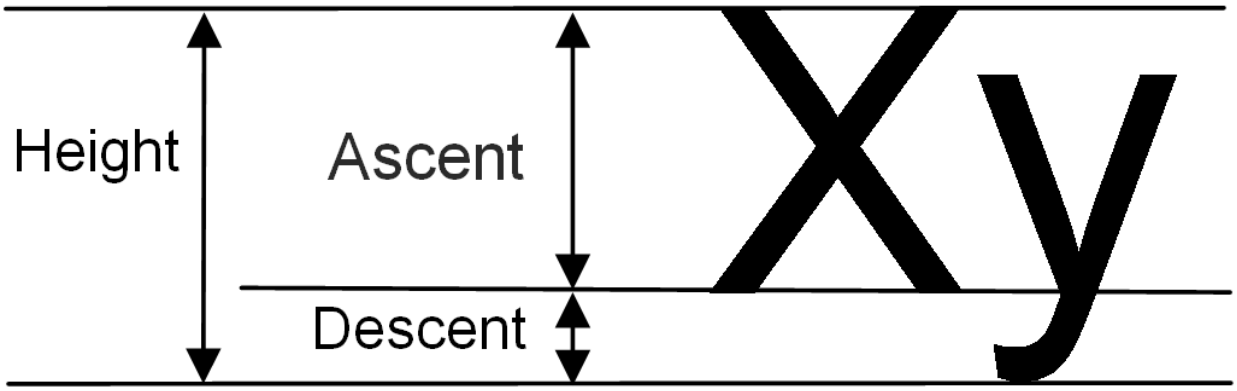
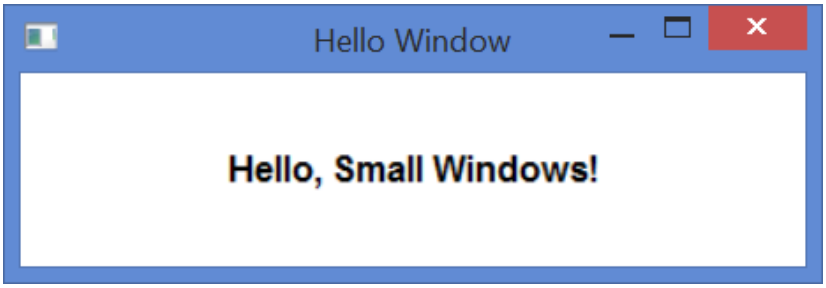
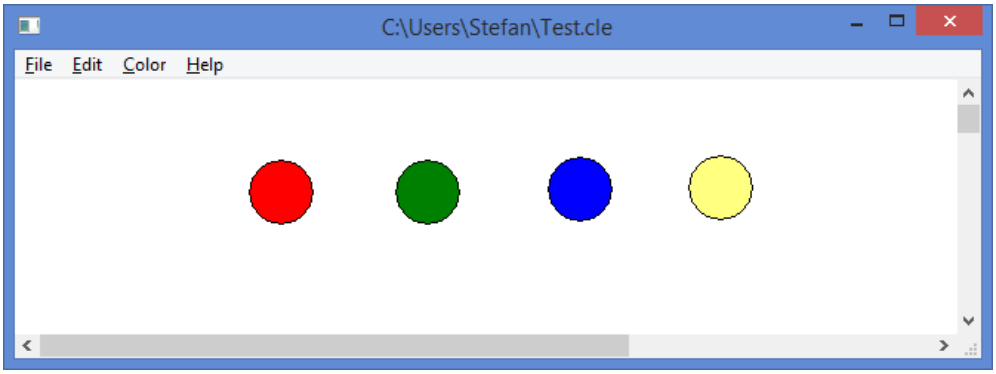
Chapter 1: Introduction

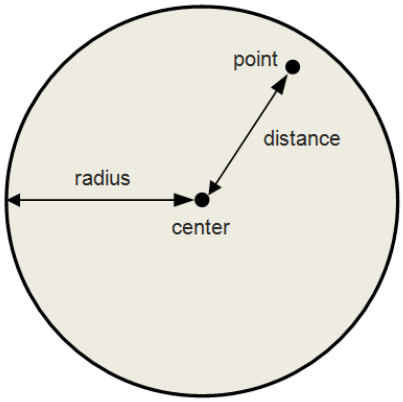


Chapter 2: Hello, Small World!

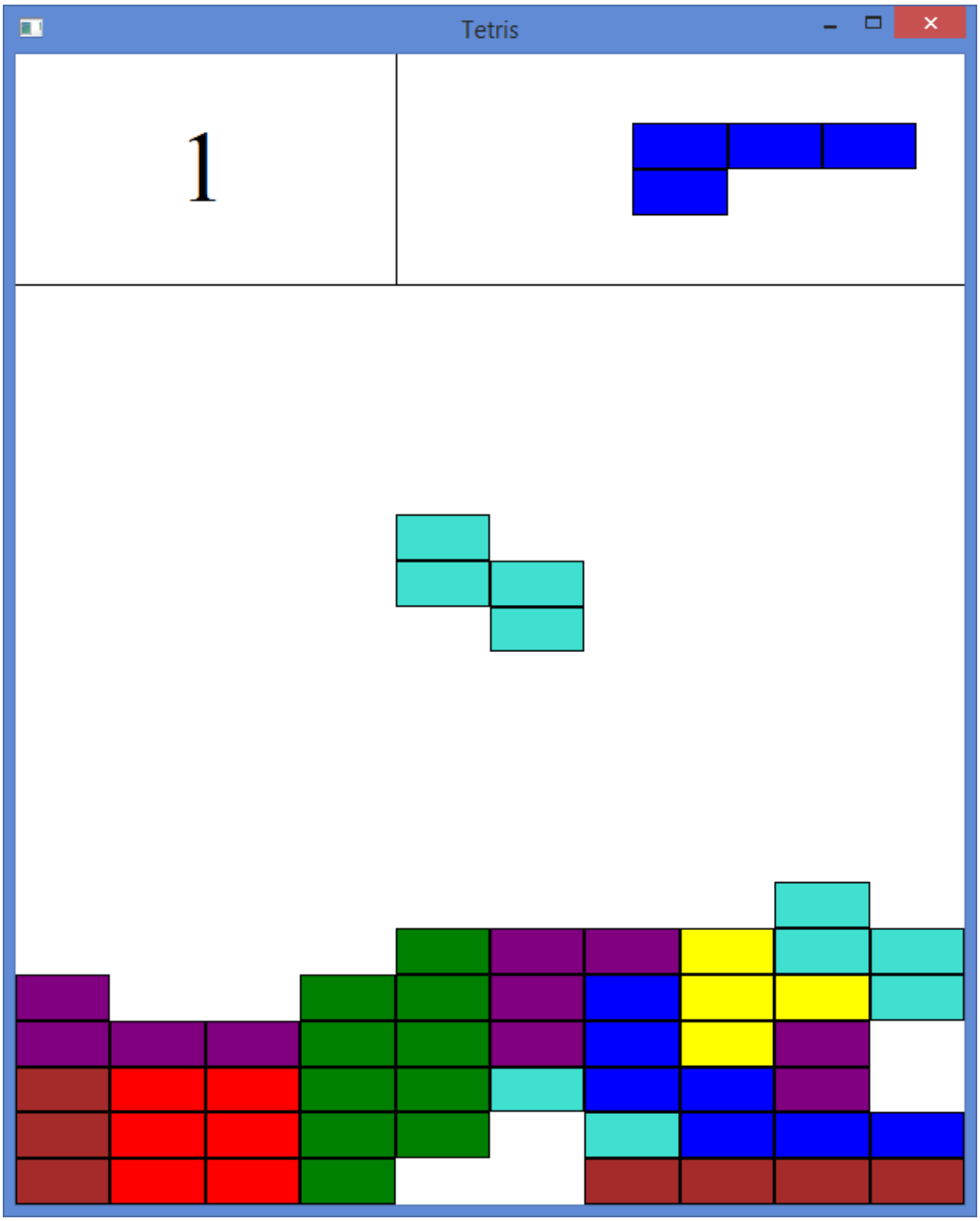


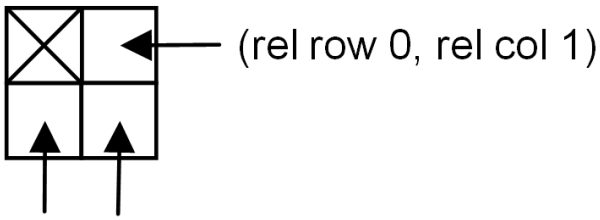


$$distance = \sqrt{\left(x_{point} - x_{center}\right)^2 + \left(y_{point} - y_{center}\right)^2}$$

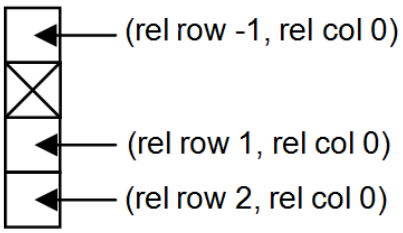


Chapter 3: Building a Tetris Application

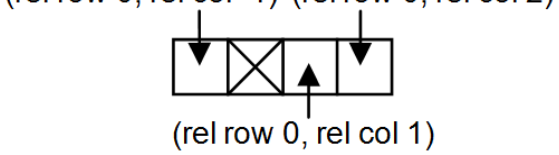




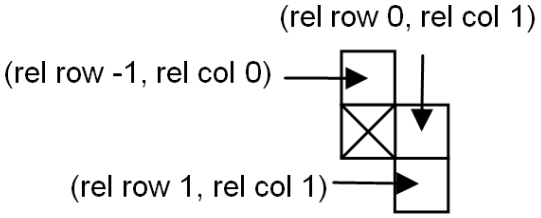
Vertical Direction



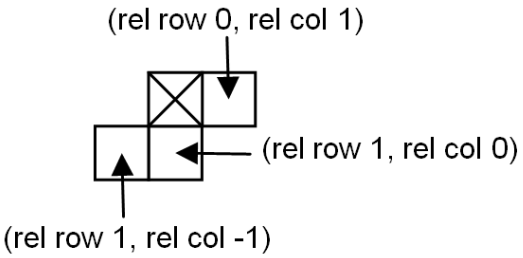
Horizontal Direction



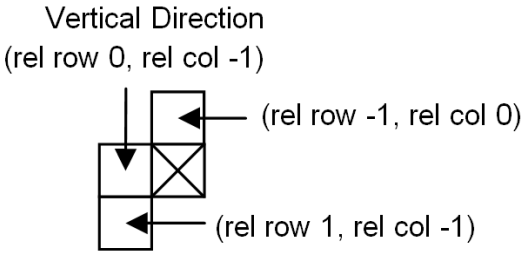
Vertical Direction



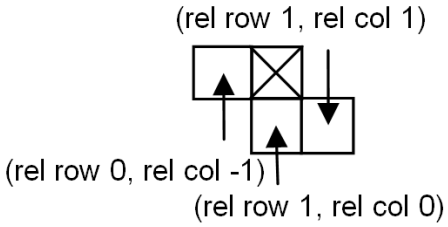
Horizontal Direction



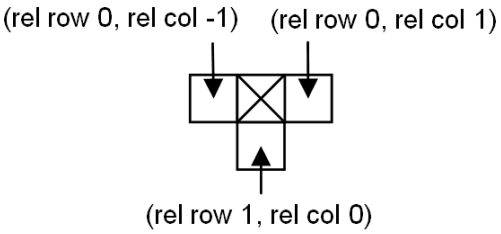
Vertical Direction



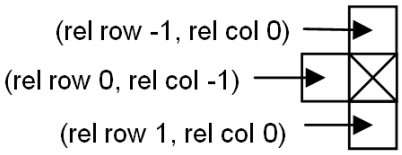
Horizontal Direction



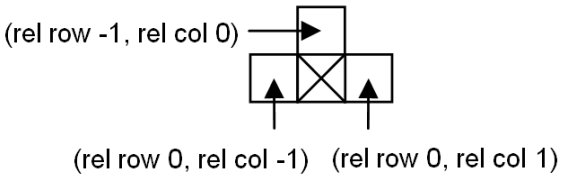
Southwards



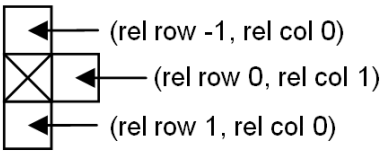
Westwards



Northwards



Eastwards



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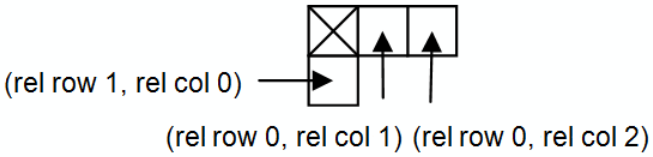
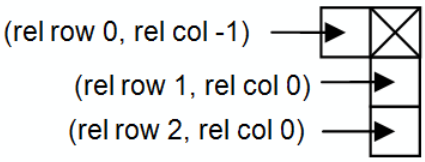
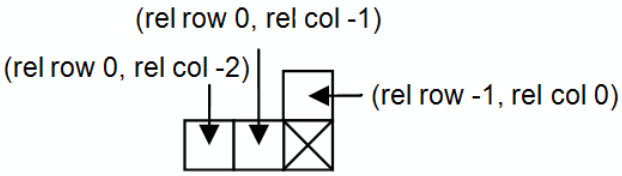


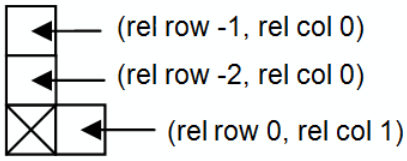
Westwards



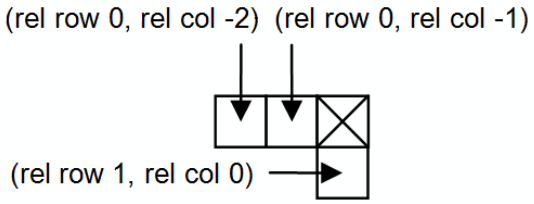
Northwards



Eastwards



Southwards



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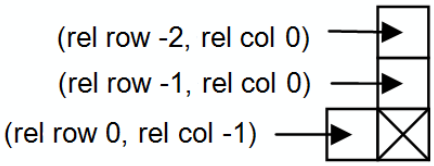
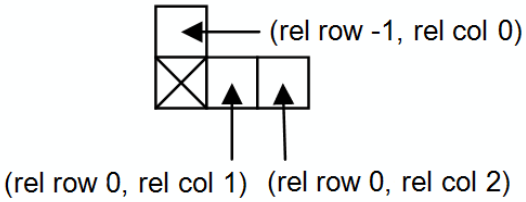
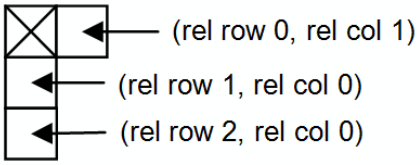


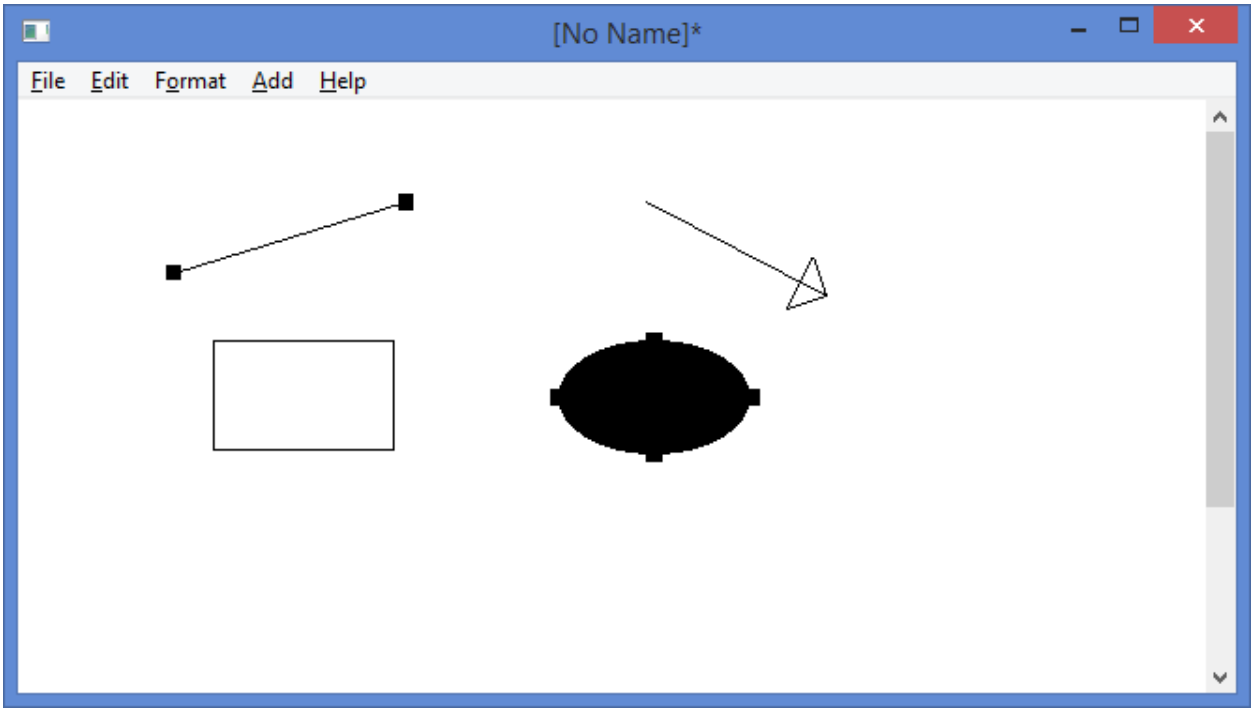
Northwards



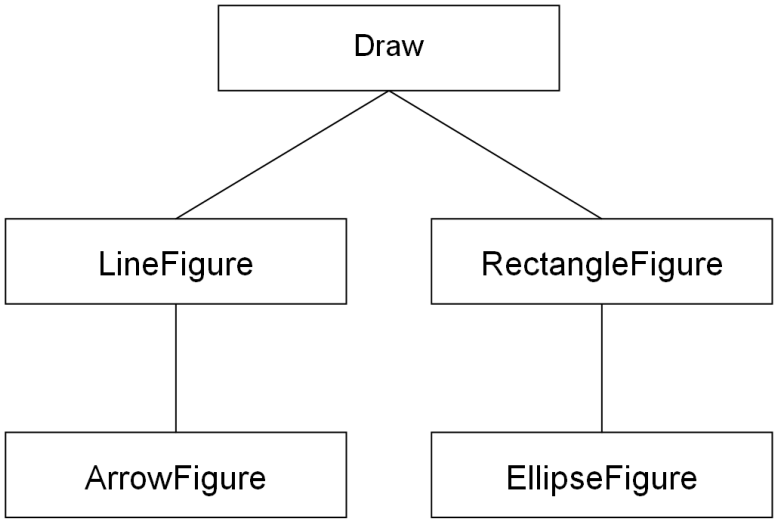
Eastwards

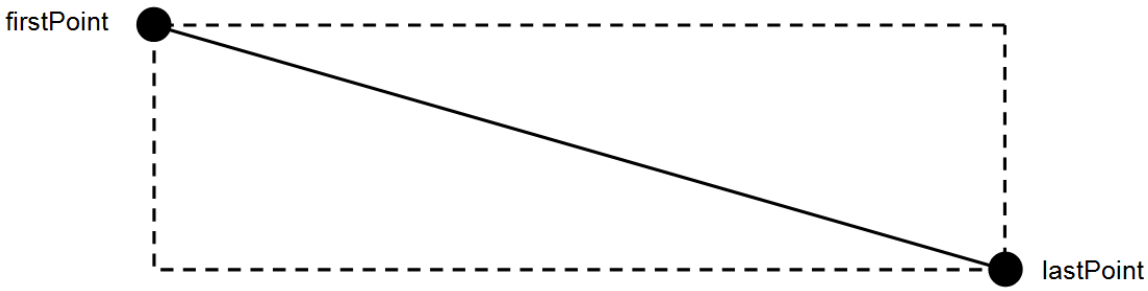


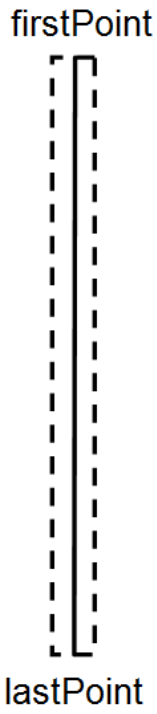
Chapter 4: Working with Shapes and Figures

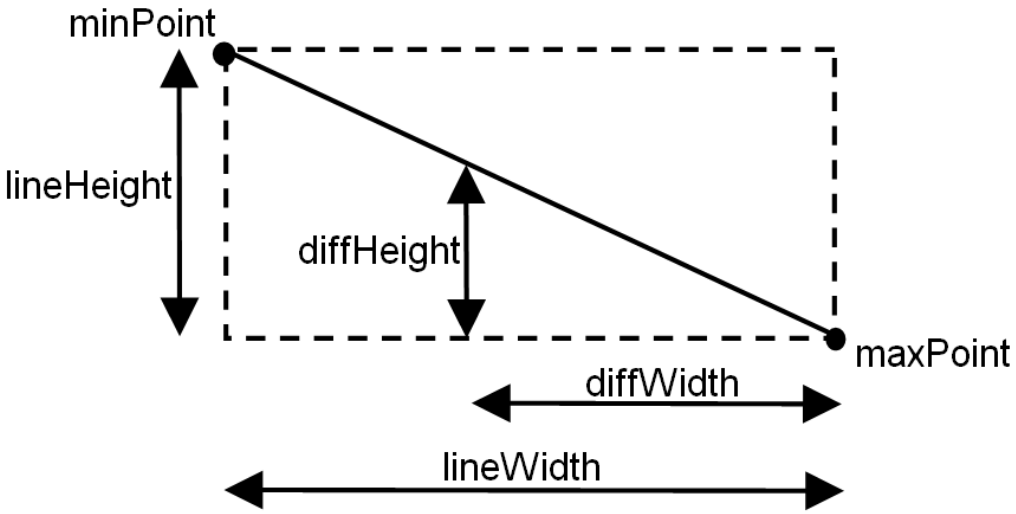


Chapter 5: The Figure Hierarchy









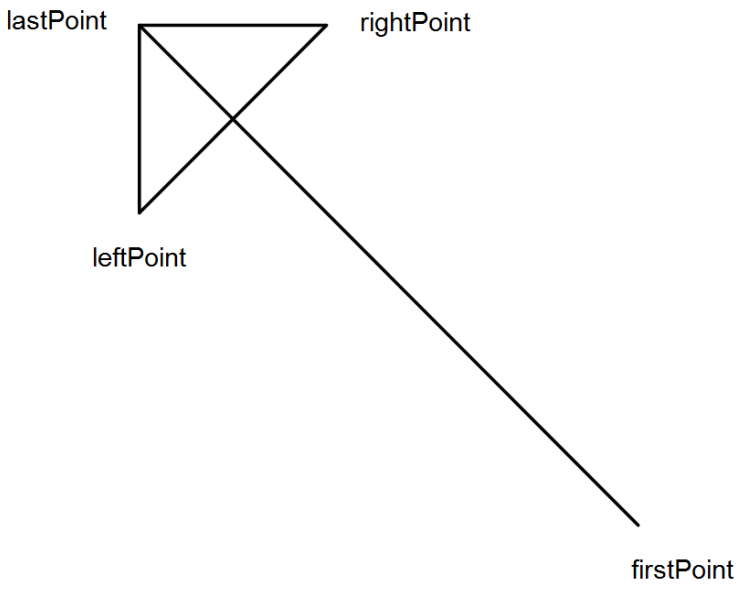
$$\frac{diffWidth}{diffHeight} = \frac{lineWidth}{lineHeight}$$

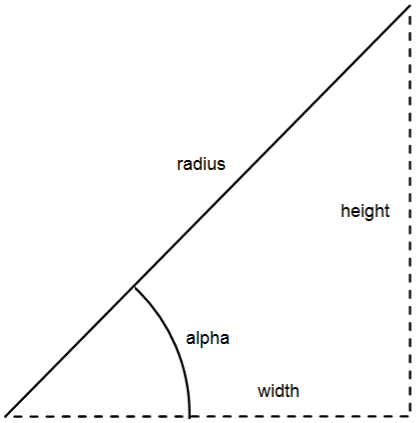
$$\frac{lineHeight}{lineWidth} diffWidth = diffHeight$$

$$diffHeight - \frac{lineHeight}{lineWidth} diffWidth = 0.$$

$$delta = \left| diffHeight - \frac{lineHeight}{lineWidth} diffWidth \right|$$

$$delta \leq 100 \Rightarrow Hit$$





$$\sin angle = \frac{height}{radius}$$

$$\cos angle = \frac{width}{radius}$$

$$width = radius \cos angle$$

$$height = radius \sin angle$$

$$radius = \sqrt{width^2 + height^2}$$

$$alpha = \arctan \frac{height}{width}$$

$$width = lastPoint.X - firstPoint.X$$

$$height = lastPoint.Y - firstPoint.Y$$

$$alpha = arctan \frac{height}{Width}$$

$$beta = alpha + \pi$$

$$leftAngle = beta - \frac{\pi}{4}$$

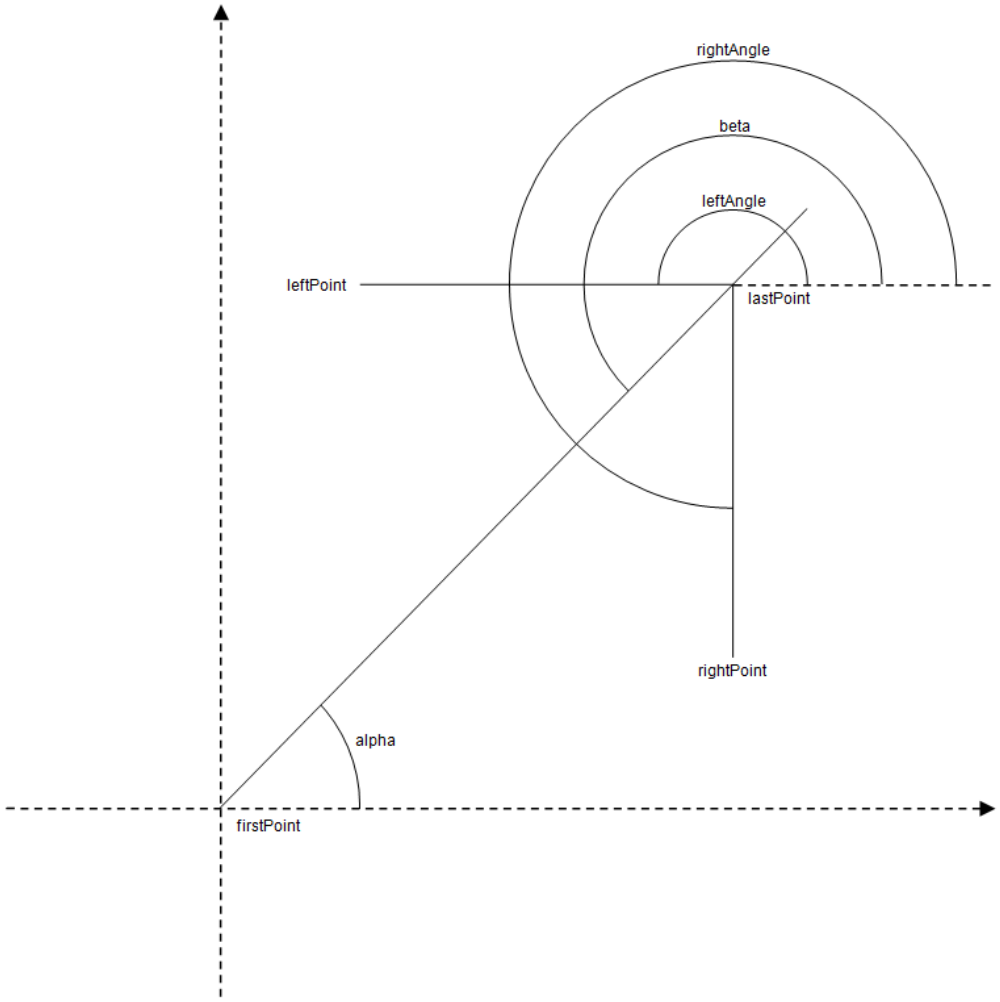
$$rightAngle = beta + \frac{\pi}{4}$$

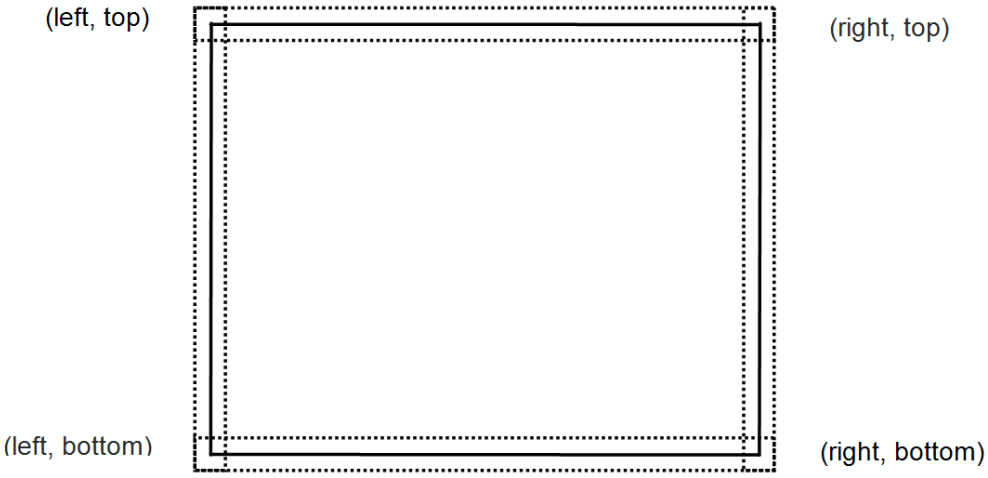
$$leftPoint.X = lastPoint.X + ArrowLenght \cos leftAngle$$

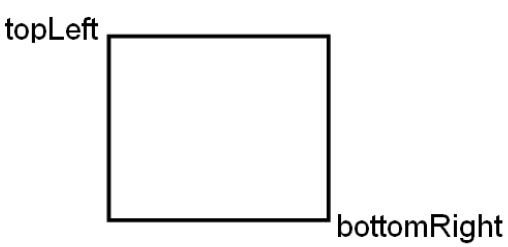
$$leftPoint.Y = lastPoint.Y + ArrowLenght \sin leftAngle$$

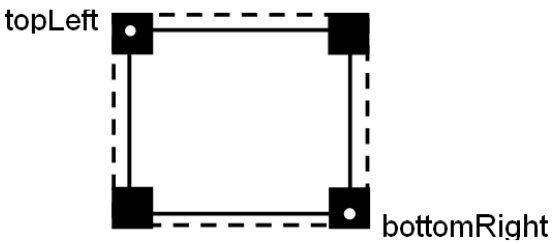
$$rightPoint.X = lastPoint.X + ArrowLenght \cos rightAngle$$

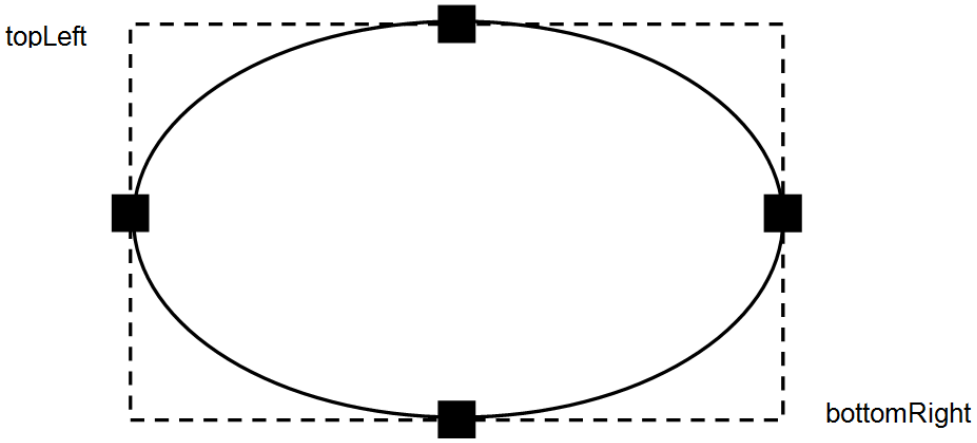
$$rightPoint.Y = lastPoint.Y + ArrowLenght \sin rightAngle$$


rightAngle
beta
leftAngle
leftPoint
lastPoint
rightPoint
alpha
firstPoint


(left, top)
(right, top)
(left, bottom)
(right, bottom)


topLeft
bottomRight


topLeft
bottomRight


topLeft
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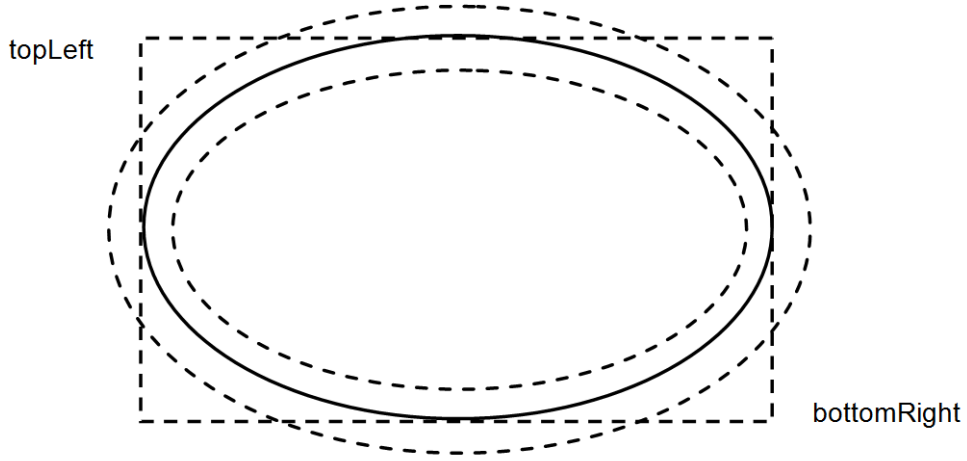
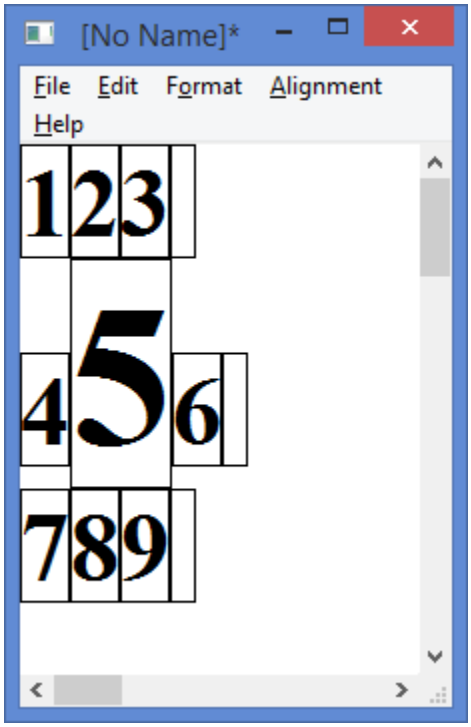
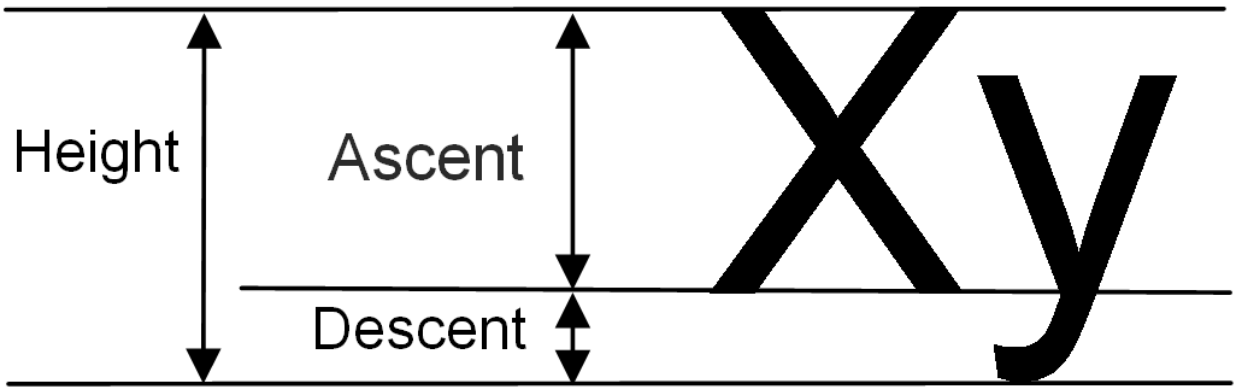

topLeft
bottomRight

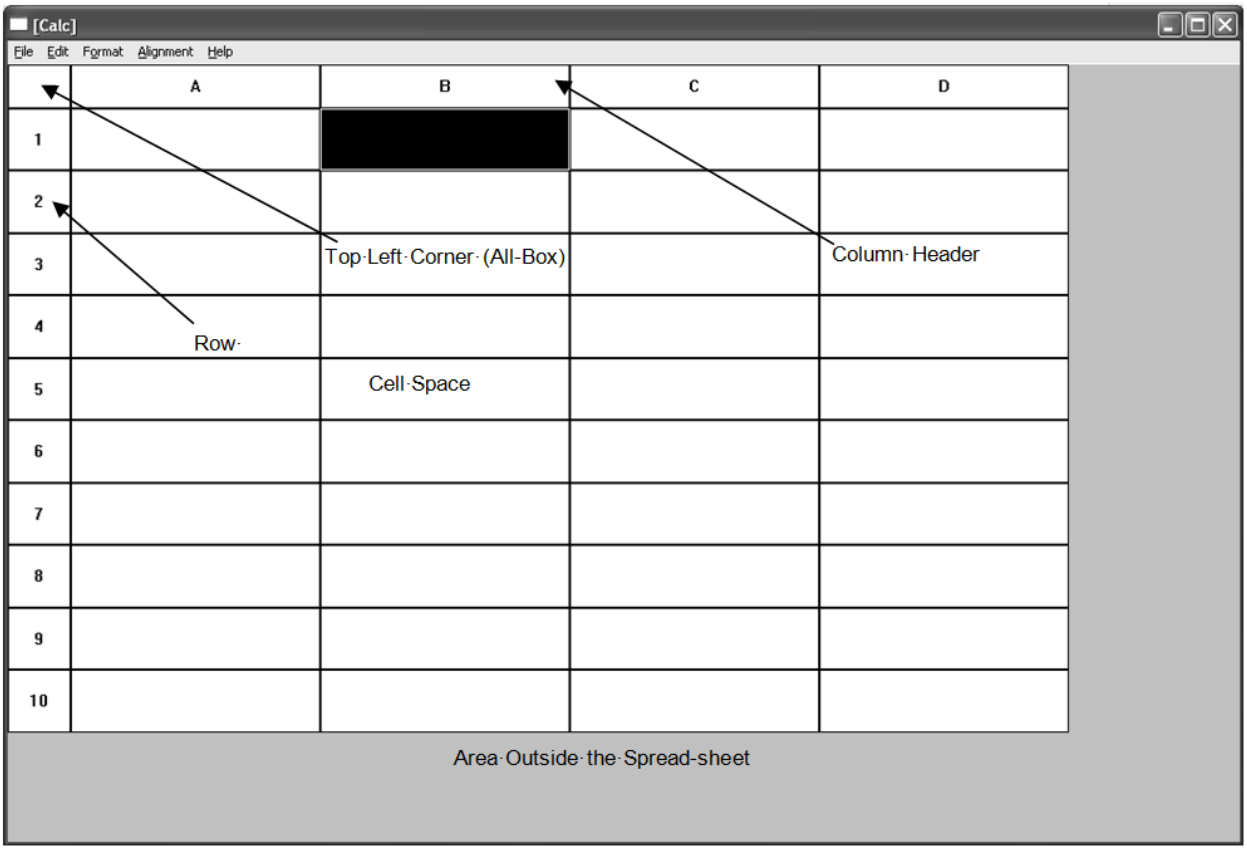
Chapter 6: Building a Word Processor

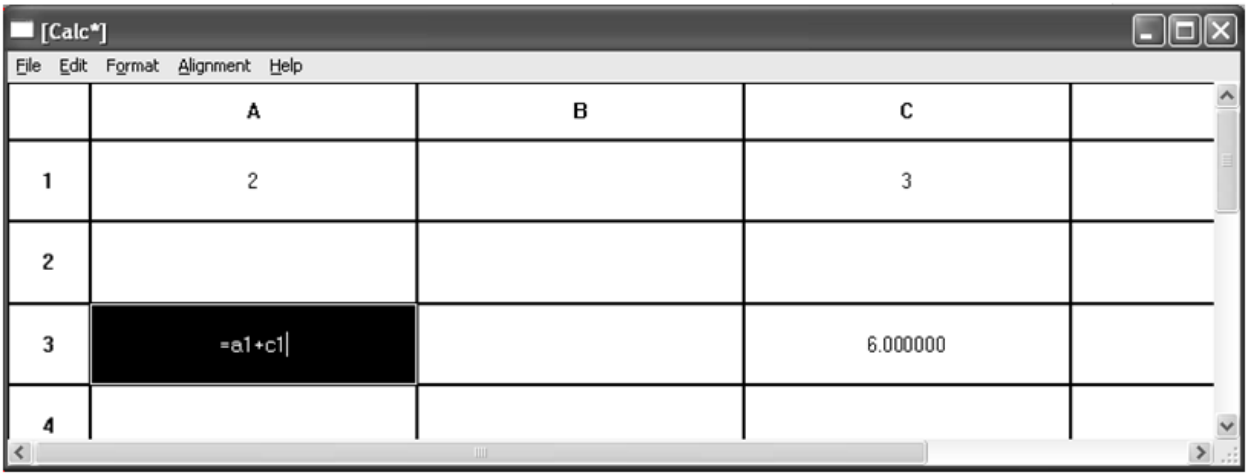
Chapter 7: Keyboard Input and Character Calculation





Chapter 8: Building a Spreadsheet Application

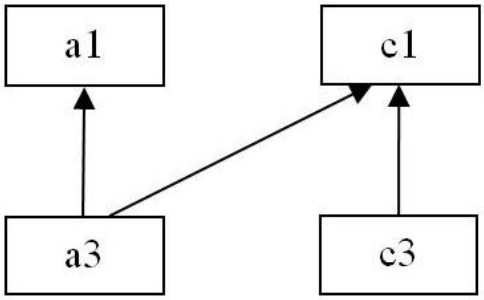




[Calc*]

File Edit Format Alignment Help

	A	B	C	
1	2		3	
2				
3	5.000000		=2*c1	
4				

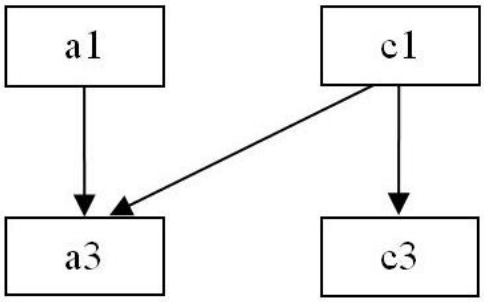


$source(a1) = \{\}$

$source(c1) = \{\}$

$source(a3) = \{a1, c1\}$

$source(c3) = \{c1\}$



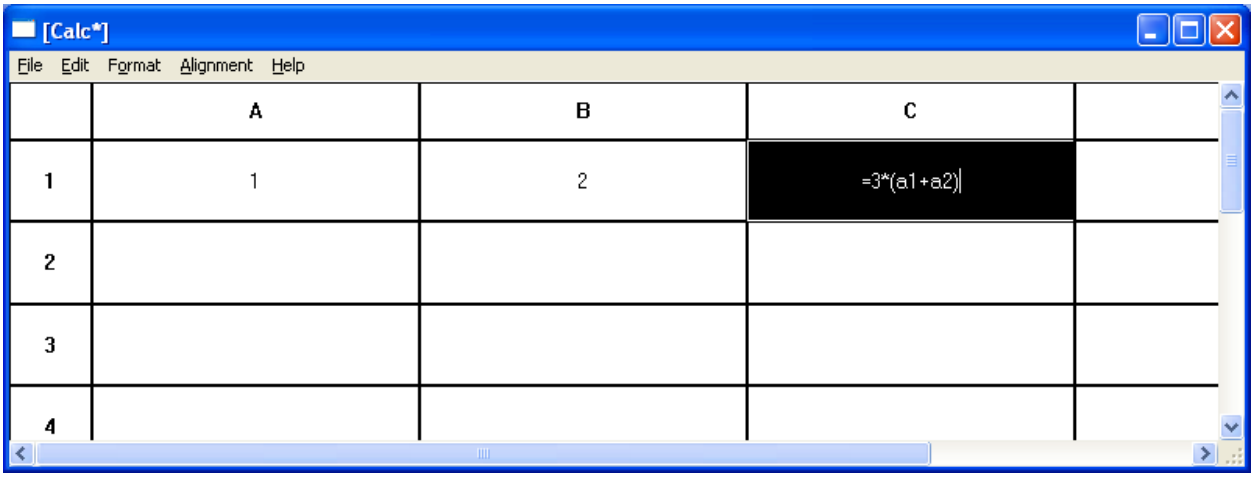
$target(a1) = \{a3\}$

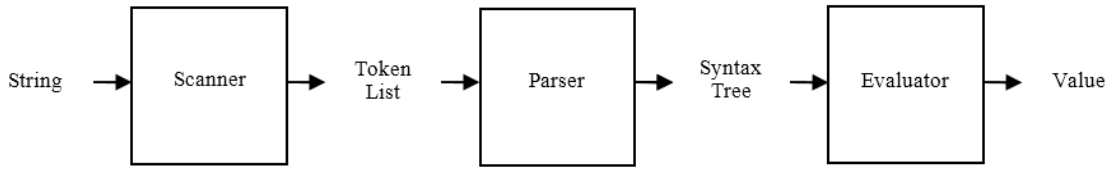
$target(c1) = \{a3, c3\}$

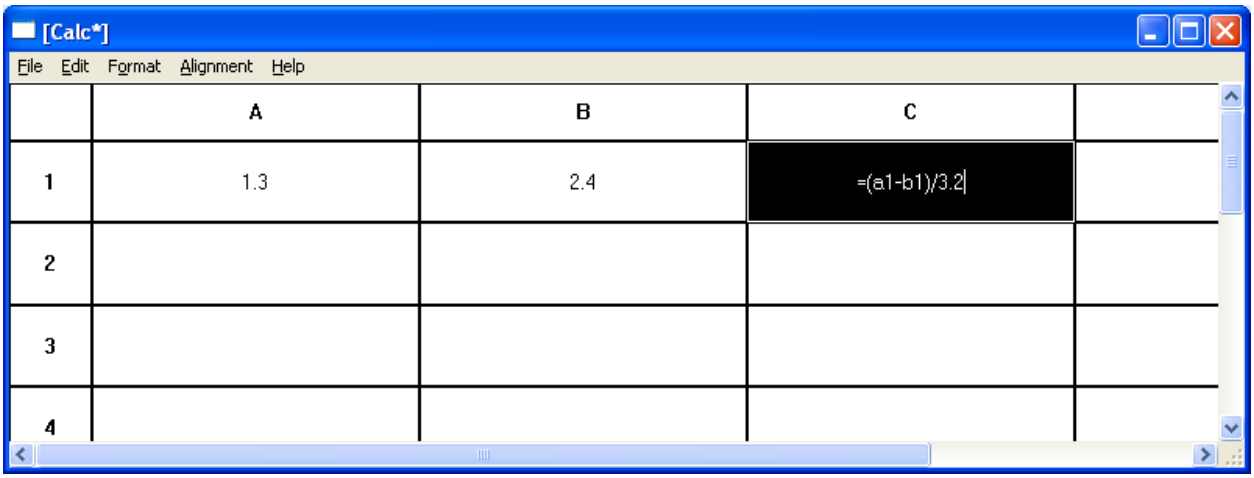
$target(a3) = \{\}$

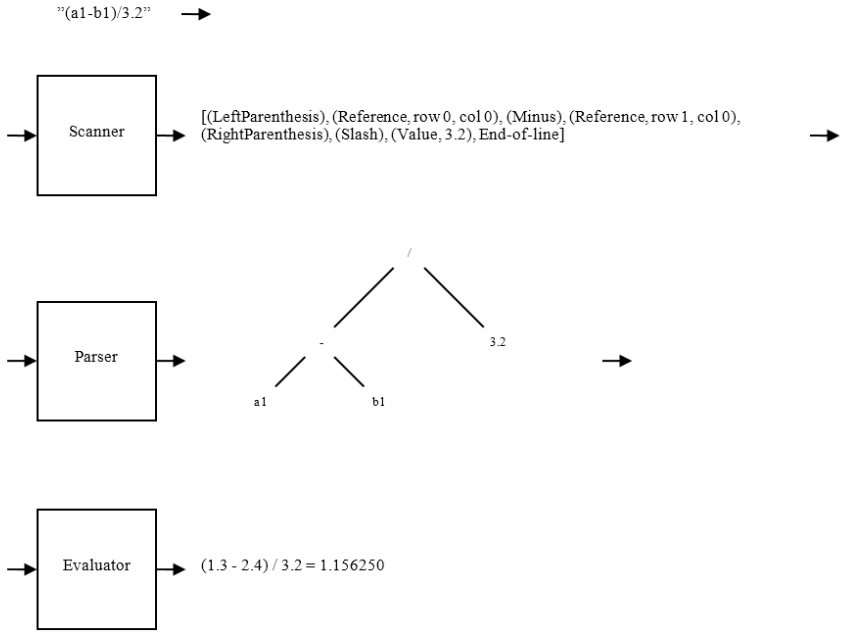
$target(c3) = \{\}$

Chapter 9: Formula Interpretation









[Calc*]

File Edit Format Alignment Help

	A	B	C	
1	1.3	2.4	1.156250	
2				
3				
4				

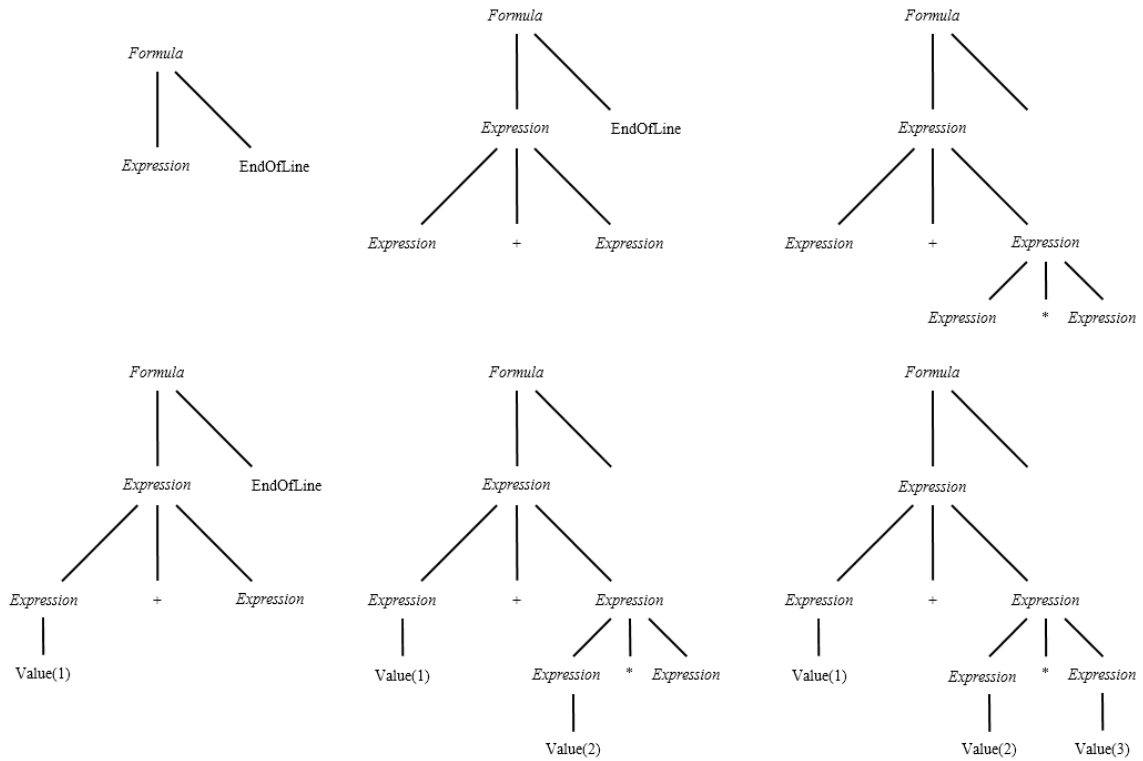
1. $Formula \rightarrow Expression\ \ EndOfLine$
2. $Expression \rightarrow Expression + Expression$
3. $Expression \rightarrow Expression - Expression$
4. $Expression \rightarrow Expression * Expression$
5. $Expression \rightarrow Expression / Expression$
6. $Expression \rightarrow (Expression)$
7. $Expression \rightarrow Value$
8. $Expression \rightarrow Reference$

$$Formula \overset{1}{\Rightarrow} Expression\ \ EndOfFile \overset{2}{\Rightarrow} Expression + Expression\ \ EndOfFile \overset{4}{\Rightarrow}$$

$$Expression + Expression * Expression\ \ EndOfFile \overset{7}{\Rightarrow} Value(1) + Expression * Expression$$

$$EndOfFile \overset{7}{\Rightarrow} Value(1) + Value(2) * Expression\ \ EneOfLine \overset{7}{\Rightarrow} Value(1) + Value(2) * Value(3)$$

$$EndOfFile$$

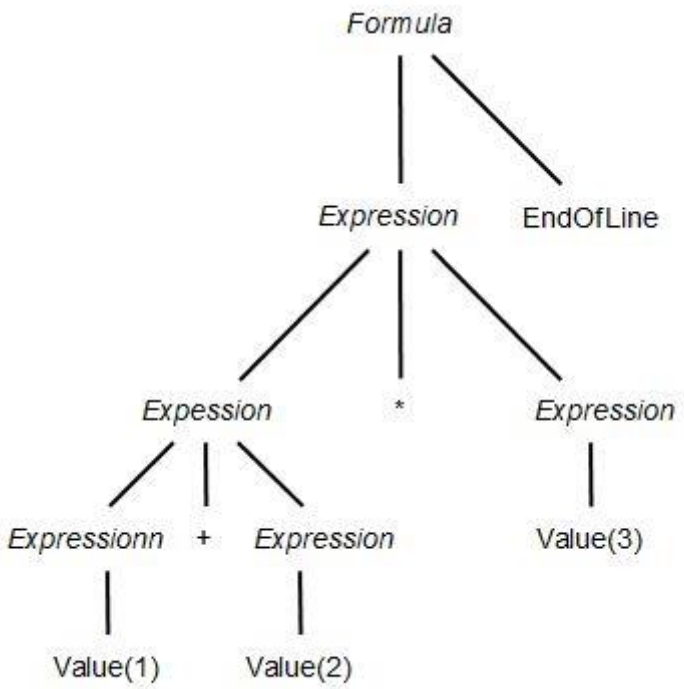


$$Formula \overset{1}{\Rightarrow} Expression\ \ EndOfLine \overset{4}{\Rightarrow} Expression * Expression\ \ EndOfLine \overset{2}{\Rightarrow}$$

$$Expression + Expression * Expression\ \ EndOfLine \overset{7}{\Rightarrow} Value(1) + Expression * Expression$$

$$EndOfLine \overset{7}{\Rightarrow} Value(1) + Value(2) * Expression\ \ EndOfLine \overset{7}{\Rightarrow} Value(1) + Value(2) * Value(3)$$

$$EndOfLine$$



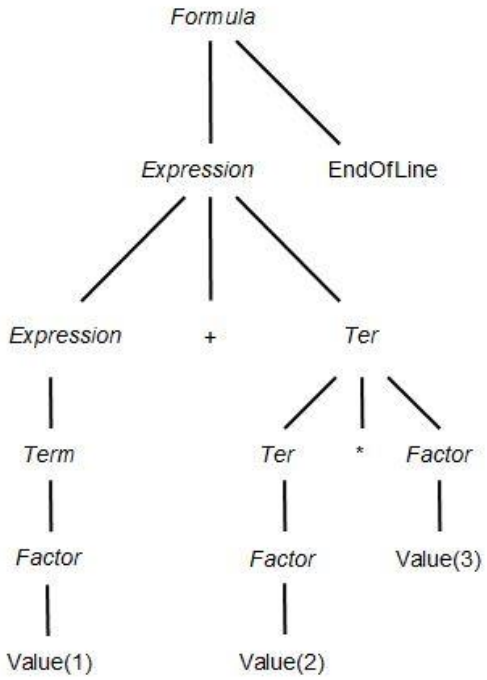
1. $Formula \rightarrow Expression\ EndOfLine$
2. $Expression \rightarrow Expression + Term$
3. $Expression \rightarrow Expression - Term$
4. $Expression \rightarrow Term$
5. $Term \rightarrow Term * Factor$
6. $Term \rightarrow Term / Factor$
7. $Term \rightarrow Factor$
8. $Factor \rightarrow Value$
9. $Factor \rightarrow Reference$
10. $Factor \rightarrow (Expression)$

$$Formula \overset{1}{\Rightarrow} Expression\ EndOfLine \overset{2}{\Rightarrow} Expression + Term\ EndOfLine \overset{4}{\Rightarrow}$$

$$Term + Term\ EndOfLine \overset{7}{\Rightarrow} Factor + Term\ EndOfLine \overset{8}{\Rightarrow} Value(1) + Term\ EndOfLine \overset{5}{\Rightarrow}$$

$$Value(1) + Term * Factor\ EndOfLine \overset{7}{\Rightarrow} Value(1) + Factor * Factor\ EndOfLine \overset{8}{\Rightarrow}$$

$$Value(1) + Value(2) * Factor\ EndOfLine \overset{7}{\Rightarrow} Value(1) + Value(2) * Value(3)\ \ EndOfLine$$



$$Expression \rightarrow Expression + Term$$

$$Expression \rightarrow Expression - Term$$

$$Expression \rightarrow Term$$

$$Expression \rightarrow Term\ \ NextExpression$$

$$NextExpression \rightarrow +Term\ \ NextExpression$$

$$NextExpression \rightarrow -Term\ \ NextExpression$$

$$NextExpression \rightarrow \varepsilon$$

1. $Formula \rightarrow Expression\ \ EOL$
2. $Expression \rightarrow Term\ NextExpression$
3. $NextExpression \rightarrow +Term\ NextExpression$
4. $NextExpression \rightarrow -Term\ NextExpression$
5. $NextExpression \rightarrow \varepsilon$
6. $Term \rightarrow Factor\ NextTerm$
7. $NextTerm \rightarrow *Factor\ NextTerm$
8. $NextTerm \rightarrow /\ Factor\ NextTerm$
9. $NextTerm \rightarrow \varepsilon$
10. $Factor \rightarrow Value$
11. $Factor \rightarrow Reference$
12. $Factor \rightarrow (Expression)$

$$Formula \overset{1}{\Rightarrow} Expression\ EndOfLine \overset{2}{\Rightarrow} Term\ NextExpression\ EndOfLine \overset{3}{\Rightarrow}$$

$$Term + Term\ NextExpression\ EndOfLine \overset{6}{\Rightarrow}$$

$$Factor\ NextTerm + Term\ NextExpression\ EndOfLine \overset{9}{\Rightarrow}$$

$$Factor + Term\ NextExpression\ EndOfLine \overset{10}{\Rightarrow}$$

$$Value(1) + Term\ NextExpression\ EndOfLine \overset{6}{\Rightarrow}$$

$$Value(1) + Factor\ NextTerm\ NextExpression\ EndOfLine \overset{10}{\Rightarrow}$$

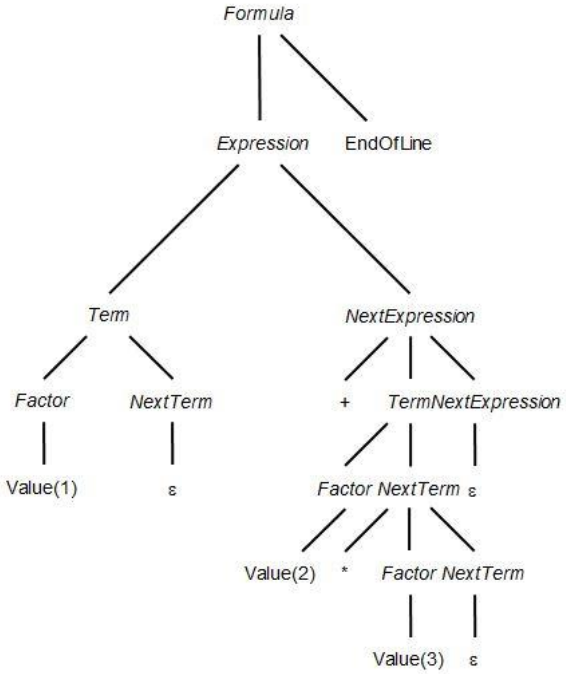
$$Value(1) + Value(2)\ NextTerm\ NextExpression\ EndOfLine \overset{7}{\Rightarrow}$$

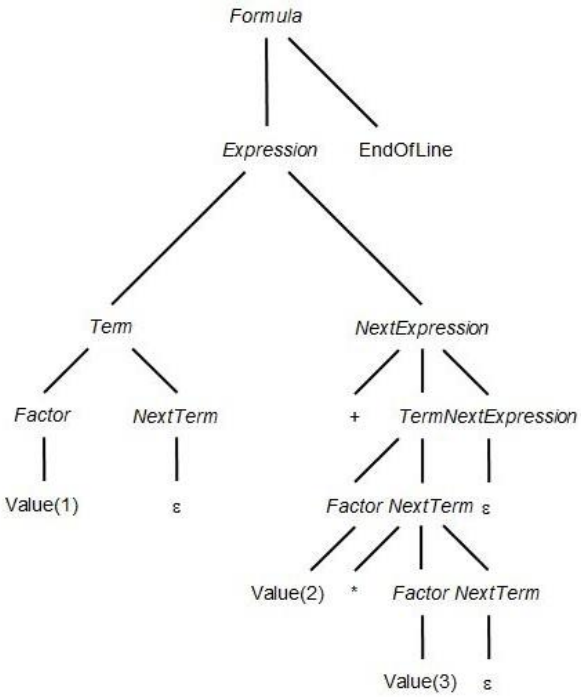
$$Value(1) + Value(2) * Factor\ NextTerm\ NextExpression\ EndOfLine \overset{10}{\Rightarrow}$$

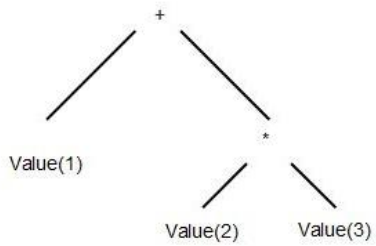
$$Value(1) + Value(2) * Value(3)\ NextTerm\ NextExpression\ EndOfLine \overset{9}{\Rightarrow}$$

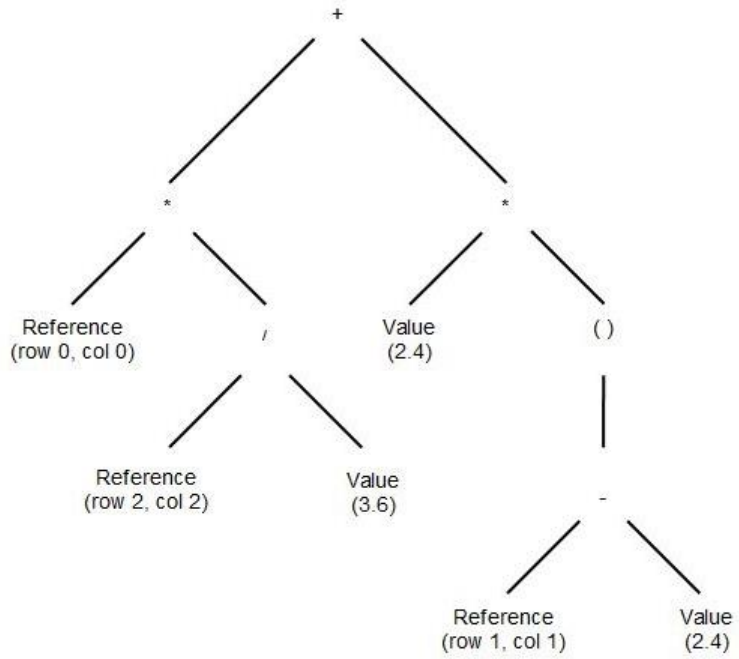
$$Value(1) + Value(2) * Value(3)\ NextExpression\ EndOfLine \overset{5}{\Rightarrow}$$

$$Value(1) + Value(2) * Value(3)\ EndOfLine$$

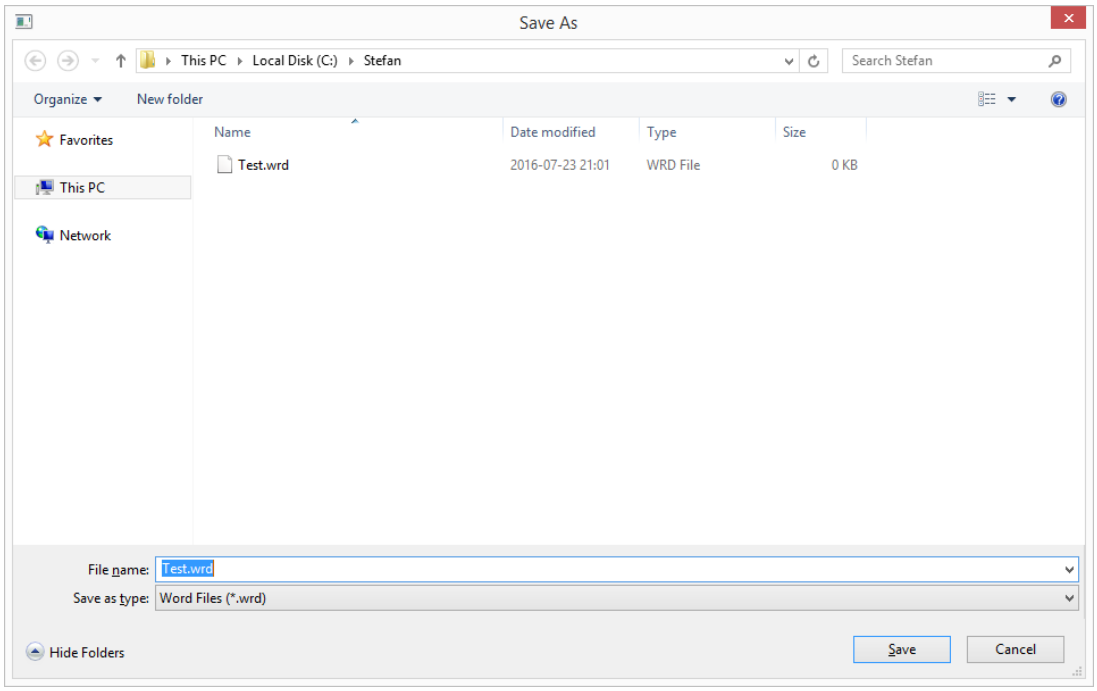


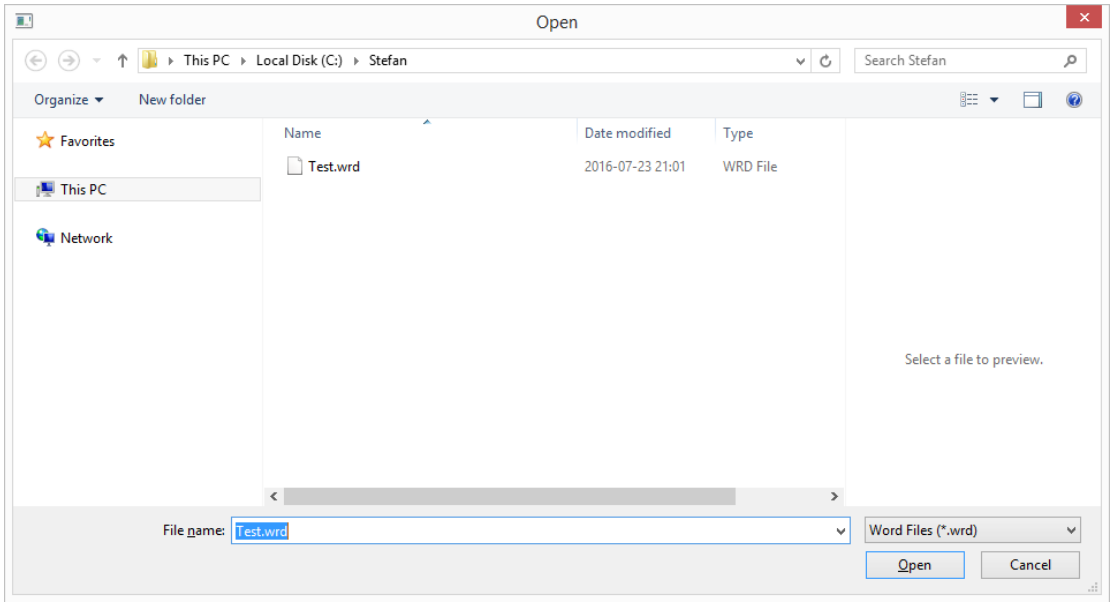

Formula
Expression
EndOfLine
Term
NextExpression
Factor
NextTerm
+
TermNextExpression
Value(1)
ε
Factor NextTerm
ε
Value(2)
*
Factor NextTerm
Value(3)
ε

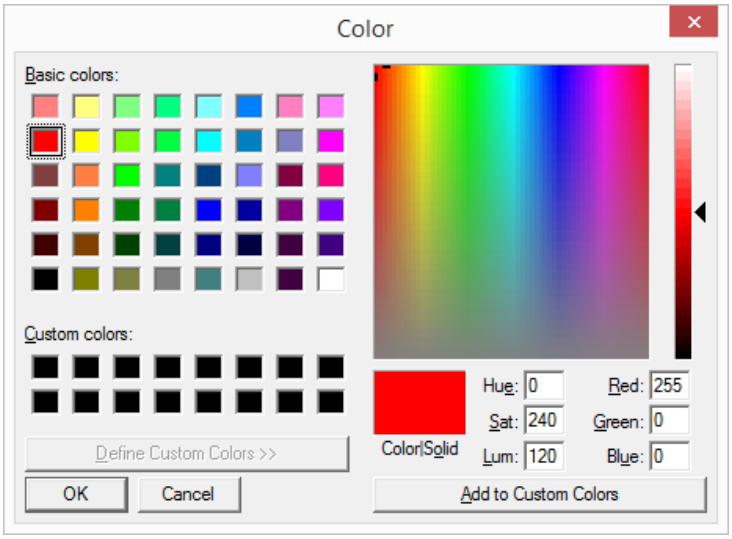

+
Value(1)
*
Value(2)
Value(3)

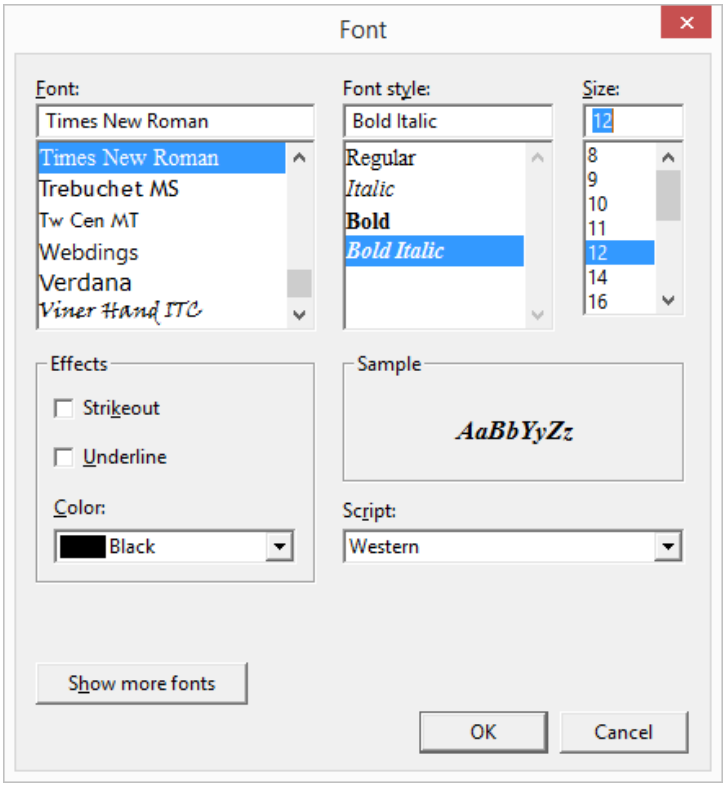

+
*
*
Reference
(row 0, col 0)
/
Value
(2.4)
( )
Reference
(row 2, col 2)
Value
(3.6)
-
Reference
(row 1, col 1)
Value
(2.4)

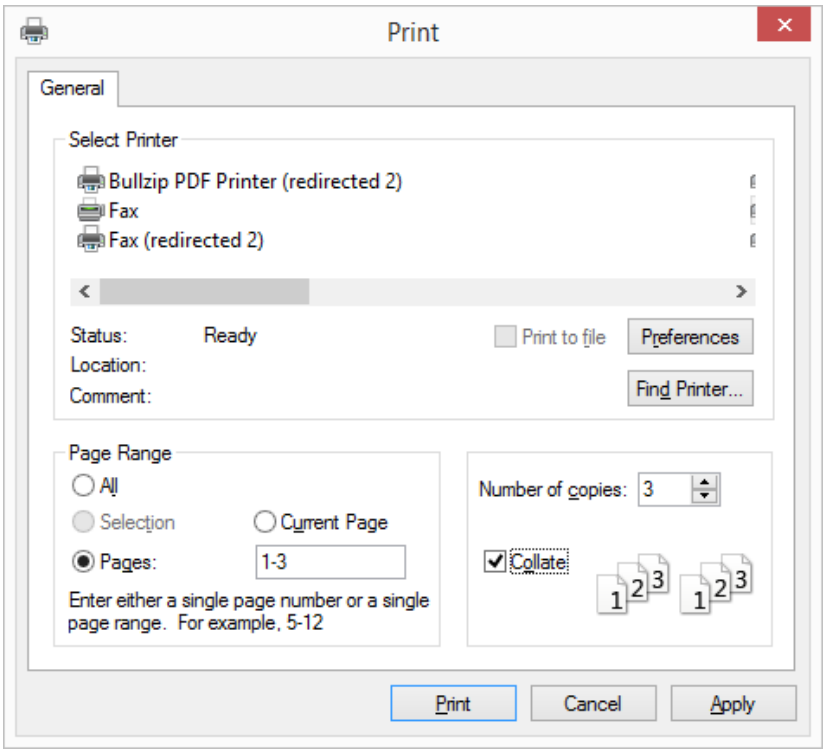
Chapter 13: The Registry, Clipboard, Standard Dialogs, and Print Preview



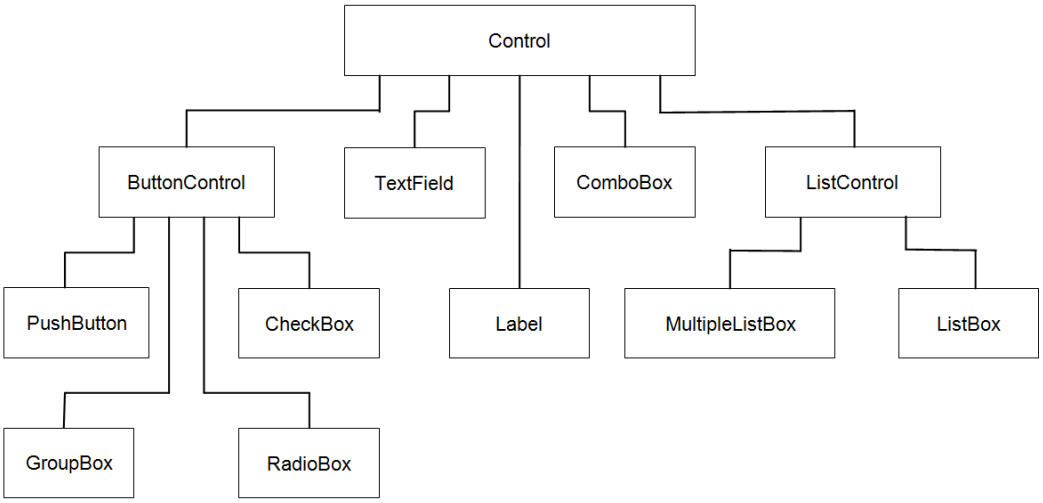


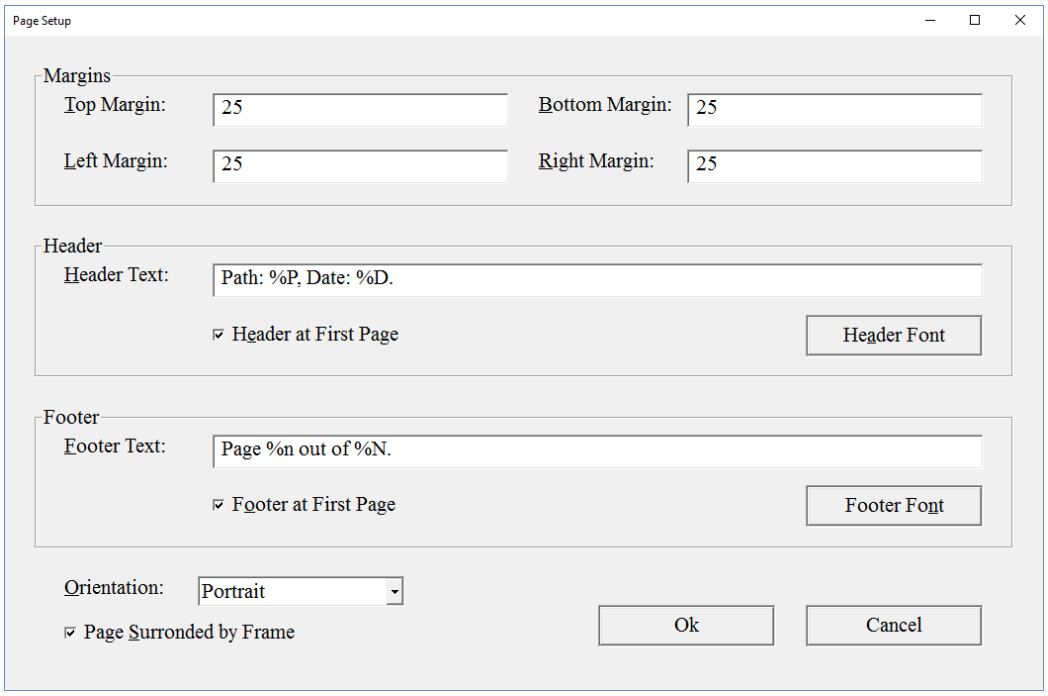

Color
Basic colors:
Custom colors:
Define Custom Colors >>
OK
Cancel
Color|Solid
Hue: 0
Sat: 240
Lum: 120
Red: 255
Green: 0
Blue: 0
Add to Custom Colors


Font
Font:
Times New Roman
Times New Roman
Trebuchet MS
Tw Cen MT
Webdings
Verdana
Viner Hand ITC
Font style:
Bold Italic
Regular
Italic
Bold
Bold Italic
Size:
12
8
9
10
11
12
14
16
Effects
Strikeout
Underline
Color:
Black
Sample
AaBbYyZz
Script:
Western
Show more fonts
OK
Cancel


Print
General
Select Printer
Bullzip PDF Printer (redirected 2)
Fax
Fax (redirected 2)
Status: Ready
Location:
Comment:
Print to file
Preferences
Find Printer...
Page Range
All
Selection
Current Page
Pages: 1-3
Enter either a single page number or a single page range. For example, 5-12
Number of copies: 3
Collate
1 2 3
1 2 3
Print
Cancel
Apply

Chapter 14: Dialogs, Controls, and Page Setup





Appendix: Rational and Complex Numbers

$$\frac{n_1}{d_1} < \frac{n_2}{d_2} \Leftrightarrow n_1 d_2 < n_2 d_1$$

$$\frac{n_1}{d_1} + \frac{n_2}{d_2} = \frac{n_1 d_2}{d_1 d_2} + \frac{n_2 d_1}{d_2 d_1} = \frac{n_1 d_2 + n_2 d_1}{d_1 d_2}$$

$$\frac{n_1}{d_1} - \frac{n_2}{d_2} = \frac{n_1 d_2}{d_1 d_2} - \frac{n_2 d_1}{d_2 d_1} = \frac{n_1 d_2 - n_2 d_1}{d_1 d_2}$$

$$\frac{n_1}{d_1}\frac{n_2}{d_2} = \frac{n_1 n_2}{d_1 d_2}$$

$$\frac{n_1}{d_1} / \frac{n_2}{d_2} = \frac{n_1}{d_1}\frac{d_2}{n_2} = \frac{n_1 d_2}{d_1 n_2}$$

$$\frac{x_1 + y_1 i}{x_2 + y_2 i} = \frac{x_1 + y_1 i}{x_2 + y_2 i}\frac{x_2 - y_2 i}{x_2 - y_2 i} = \frac{\left(x_1 + y_1 i\right)\left(x_2 - y_2 i\right)}{\left(x_2 + y_2 i\right)\left(x_2 - y_2 i\right)} = \frac{x_1 x_2 - x_1 y_2 i + x_2 y_1 i - y_1 y_2 i^2}{x_2^2 + y_2^2} =$$

$$\frac{x_1 x_2 - x_1 y_2 i + x_2 y_1 i - y_1 y_2 \left(-1\right)}{x_2^2 + y_2^2} = \frac{x_1 x_2 - x_1 y_2 i + x_2 y_1 i + y_1 y_2}{x_2^2 + y_2^2} = \frac{\left(x_1 x_2 + y_1 y_2\right) + \left(x_2 y_1 - x_1 y_2\right) i}{x_2^2 + y_2^2} =$$

$$\frac{x_1 x_2 + y_1 y_2}{x_2^2 + y_2^2} + \frac{x_2 y_1 - x_1 y_2}{x_2^2 + y_2^2} i$$