generator provided by W3schools.

<http://www.w3schools.com/html/html_colors.asp>

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= Pass

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= Fail

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= Unsure based on information provided

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| --- | --- | --- | --- | --- |
| ID | Functionality | Input | Comments | Status |
| TC1 | \* | \*Comment test |  | P |
| TC2 | RECT | RECT,5,5,50,50,yellow,5,nofill |  | P |
| TC3 | RECT | RECT,-5,-5,-50,-50,black,5,fill | The specifications did not say whether coordinates and measurements could be negative. The program indicates “All Commands Ok” with no images rendered. | ? |
| TC4 | RECT | rect,0,0,00010,100, [220:255:5],,fill | The specifications did not say whether inputs could have leading zeros. The program indicates “All Commands Ok” with images rendered. | ? |
| TC5 | VGRID | VGRID,3,4,80,100,16,limegreen,5 | “Error at Line # 1 : Color – limegreen not recognized” | F |
| TC6 | VGRID | VGRID,3,4,80,100,16,lightgray,5 |  | P |
| TC7 | LINE | LINE,10,20,50,80,darkgray,2 |  | P |
| TC8 | ARROW | ARROW,10,10,10,60,RED,9 | Arrow doesn’t seem to have a pointed head | P |
| TC9 | HGRID | HGRID,10,10,100,100,9,[2222:2222:2222],5 | “All Commands OK”  The values in R:G:B are over 255 | F |
| TC10 | HGRID | HGRID,10,10,100,100,9,[22:212:22],5 |  | P |
| TC11 | CLIPREGION | CLIPREGION,4,10,10,20,20,10,20,10,10  GRADIENT,0,0,100,100,[255:0:0],[0:0:255] | Documentation should have specified to use this function in combination with another one to see effects | P |
| TC12 | CLEARCLIP | CLIPREGION,4,10,10,20,20,10,20,10,10  GRADIENT,0,0,100,100,[255:0:0],[0:0:255]  CLEARCLIP  GRADIENT,0,0,100,100,[255:0:0],[0:0:255] |  | P |
| TC13 | GRADIENT | gradient,4,4,100,100,[255:0:0],[0:252:255] |  | P |
| TC14 | GRADIENT | gradient,4,4,100,100,black,[0:252:255]  gradient,4,4,100,100,[0:252:255],red | Expected an error message, just not this format.  “Error at Line # 1 : For input string: “lack” ”  Not sure why the first character was not picked up in black. Same thing happens with the second colour slot. | ? |
| TC15 | PIXEL | PIXEL,5,5 |  | P |
| TC16 | PIXELFILL | PIXELFILL,70,20,20,20,11111,black |  | P |
| TC17 | CIRCLE | CIRCLE,20,60,15,darkbrown,7,FILL |  | P |
| TC18 | CIRCLE | CIRCLE,20,60,15,blue,2,noFILL |  | P |
| TC19 | ELLIPSE | ELLIPSE,75,70,15,51,CYAN,16,nofill,350 | From the specifications [pw{1}] described as “width of frame”. From the example provided it generated 16 ellipses. Confusing description in document. Also I assume {sang[0]} is “startAngle”, should have used the same naming convention to avoid confusion. | ? |
| TC20 | ELLIPSE | ELLIPSE,20,20,125,5,orange,1,fill,34,67 |  | P |
| TC21 | ELLIPSE | ELLIPSE,70,70,15,5, gray,1 |  | P |
| TC22 | POLYGON | POLYGON,6,10,20,20,30,10,30,0,15,10,20,234,354,magenta,2 | “Error at Line # 1 : All parameters must be >=0 and <=100 for POLYGON” This should have been stated in the documentations | P |
| TC23 | POLYGON | POLYGON,6,10,20,20,30,10,30,0,15,10,20,34,54,magenta,6 |  | P |
| TC24 | TEXT | TEXT,50,90,Testing 1 2 3,black,MONOSPACED,15 |  | P |
| TC25 | TEXT | TEXT,50,90,Testing 1 2 3,pink,dfgdgf,15 | “All Commands OK”  Did not indicate “dfgdgf” is not a valid font name | F |
| TC26 | TEXT | TEXT,50,90,Testing 1 2 3,pink,sanserif,BOLD | “Error at Line # 1 : For input string: “BOLD” “ | F |
| TC27 | TEXT | TEXT,50,90,Testing 1 2 3,pink,sanserif,ITALIC | “Error at Line # 1 : For input string: “ITALIC” “ | F |
| TC28 | TEXT | TEXT,50,90,Testing 1 2 3,pink,sanserif,Normal | “Error at Line # 1 : For input string: “Normal” “ | F |
| TC29 | TEXT | TEXT,50,90,Testing 1 2 3,pink,sanserif,15,italic | “All Commands OK”  From the example function provided, size is the last input field. This is wrong because font attribute is the actual last field and it is switched with size. | F |

# Bug Summary

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| --- | --- | --- | --- | --- |
| ID | Functionality | Input | Comments | Classification |
| TC3 | RECT | RECT,-5,-5,-50,-50,black,5,fill | The specifications did not say whether coordinates and measurements could be negative. The program indicates “All Commands Ok” with no images rendered. | 3 |
| TC4 | RECT | rect,0,0,00010,100, [220:255:5],,fill | The specifications did not say whether inputs could have leading zeros. The program indicates “All Commands Ok” with images rendered. | 3 |
| TC14 | GRADIENT | gradient,4,4,100,100,black,[0:252:255]  gradient,4,4,100,100,[0:252:255],red | Expected an error message, just not this format.  “Error at Line # 1 : For input string: “lack” ”  Not sure why the first character was not picked up in black. Same thing happens with the second colour slot. | 3 |
| TC19 | ELLIPSE | ELLIPSE,75,70,15,51,CYAN,16,nofill,350 | From the specifications [pw{1}] described as “width of frame”. From the example provided it generated 16 ellipses. Confusing description in document. Also I assume {sang[0]} is “startAngle”, should have used the same naming convention to avoid confusion. | 2 |
| TC5 | VGRID | VGRID,3,4,80,100,16,limegreen,5 | “Error at Line # 1 : Color – limegreen not recognized” | 4 |
| TC9 | HGRID | HGRID,10,10,100,100,9,[2222:2222:2222],5 | “All Commands OK”  The values in R:G:B are over 255 | 2 |
| TC25 | TEXT | TEXT,50,90,Testing 1 2 3,pink,dfgdgf,15 | “All Commands OK”  Did not indicate “dfgdgf” is not a valid font name | 2 |
| TC26 | TEXT | TEXT,50,90,Testing 1 2 3,pink,sanserif,BOLD | “Error at Line # 1 : For input string: “BOLD” “ | 1 |
| TC27 | TEXT | TEXT,50,90,Testing 1 2 3,pink,sanserif,ITALIC | “Error at Line # 1 : For input string: “ITALIC” “ | 1 |
| TC28 | TEXT | TEXT,50,90,Testing 1 2 3,pink,sanserif,Normal | “Error at Line # 1 : For input string: “Normal” “ | 1 |
| TC29 | TEXT | TEXT,50,90,Testing 1 2 3,pink,sanserif,15,italic | “All Commands OK”  From the example function provided, size is the last input field. This is wrong because font attribute is the actual last field and it is switched with size. | 1 |

# Conclusion

Based on my testing results, this software needs a lot of adjustments. Both in the specification/documentation and function commands. I feel the documentations could be written better with additional details and easier readability. The function commands has errors that should have not made it into commercial use. I believe this software needs more thorough testing, around 40 hours more should be put into it. I think for a software that is being used within a successful commercial application should have minimal bugs. This many problems with the software justifies the extra time needed to test/fix bugs.