

JBusinessChart

Providing Charts to ooRexx

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Start

- Fascination for programming and ooRexx (BP1 & 2)
 - Meeting with Prof. Flatscher
 - Research Question
 - Which ooRexx class structures for JDOR effectively facilitate the creation of diverse business charts?
- Chart framework for ooRexx

Time schedule (planned)

- 28. June: Start (end of exam week)
- 29. July: Program complete (1 month)
- 12. August: Code & Examples complete (2 weeks)
- 19. August: Thesis complete (1 week)
- 29. August: Submission on myLearn

Problem

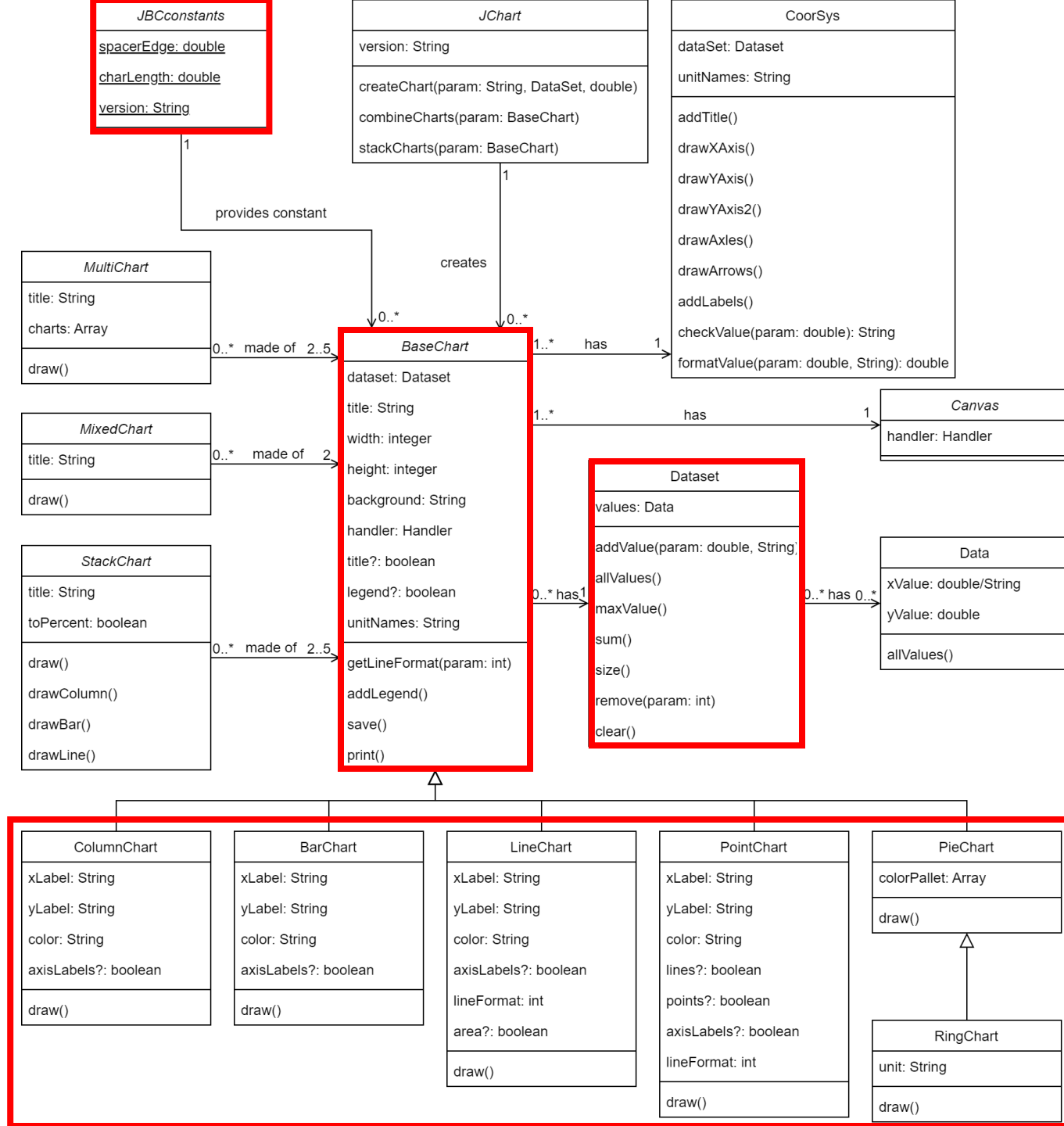
- Chart representation not directly available in ooRexx
 - bar/line/pie chart
- BSF4ooRexx → **JDOR** Java Drawing for ooRexx → Java2D
 - Complex for new programmers
 - Slow

Solution

- Framework on top of BSF4ooRexx and JDOR utilizing Java2D
- Intuitive, simple, fast results
 - New logic
- Result: Classes to facilitate chart creation
 - JBusinessChart

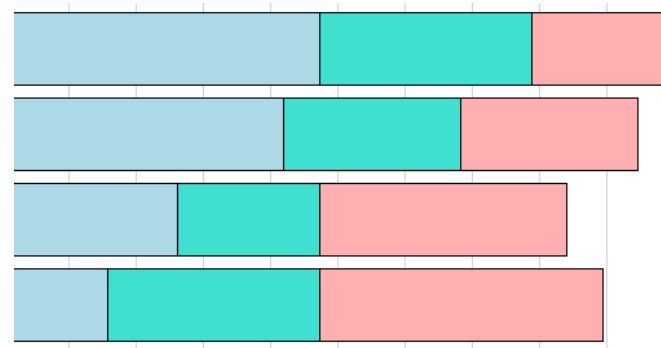
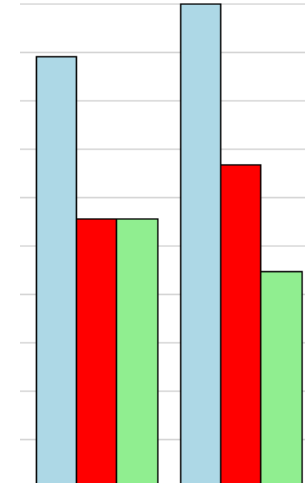
Architecture

- DataSet
 - Universal data storage
- JChart
 - Primary user interface
 - Create and works with charts
 - Distributes tasks to corresponding classes
- BaseChart and subclasses
 - Construct the charts



Nutshell Examples

- Demonstrate all features and usage
- Help new programmers
- 14 programs divided in 3 difficulties
 - 0) Basics (dataset & createChart)
 - 1) Combining (combineCharts)
 - 2) Stacking (stackCharts)



Nutshell Demonstration

00_create_dataset.rxj

```
/* creating datasets */
myData = .dataSet~new
myData~addValue("2012", 10)
myData~addValue("2013", 15)
myData~addValue("2014", 25)
myData~addValue("2015", 40)
myData~addValue(">2015", 45)

/* display all values of a dataset */
say "Displaying current values of myData..."
myData~allValues
myData~size
myData~maxValue

/* waiting 4 seconds */
say "waiting 4 seconds"
call sys.sleep 4

/* editing data */
say "Removing the third data of myData..."
myData~remove(3)
myData~allValues

/* waiting 4 seconds */
say "waiting 4 seconds"
call sys.sleep 4

/* deleting all data */
say "Deleting all data of myData and adding one..."
myData~clear
myData~addValue("2022", 1004)
myData~allValues

/* close windows after 20 seconds */
say "waiting 20 seconds"
call sys.sleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'
```

```
Displaying current values of myData...  
#1 Values: 2012 10  
#2 Values: 2013 15  
#3 Values: 2014 25  
#4 Values: 2015 40  
#5 Values: >2015 45  
Removing the third data of myData...  
#1 Values: 2012 10  
#2 Values: 2013 15  
#3 Values: 2015 40  
#4 Values: >2015 45  
Deleting all data of myData and adding one...  
#1 Values: 2024 1108  
waiting 20 seconds
```

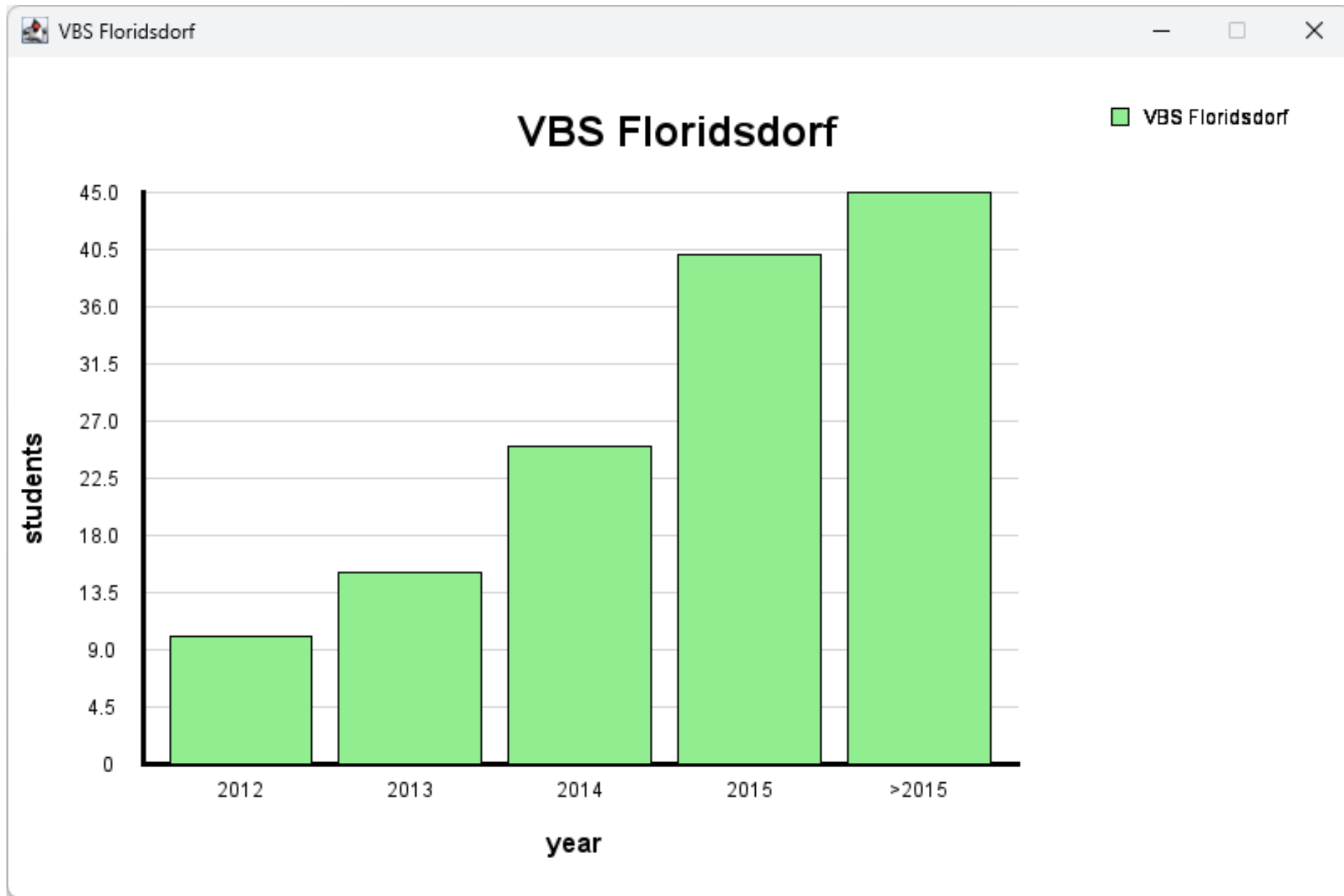
01_column_chart.rxj

```
/* creating datasets */
myData = .dataSet~new
myData~addValue("2012", 10)
myData~addValue("2013", 15)
myData~addValue("2014", 25)
myData~addValue("2015", 40)
myData~addValue(">2015", 45)

/* creating classic column chart & display it */
myColumnChart = .JChart~createChart("ColumnChart", myData, "VBS Floridsdorf", "year", "students")
--chartType, dataSet [, title, xLabel, yLabel, width, height]
myColumnChart~color = lightgreen --change bar color to "lightgreen" (default: "lightblue")
myColumnChart~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call syssleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'
```



02_bar_chart.rxj

```

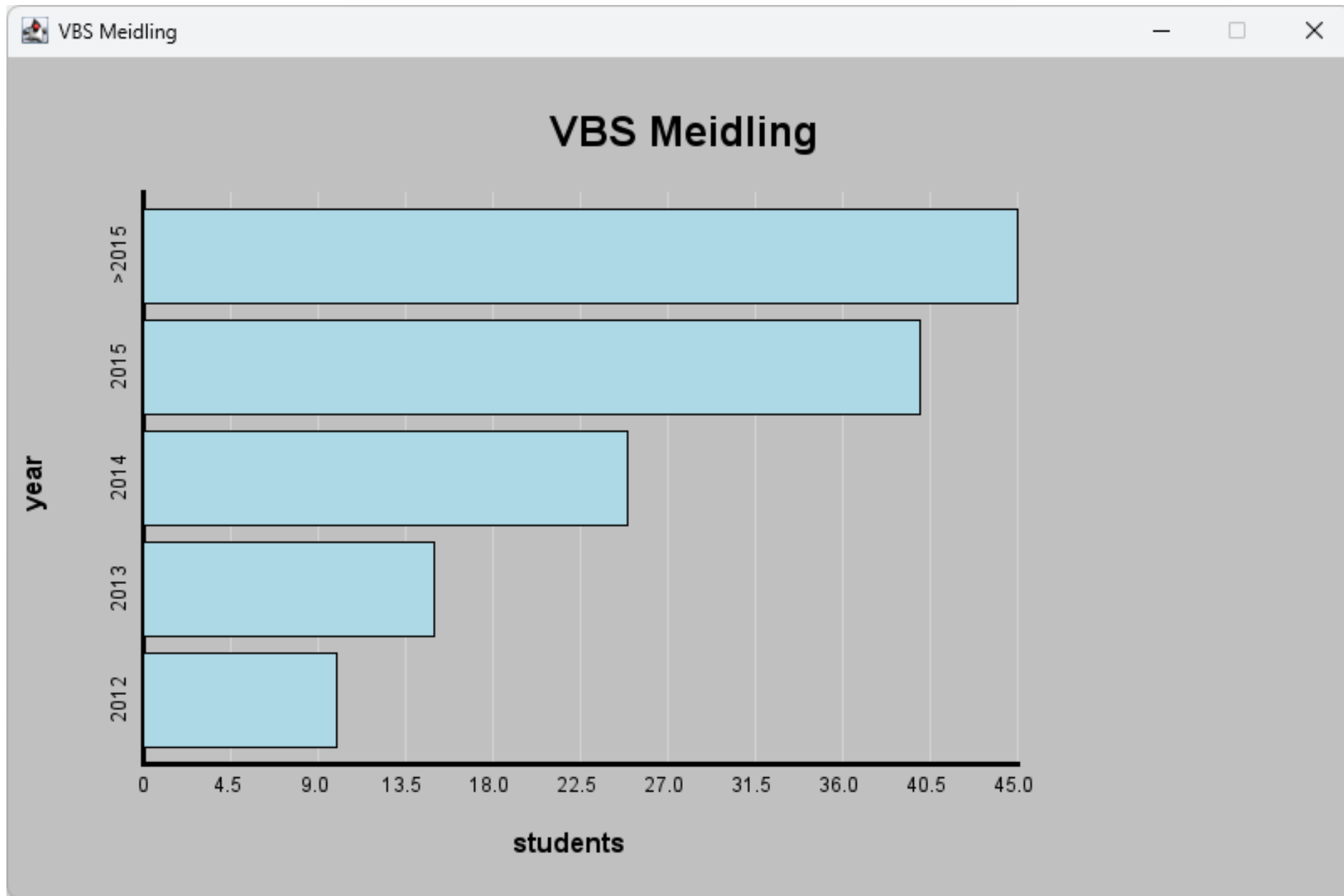
/* creating datasets */
myData = .dataSet~new
myData~addValue("2012", 10)
myData~addValue("2013", 15)
myData~addValue("2014", 25)
myData~addValue("2015", 40)
myData~addValue(">2015", 45)

/* creating classic bar chart & display it */
myBarChart = .JChart~createChart("BarChart", myData, "VBS Meidling", "students", "year")
--chartType, dataSet [, title, xLabel, yLabel, width, height]
myBarChart~background = silver --change background color to "silver" (default: "white")
myBarChart~legend? = .false --disable the legend
myBarChart~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call syssleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'

```



03_line_chart.rxj

```

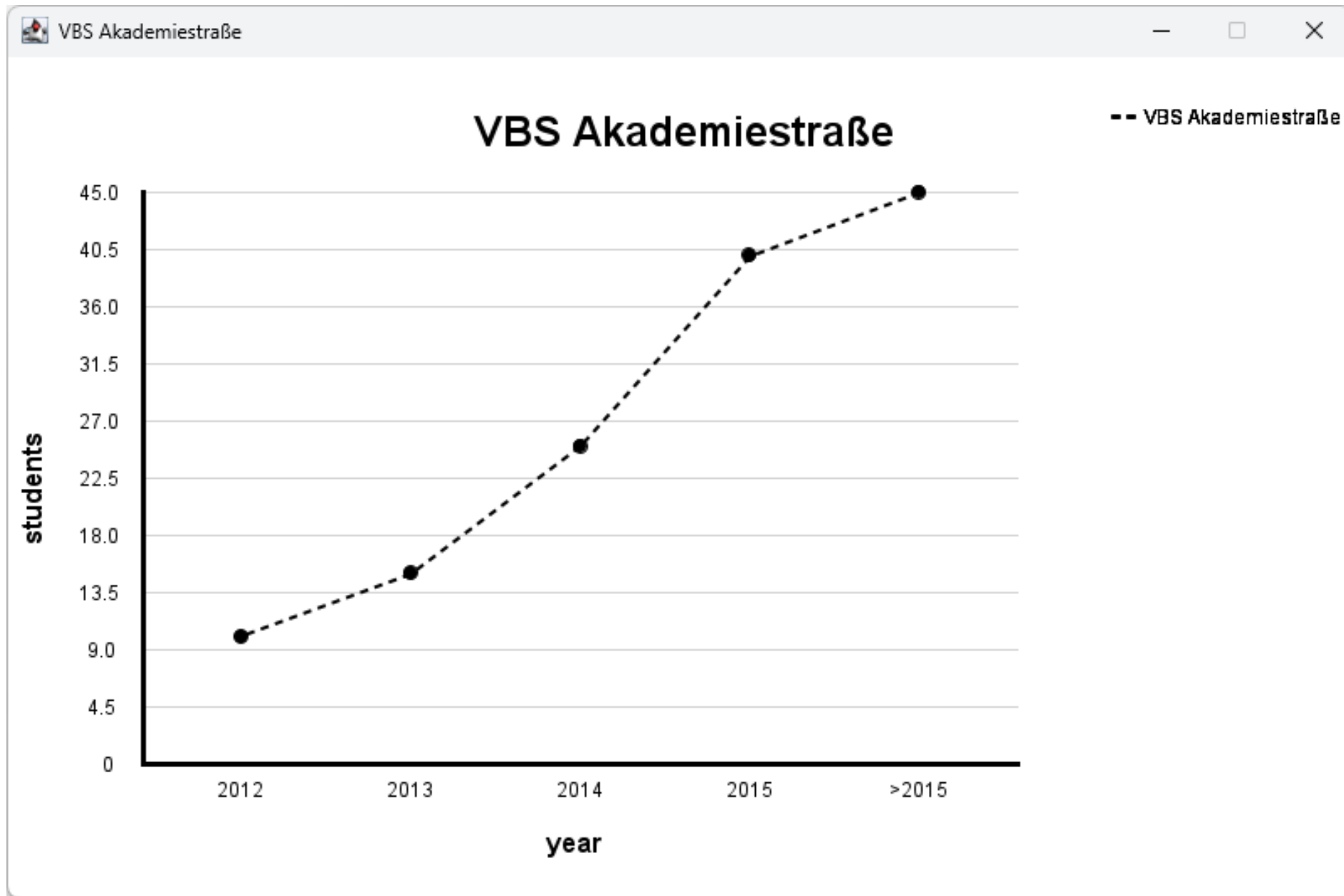
/* creating datasets */
myData = .dataSet~new
myData~addValue("2012", 10)
myData~addValue("2013", 15)
myData~addValue("2014", 25)
myData~addValue("2015", 40)
myData~addValue(">2015", 45)

/* creating classic line chart & display it */
myLineChart = .JChart~createChart("LineChart", myData, "VBS Akademiestraße", "year", "students")
--chartType, dataSet [, title, xLabel, yLabel, width, height]
myLineChart~area? = .false --disable showing area under the line (default: .true)
myLineChart~lineFormat = 1 --change line format (default: 0) [0: solid line, 1:
dashed, 2: dotted, 3: mixed]
myLineChart~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call sysssleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'

```



04_point_chart.rxj

```

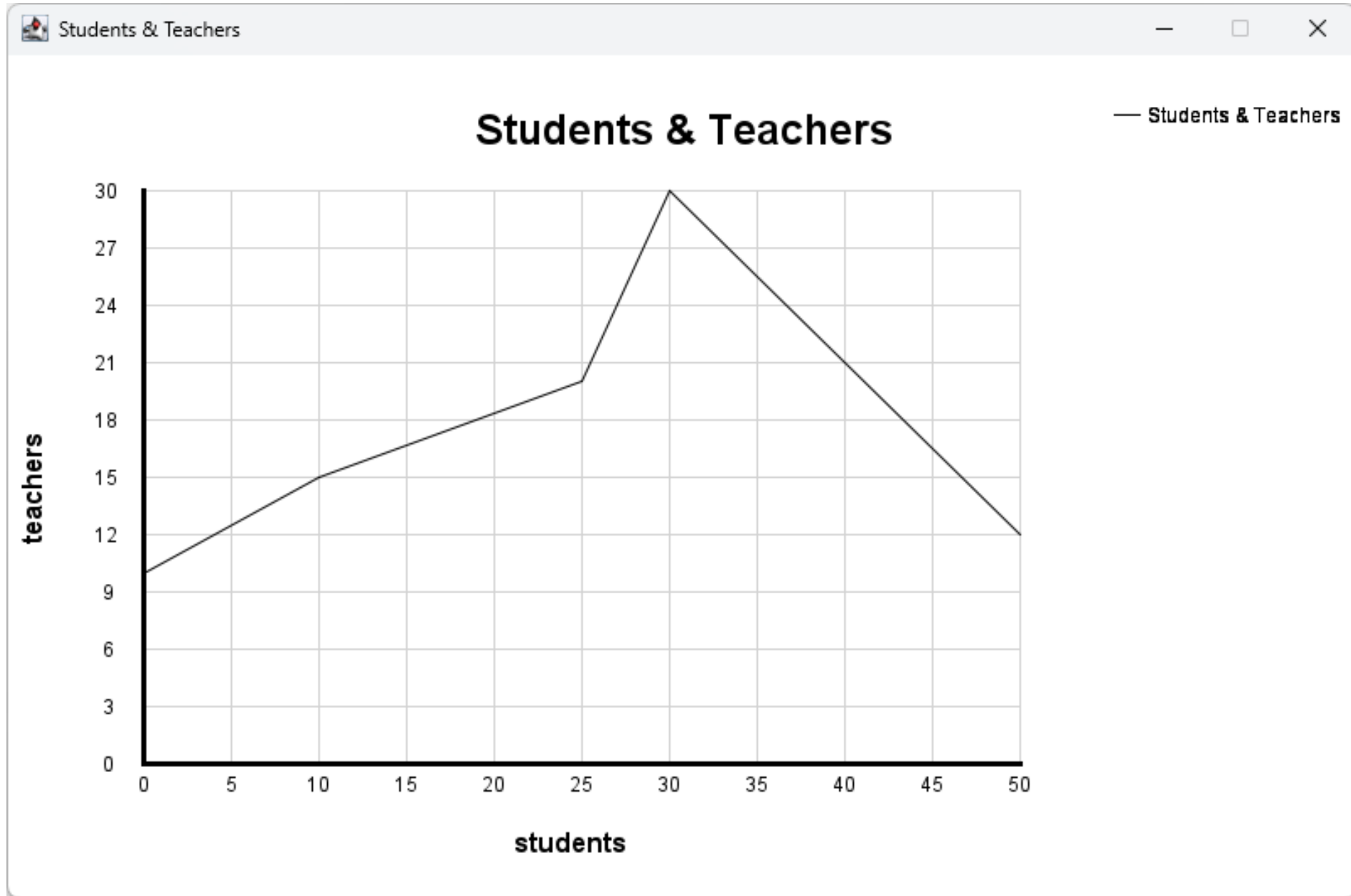
/* creating datasets */
myData = .dataSet~new
myData~addValue(0, 10)
myData~addValue(10, 15)
myData~addValue(25, 20)
myData~addValue(30, 30)
myData~addValue(50, 12)

/* creating classic point chart & display it */
myPointChart = .JChart~createChart("PointChart", myData, "Students & Teachers", "students",
"teachers")
                                --chartType, dataSet [, title, xLabel, yLabel, width, height]
myPointChart~points? = .false    --disable showing points (default: .true)
myPointChart~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call syssleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'

```



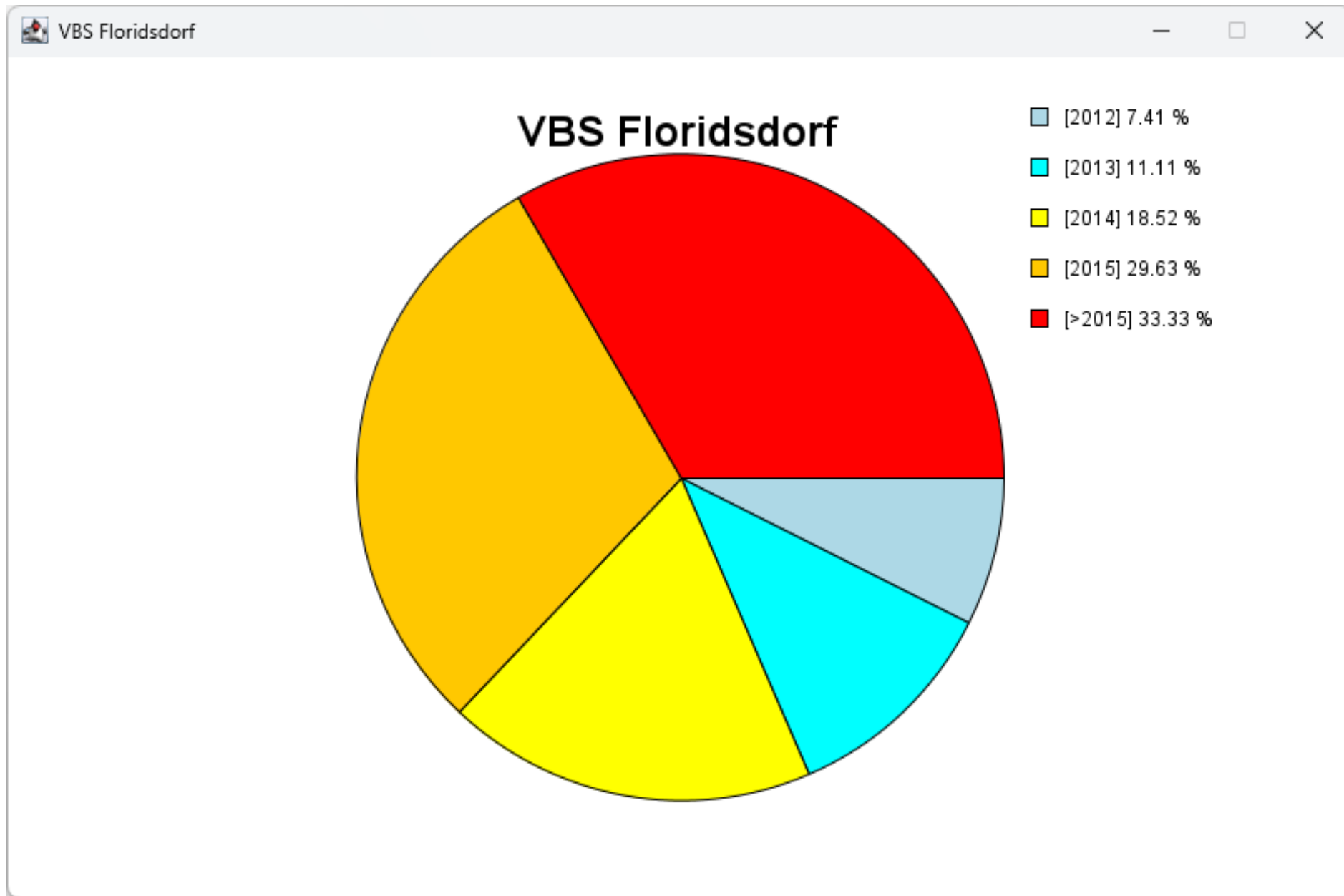
05_pie_chart.rxj

```
/* creating datasets */
myData = .dataSet~new
myData~addValue("2012", 10)
myData~addValue("2013", 15)
myData~addValue("2014", 25)
myData~addValue("2015", 40)
myData~addValue(">2015", 45)

/* creating classic pie chart & display it */
myPieChart = .JChart~createChart("PieChart", myData, "VBS Floridsdorf")
--chartType, dataSet [, title, width, height]
myPieChart~colorPallet = ("lightblue", "cyan", "yellow", "orange", "red", "blue")
--change color of elements (default: random)
myPieChart~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call syssleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'
```



06_ring_chart.rxj

```

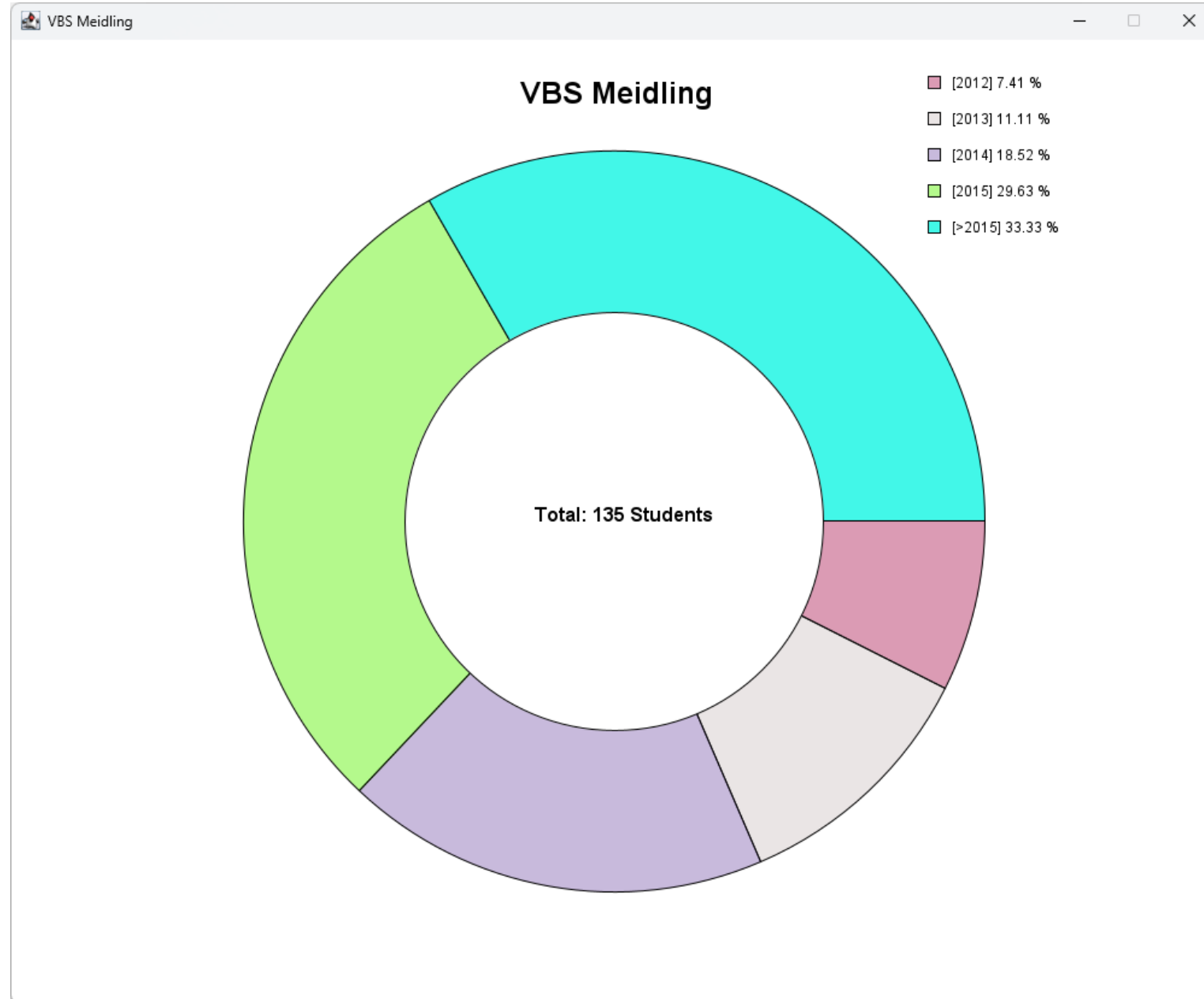
/* creating datasets */
myData = .dataSet~new
myData~addValue("2012", 10)
myData~addValue("2013", 15)
myData~addValue("2014", 25)
myData~addValue("2015", 40)
myData~addValue(">2015", 45)

/* creating classic ring chart & display it */
myRingChart = .JChart~createChart("RingChart", myData, "VBS Meidling", , , 1000, 800)
--chartType, dataSet [, title, , ,width, height]
myRingChart~unit = "Students" --changing unit of the data displayed in the middle
myRingChart~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call syssleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'

```



11_combine_column_charts.rxj

```

/* creating datasets */
hak1 = .dataSet~new
hak1~addValue("2012", 10)
hak1~addValue("2013", 15)
hak1~addValue("2014", 25)
hak1~addValue("2015", 40)
hak1~addValue(">2015", 45)

hak2 = .dataSet~new
hak2~addValue("2012", 10)
hak2~addValue("2013", 30)
hak2~addValue("2014", 20)
hak2~addValue("2015", 25)
hak2~addValue(">2015", 30)

hak3 = .dataSet~new
hak3~addValue("2012", 30)
hak3~addValue("2013", 40)
hak3~addValue("2014", 35)
hak3~addValue("2015", 25)
hak3~addValue(">2015", 20)

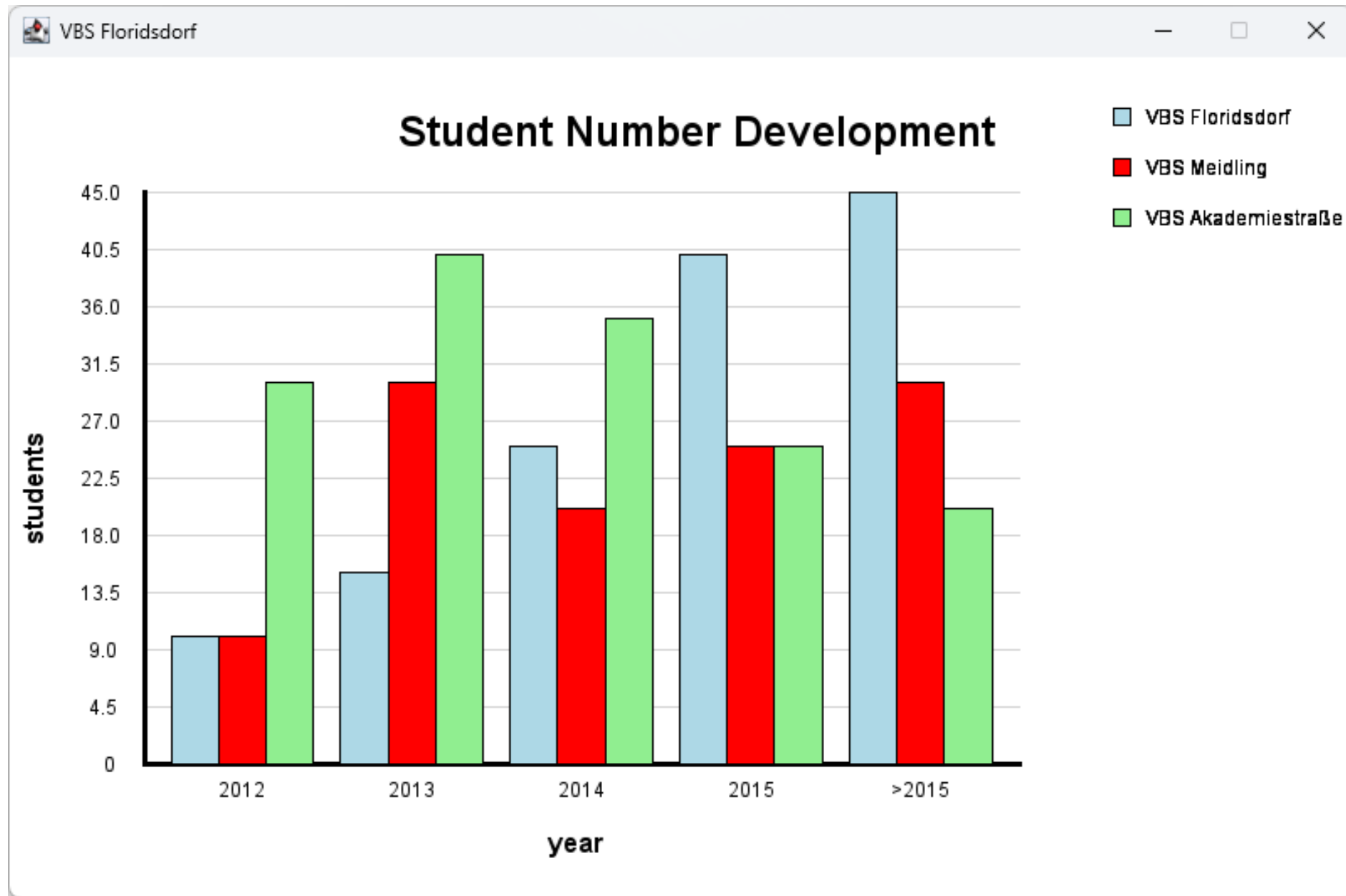
/* creating column charts */
c1 = .JChart~createChart("ColumnChart", hak1, "VBS Floridsdorf", "year", "students")
c2 = .JChart~createChart("ColumnChart", hak2, "VBS Meidling", "year", "students")
c3 = .JChart~createChart("ColumnChart", hak3, "VBS Akademiestraße", "year", "students")
c2~color = red
c3~color = lightgreen

/* combining column charts */
myCombinedColumns = .JChart~combineCharts(c1, c2, c3)
myCombinedColumns~title = "Student Number Development"
myCombinedColumns~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call sys$sleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'

```



12_combine_line_charts.rxj

```
/* creating datasets */
hak1 = .dataSet~new
hak1~addValue("2012", 10)
hak1~addValue("2013", 15)
hak1~addValue("2014", 25)
hak1~addValue("2015", 40)
hak1~addValue(">2015", 45)

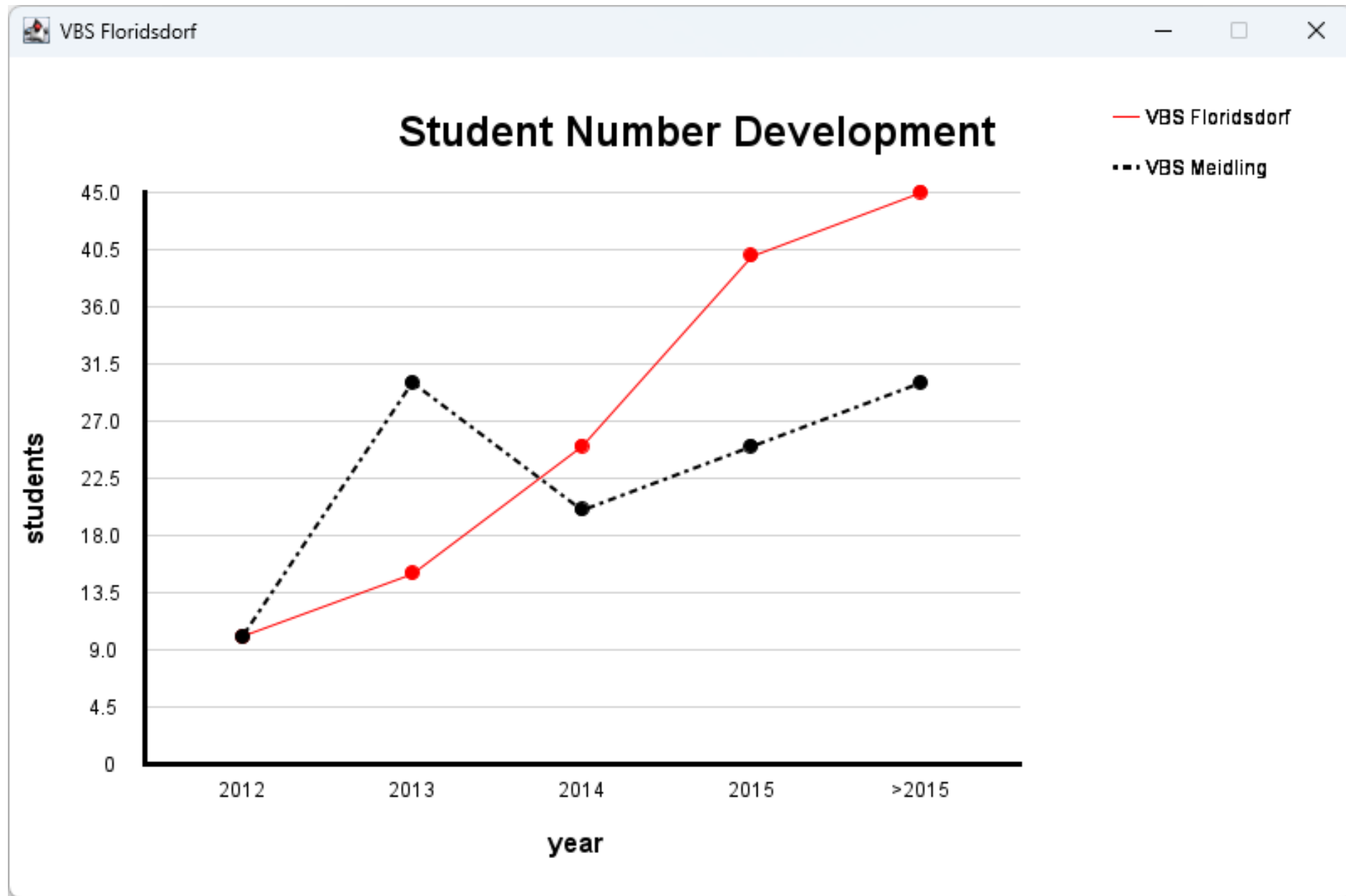
hak2 = .dataSet~new
hak2~addValue("2012", 10)
hak2~addValue("2013", 30)
hak2~addValue("2014", 20)
hak2~addValue("2015", 25)
hak2~addValue(">2015", 30)

/* creating line charts */
l1 = .JChart~createChart("LineChart", hak1, "VBS Floridsdorf", "year", "students")
l2 = .JChart~createChart("LineChart", hak2, "VBS Meidling", "year", "students")
l1~color = red
l1~area? = .false
l2~area? = .false
l2~lineFormat = 3

/* combining line charts */
myCombinedLines = .JChart~combineCharts(l1, l2)
myCombinedLines~title = "Student Number Development"
myCombinedLines~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call sys$sleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'
```



13_mix_column-line_charts.rxj

```
/* creating datasets */
hak1 = .dataSet~new
hak1~addValue("2012", 10)
hak1~addValue("2013", 15)
hak1~addValue("2014", 25)
hak1~addValue("2015", 40)
hak1~addValue(">2015", 45)

hak3 = .dataSet~new
hak3~addValue("2012", 30)
hak3~addValue("2013", 40)
hak3~addValue("2014", 35)
hak3~addValue("2015", 25)
hak3~addValue(">2015", 20)

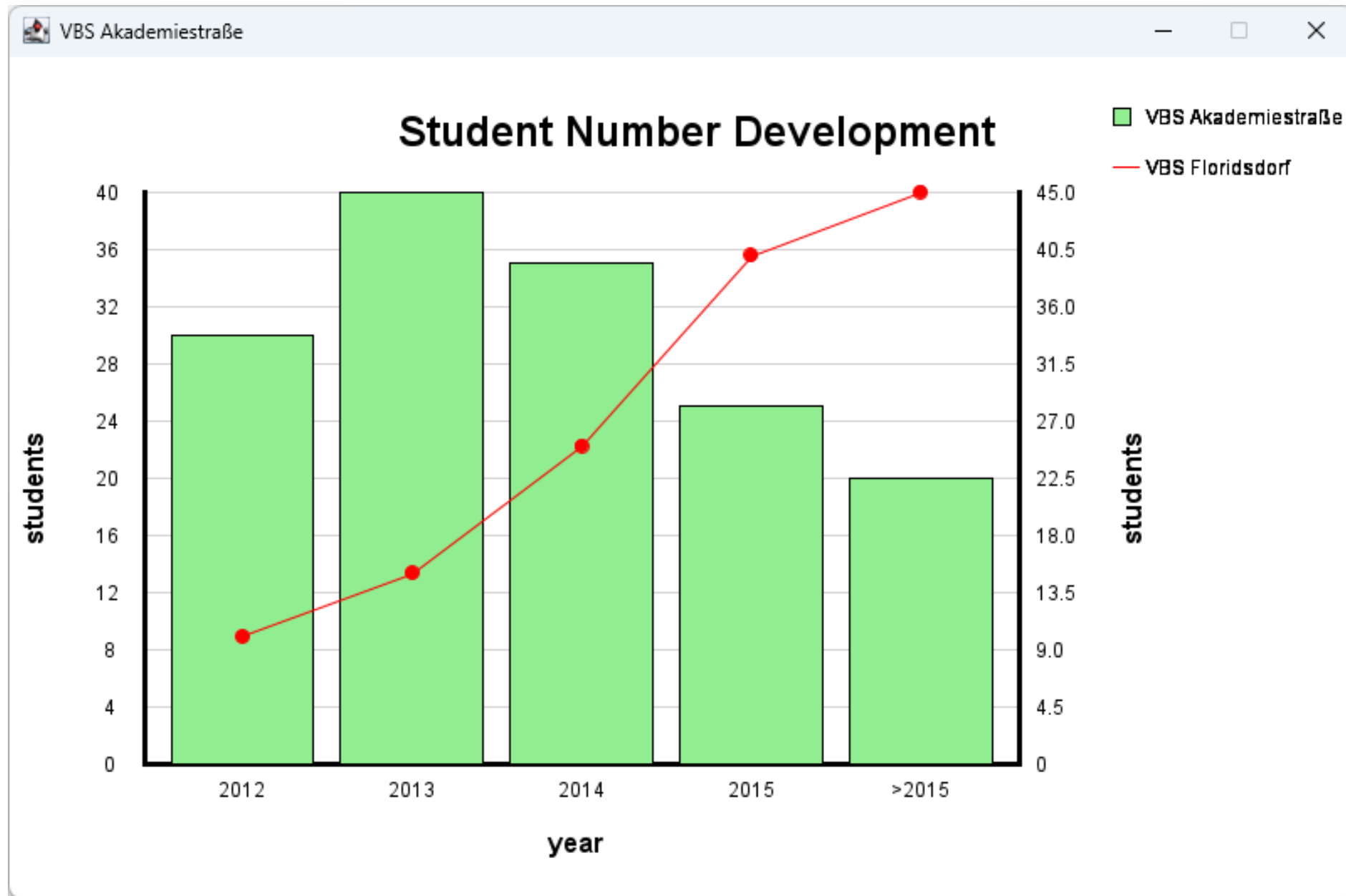
/* creating column chart */
c3 = .JChart~createChart("ColumnChart", hak3, "VBS Akademiestraße", "year", "students")
c3~color = lightgreen

/* creating line chart */
l1 = .JChart~createChart("LineChart", hak1, "VBS Floridsdorf", "year", "students")
l1~color = red
l1~area? = .false

/* combining different chart types */
myMix1 = .JChart~combineCharts(c3, l1) --line chart and column chart order does not matter
myMix1~title = "Student Number Development"
myMix1~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call sys$sleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'
```



14_mix_combined_charts.rxj

```

/* creating datasets */
hak1 = .dataSet~new
hak1~addValue("2012", 10)
hak1~addValue("2013", 15)
hak1~addValue("2014", 25)
hak1~addValue("2015", 40)
hak1~addValue(">2015", 45)

hak2 = .dataSet~new
hak2~addValue("2012", 10)
hak2~addValue("2013", 30)
hak2~addValue("2014", 20)
hak2~addValue("2015", 25)
hak2~addValue(">2015", 30)

hak3 = .dataSet~new
hak3~addValue("2012", 30)
hak3~addValue("2013", 40)
hak3~addValue("2014", 35)
hak3~addValue("2015", 25)
hak3~addValue(">2015", 20)

/* creating column charts */
c1 = .JChart~createChart("ColumnChart", hak1, "VBS Floridsdorf", "year", "students")
c2 = .JChart~createChart("ColumnChart", hak2, "VBS Meidling", "year", "students")
c3 = .JChart~createChart("ColumnChart", hak3, "VBS Akademiestraße", "year", "students")
c2~color = red
c3~color = lightgreen

/* combining column charts */
myCombinedColumns = .JChart~combineCharts(c1, c2, c3)

/* creating line charts */
l1 = .JChart~createChart("LineChart", hak1, "VBS Floridsdorf", "year", "students")
l2 = .JChart~createChart("LineChart", hak2, "VBS Meidling", "year", "students")
l1~color = red
l1~area? = .false
l2~area? = .false
l2~lineFormat = 3

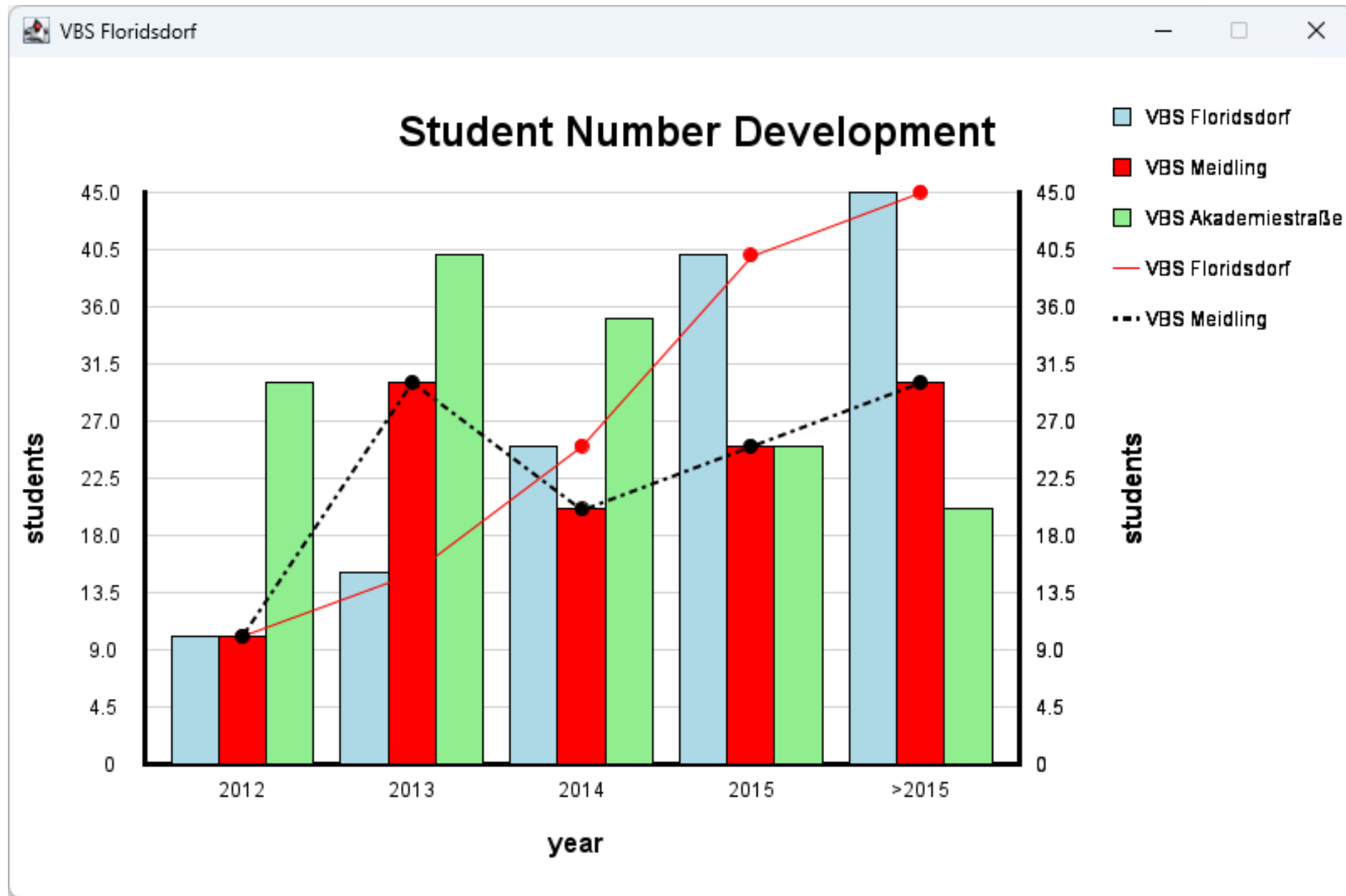
/* combining line charts */
myCombinedLines = .JChart~combineCharts(l1, l2)

/* combining different combined chart types */
myMix2 = .JChart~combineCharts(myCombinedColumns, myCombinedLines)
myMix2~title = "Student Number Development"
myMix2~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call sys$sleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'

```



21_stack_bar_charts.rxj

```

/* creating datasets */
hak1 = .dataSet~new
hak1~addValue("2012", 10)
hak1~addValue("2013", 15)
hak1~addValue("2014", 25)
hak1~addValue("2015", 40)
hak1~addValue(">2015", 45)

hak2 = .dataSet~new
hak2~addValue("2012", 10)
hak2~addValue("2013", 30)
hak2~addValue("2014", 20)
hak2~addValue("2015", 25)
hak2~addValue(">2015", 30)

hak3 = .dataSet~new
hak3~addValue("2012", 30)
hak3~addValue("2013", 40)
hak3~addValue("2014", 35)
hak3~addValue("2015", 25)
hak3~addValue(">2015", 20)

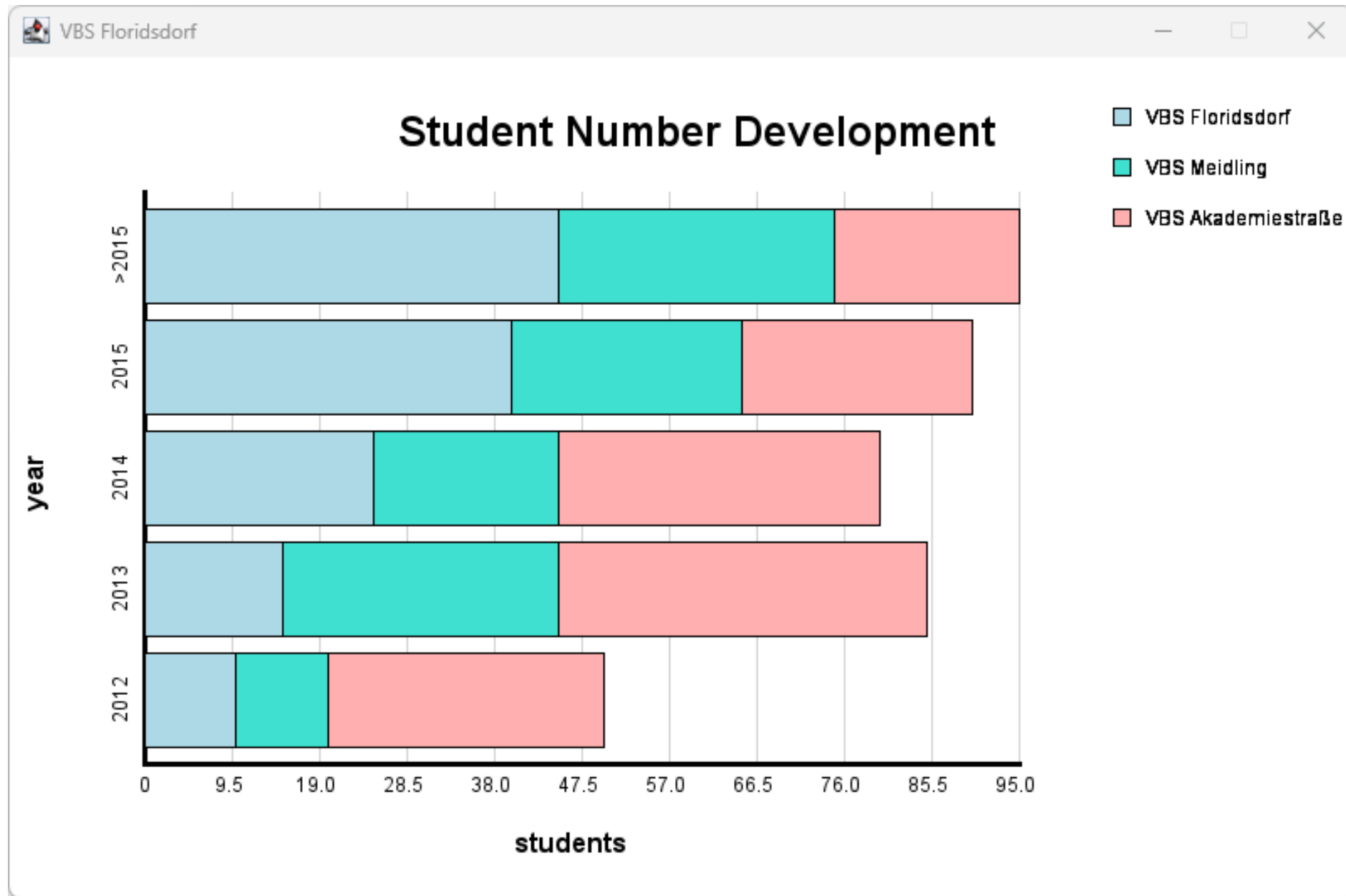
/* create bar charts */
b1 = .JChart~createChart("BarChart", hak1, "VBS Floridsdorf", "students", "year")
b2 = .JChart~createChart("BarChart", hak2, "VBS Meidling", "students", "year")
b3 = .JChart~createChart("BarChart", hak3, "VBS Akademiestraße", "students", "year")
b2~color = turquoise
b3~color = pink

/* stacking bar charts */
myStackedBars = .JChart~stackCharts(b1, b2, b3)
myStackedBars~title = "Student Number Development"
myStackedBars~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call sys.sleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'

```



22_stack_line_charts.rxj

```

/* creating datasets */
hak1 = .dataSet~new
hak1~addValue("2012", 10)
hak1~addValue("2013", 15)
hak1~addValue("2014", 25)
hak1~addValue("2015", 40)
hak1~addValue(">2015", 45)

hak2 = .dataSet~new
hak2~addValue("2012", 10)
hak2~addValue("2013", 30)
hak2~addValue("2014", 20)
hak2~addValue("2015", 25)
hak2~addValue(">2015", 30)

hak3 = .dataSet~new
hak3~addValue("2012", 30)
hak3~addValue("2013", 40)
hak3~addValue("2014", 35)
hak3~addValue("2015", 25)
hak3~addValue(">2015", 20)

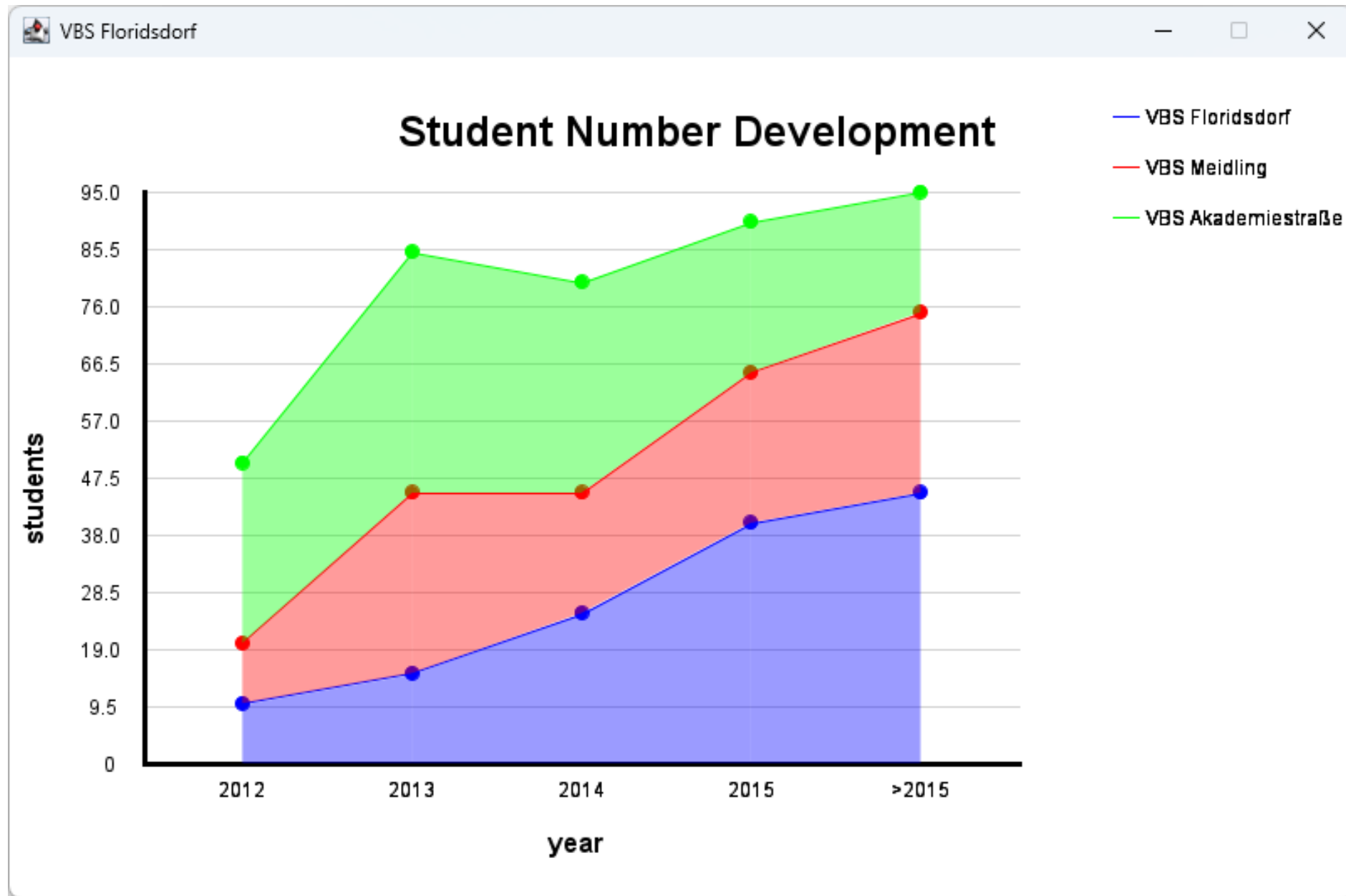
/* creating line charts */
l1 = .JChart~createChart("LineChart", hak1, "VBS Floridsdorf", "year", "students")
l2 = .JChart~createChart("LineChart", hak2, "VBS Meidling", "year", "students")
l3 = .JChart~createChart("LineChart", hak3, "VBS Akademiestraße", "year", "students")
l1~color = blue
l2~color = red
l3~color = green

/* stacking line charts */
myStackedLines = .JChart~stackCharts(l1, l2, l3)
myStackedLines~title = "Student Number Development"
myStackedLines~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call sys.sleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'

```



23_stack_charts_in_percent.rxj

```

/* creating datasets */
hak1 = .dataSet~new
hak1~addValue("2012", 10)
hak1~addValue("2013", 15)
hak1~addValue("2014", 25)
hak1~addValue("2015", 40)
hak1~addValue(">2015", 45)

hak2 = .dataSet~new
hak2~addValue("2012", 10)
hak2~addValue("2013", 30)
hak2~addValue("2014", 20)
hak2~addValue("2015", 25)
hak2~addValue(">2015", 30)

hak3 = .dataSet~new
hak3~addValue("2012", 30)
hak3~addValue("2013", 40)
hak3~addValue("2014", 35)
hak3~addValue("2015", 25)
hak3~addValue(">2015", 20)

/* creating line charts */
l1 = .JChart~createChart("LineChart", hak1, "VBS Floridsdorf", "year", "students")
l2 = .JChart~createChart("LineChart", hak2, "VBS Meidling", "year", "students")
l3 = .JChart~createChart("LineChart", hak3, "VBS Akademiestraße", "year", "students")
l1~color = blue
l2~color = red
l3~color = green

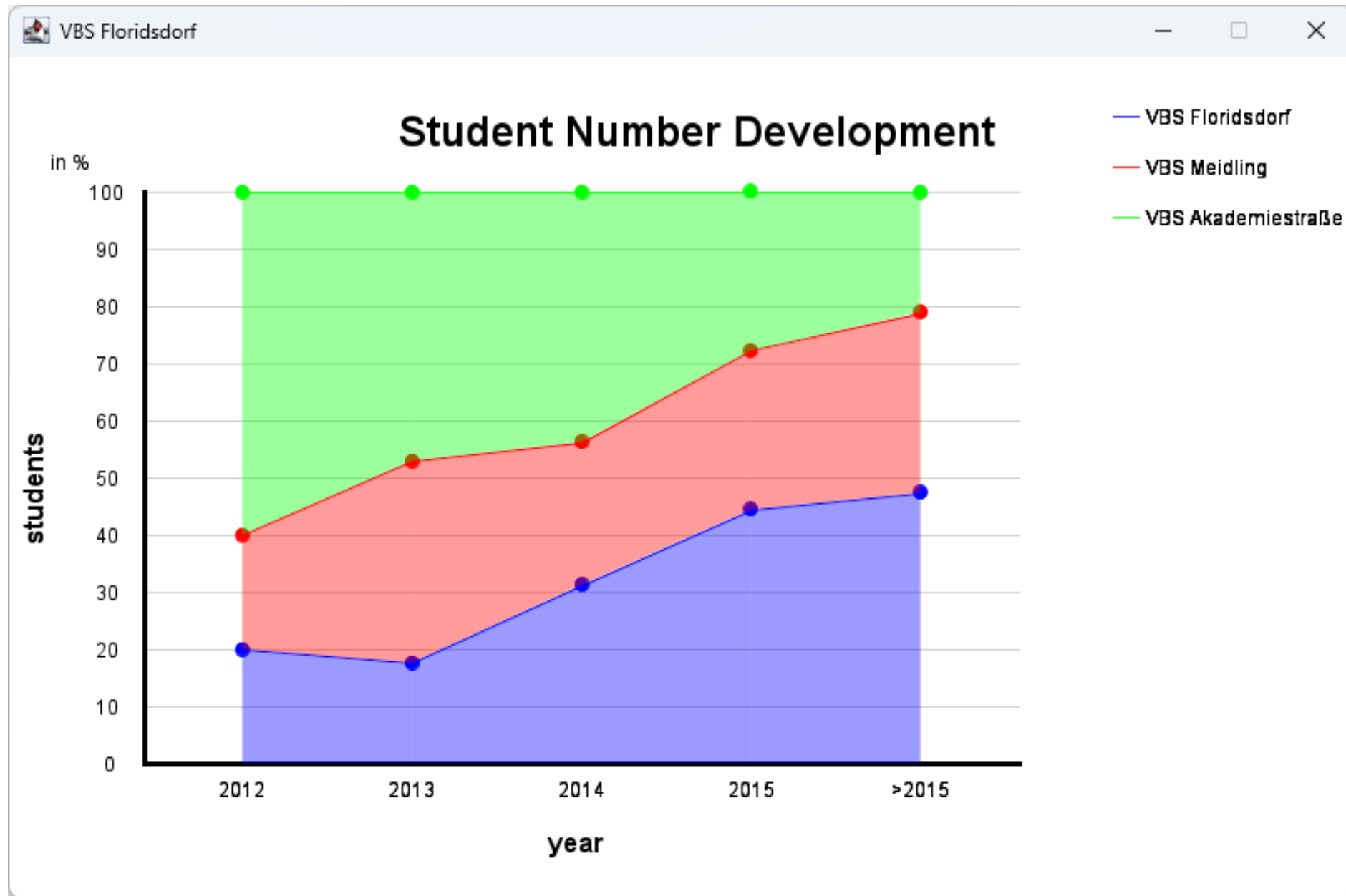
/* stacking line charts */
myStackedLines = .JChart~stackCharts(l1, l2, l3)
myStackedLines~title = "Student Number Development"

/* change data representation to 100 percent*/
myStackedLines~toPercent = .true
myStackedLines~draw

/* close windows after 20 seconds */
say "waiting 20 seconds"
call sys.sleep 20

/* get access to JBusinessChart classes */
::requires 'JBusinessChart.cls'

```



Questions?