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1.9 | § Ÿ ^ Python• · ©ª «

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- Python® Ē K Ē " Python Ā E E è é Guido van Rossum Í † Ō / <http://docs.python.org/tutorial/>
- ° ±² Ē Alan Gauld Ī / " Ō a ~ Ī Ā Ø 1 & Ō Python E w Ɔ ±² Ą Ç b c Ā <http://www.freenetpages.co.uk/hp/alan.gauld/>
- ³ ´ Python Magnus Lie Hetland Ī / " Ø V 6 " ... ĩ a Ā <http://www.hetland.org/python/instant-python.php>
- µ ¶ Python 4² • \ ò C D " a Ā L " · , Python Ī a Ā <http://www.diveintopython.net/>

1.10 3.x• ₁ ° • » ¼

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- Python 3.x Ũ t ō Ā è ũ' ĩ x g 2.7 µ 3.6 Í ũ ũ
- `__init__.py` % 5 ò 2.7¾ > = 3.6
- `__init__.py` Ç q Ō | f , " `reportlab.local_rl_mods E , Ç q Ō ®² • – è Ā`
- `rl_config ā g f , Ō | rl_settings E v f , Ō | local_rl_settings E reportlab_settings.py E E • " ~ / .reportlab_settings`
- ReportLab C w x ā g # • reportlab Ā Ā ÷ • % _rl_accel ā ā g E y Ĩ _rl_accel Ō | Ç Ē `reportlab.lib.rl_accel`
- `xmllib , #² • Ō n HTMLParser} ´ " paraparaser N O è Ī ... Ø | Ā`
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- `_rl_accel C w x % o Ũª ā a - " 4 è ũ ũ Ā`
- ũ ũ | `reportlab/lib/para.py µ pycanvas.py Ā`
`ž • E , ý • < þ Ē a Ā E f , ý² Í " Monkeypatching Ā`
- á | Ō • " ÷ ò RGB Ē f ó Ō Ũ µ 1 # PIL³ Ũ " Ā Ē é Matthew Duggan Š < Ɔ
- ° Ē é Ben Echols¹ ° Ɔ
- € Ɔ + e pip E easy_install E wheel è % `

`" • " ~ ũ • ž E " Ā } Ā http://www.reportlab.com/software/documentation/relnotes/30/`

„ 2 ... ½€ pdfgen ¾¿ À Á Â ¬ „

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```
from reportlab.pdfgen import canvas
```

```
c = canvas.Canvas("hello.pdf")
c.drawString(100,100,"Hello World")
c.showPage()
c.save()
```

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 • J ² helloK | E f canvas ½ ò œ | å E • E showPage Ê Ê ' Ê canvas" î ¼ å
 showPage Ê Ê ó ± canvas x g î ¼ Í » 5 E " • è è l " ¼ ½ Ç ó g Ê • " Í » 5 Ê d
 " " • è è l " ¼ ½ --d " " e j ¨ å g, f 9 | € ... • Û Ü J ² save Ê Ê --Š f
 „ ...PDF, f E ž ¨ " canvas Û Ü" Ç " " å

2.2 ¨ © ^ % ò Ê Ê • ª «

g • Ž » ³ ¼ ½ v ¼ E Y Z » \ ´ Å E • Ž è h ¨ ¥ 1 ° f , Æ " è •] + å
 ¨ q ª ¥ " ž ¥ f ° „ ...å d Š " Pythone ý E ¾ C # ñ í , è • ó ô E Š f ,
 ¼ " t E w , • ÷ Í í î ž O t !
 | » E Y Z Ĩ MM 1 ° " 9 X K | œ | :

```
def __init__(self,filename,
              pagesize=(595.27,841.89),
              bottomup=1,
              pageCompression=0,
              encoding=rl_config.defaultEncoding,
              verbosity=0,
              encrypt=None):
```

œ | filename Ð 5 E PDF, ~ " „ 1 å Š ¨ f , | " • Ê " Ó è 5 " Ê d sys.stdout E python
 a Å ° Ø" Ó è 5 ð ñ ó ô ¨ E PDF, ~ f / | k " å é • PDF" Ó è 5 - E y , g Š v ¼¾
 v • / Æ Ç NO" % < Ç E Š g HTML Å Ð PDF, f _ Š f , g HTML Å /
 è O PDF, ~ E w g HTML Å / è O PDF, ~ å

œ | pagesize" è O , 9 ò ù # " SO | Û " ä Å Ê 1 / 72 ¨ å 1 ° l Í ò A4 Ê ° Ø"
 E • ! ° Ø" letter ¥ ¨ E w E , ž • ~ ÿ å
 ª | 1 è " < Ç f , g ĩ % O reportlab.lib.pagesizes Å à š E y , Š f , ± ² ô H •

```
from reportlab.lib.pagesizes import letter, A4
myCanvas = Canvas('myfile.pdf', pagesize=letter)
width, height = letter #keep for later
```

d ^ g ² x , ~ " š } ´ E " • ' ^ ± ² • " Ê Ê 1 " A4¾ letter ¨ å
 Ð ª E Š ó ñ Š < Ĩ ! # NO å g Í " ? ® Å E Y Z 1 ! | \$ Û µ ° Û å
 g , • " a Å Å E Y Z f ó ± ² width Å « Ĩ Ÿ 1 ; % ò width - inch E " ± ² è O 1 | å
 Ê ± ² Å « E £ ± < ~ , Å Å E ; % ¨ ó " ¶ | 1 å
 œ | bottomup² • & ÷ Ê ° - å è • ³ ´ - (d PDF µ PostScript) f (0,0) ¥ • " h E Æ Ç
 - (d q ª ³ ´ ² Ĩ è [GUI's]) f 9 ¥ • bottomup œ | [' (E , • f ó ù ü å

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 ò á â ó / , ~ " „ ... a ā d ó ô < Ð & % E \$ ž ¥ pageCompression=1 E w ") O E
 á â • " , ~ ó © < E w „ ... Ū © ā " ¶ E ³ Ū W " á â " E ĸ " î Š g 7 è Í " ø 1^a
 " , • μ^a « ³ ´ E ž O „ * 1 ó ú 2 Ī Ð ā

g 2.0 € • Ā E encoding œ | ¶ • Í [\ | E f 99% " ² Î Ç f „ 2 3 ā Š " ì Í ™ Ð , E ü
 ø Š R • % ± ² MacRoman Ā " 25 O Ū + v è E Winansi Ā " ā ž Ā " è O " ² " œ • • 4 : [ht
 tp://www.alanwood.net/demos/charsetdiffs.html](http://www.alanwood.net/demos/charsetdiffs.html) k œ | = Ÿ | k , ~ " Ū Ū ð ñ ā ° Ø Type 1 Ū Ū
 Ā ž x k • ^ - Í " ð ñ B Ū x ā " ¶ E ž " Ū Ū ± ² " ð ñ Ā ^ " , • 5 ReportLab
 ¾ ĸ " 6 7 « - x k W " Python " unicode Ū + » Ū Ū ¾ UTF-8 ð ñ " Ū Ū Ū + » (è h è Ē)!

Ū Ū ð ñ - ¼ " S O ™ Ā 'WinAnsiEncoding'¾ 'MacRomanEncoding' ā Í " Ā « rl_config.defau
 ltEncoding ~ h " " š ¼ C E ž " Windows ā Mac OS
 X μ q^a Unix " ° Ø ¥ (O Linux) ā d Š " Mac ² Î E q ' " OS X E Š f ó ñ % è Ū Ç Ē ò
 " 3 4 Ā 3 4 g reportlab/pdfbase/pdfdoc.py Ī & ÷ Š ā) \$ E ^ f „ € Ç Ō ð ž O < 9 E
 8 9 ó Ē ā Ū • y " TTF μ 1 ² " CID Ū Ū E ž Ā | " ð ñ ó : 3 ā ò reportlab Ī • ; -
 Z Ÿ ž • + , h " • ð ñ ā

< > ³ • reportlab/demos/stdfonts.py f ² x ô S O , f E • > y " Ū Ū " y " ' ñ 9 E ž .
 Š - f „ Ō ā Ū + ā Ū + f „ ² Ē 1 " Python " 1 Ā ò ÷ | š Ū + » Ā E ? d \101 = 'A' ā

œ | verbosity = Ÿ | ² x^a * = > « - ā ì Í + , h E Š " 0 E „ z { x ² a Ā Ā ° Ø ó ô Ā ? P
 D F ā d ™ ò 1 E 7 „ ... , f E ^ Ç ó ä š è M • Í « - ā © ° " | Ū f ó g f Ī 1 ° ©^a " ó ô ā

œ | encrypt = Ÿ | ") „ # d • Ū , f è ü ā ì Í + , h E , f " ā d encrypt "
 è O Ū + » Ū Ū E Š ² ½ pdf " ² Î ñ ā d encrypt " è O reportlab.lib.pdfencrypt.Standard
 Encryption " • ? E Ā ' ž O Ū Ū - ² Ī pdf ā ž ç q Ū ž ¥ è Ū © Ÿ " Ð 5 ā g
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to do -- y " " « - μ Ā Ç Ø » ³ " N O ā
 s t y " 9 X K | œ | E „ # setAuthor è ā

2.3 Ê Ā Ē Ī

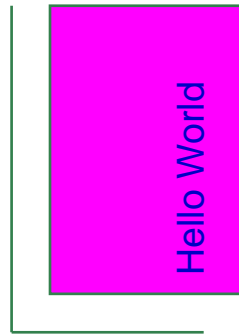
] ž Í ¹ š " hello K | • ā d h Ē Y Z » Š 7 O ¼ ½ ¢ ā

```
def hello(c):
    from reportlab.lib.units import inch
    # move the origin up and to the left
    c.translate(inch,inch)
    # define a large font
    c.setFont("Helvetica", 14)
    # choose some colors
    c.setStrokeColorRGB(0.2,0.5,0.3)
    c.setFillColorRGB(1,0,1)
    # draw some lines
    c.line(0,0,0,1.7*inch)
    c.line(0,0,1*inch,0)
    # draw a rectangle
    c.rect(0.2*inch,0.2*inch,1*inch,1.5*inch, fill=1)
    # make text go straight up
    c.rotate(90)
    # change color
    c.setFillColorRGB(0,0,0.77)
    # say hello (note after rotate the y coord needs to be negative!)
    c.drawString(0.3*inch, -inch, "Hello World")
```

Ō Ō ž ' ' ñ ¶ Š E ± ¹ ° è Ū " ¼ ½ ¶ • Í " S © ô \$ ā < è © ô \$ " g Í ¹ è • N
 O E d è O , • Ū + » ¾ è O á ´ ¾ è M ā ā < Ó © ô \$ 4 Ā ¹ ° " Ā Ā E d 4 Ā î ¼ " S T ¾ @
 A Ñ Ò E ¾ 4 Ā î ¼ " Ū Ū ô \$ μ < ā

d Y Z , a Ā ñ Ū ... è O g ¹ ° Í ¾ ½ " ¹ E » 5 " ¼ ½ ± ² î ¼ " è Ā ¾ ĸ Ē Ñ Ò ā à M.
 ā Ū Ū è ¢ f Ñ 4 B C š ¹ ° Í E " Ā Ā 4 Ā " ¼ ½ \$ 4 Ā | î ¼ " è O ¾ ĸ Ē ? d E f S T Ñ Ò Ā
 Ī " " • Ñ Ò 4 ò D Ò E ¾ C f î ¼ " Ū Ū 4 ò 15 9 " Times-Roman ¢ ā

Í ® Ō " "hello world "a Á „ ..." , f f „ h ³ ´ ă



³ 2 - 1 : pdfgen „ ... "Hello World"

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• , f | y E < " ' ñ " < > E d Í ³ á ´ y > ă ž • < > " g P | ~ ĭ * • Ā " "< " Í » 5 " ă ž • < " \$ Û ò 5.5 E ° Û ò 3 ă < > . > " " < > ' ñ " • ó Ō ă ò | Ě Ž n è E ó Ō " < F G â < | ă

2.4 Ð Ñ Ò "draw" • Ě Ì

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Ê Ó Ō Ō Ō Ò ^ × Ø

canvas.line(x1,y1,x2,y2)

canvas.lines(linelist)

à M Ě Ě g ¹ ° Í » 5 ß à ' ă

Ê Ó Á Û Ō Ò ^ × Ø

canvas.grid(xlist, ylist)

canvas.bezier(x1, y1, x2, y2, x3, y3, x4, y4)

canvas.arc(x1,y1,x2,y2)

canvas.rect(x, y, width, height, stroke=1, fill=0)

canvas.ellipse(x1,y1, x2,y2, stroke=1, fill=0)

canvas.wedge(x1,y1, x2,y2, startAng, extent, stroke=1, fill=0)

canvas.circle(x_cen, y_cen, r, stroke=1, fill=0)

```
canvas.roundRect(x, y, width, height, radius, stroke=1, fill=0)
```

```
´ ÂÊÉg¹ ° Í » 51è" ...† ´ Âå
```

Ê ÓÚÛÜÖ^ × Ø

```
canvas.drawString(x, y, text):
```

```
canvas.drawRightString(x, y, text)
```

```
canvas.drawCentredString(x, y, text)
```

```
» 5Û+» ÊÉg¹ ° Í » 5Ûü, Ûå
```

¬, Ý ÞÖ^ × Ø

```
textobject = canvas.beginPath(x, y)
```

```
canvas.drawText(textobject)
```

```
, • ÛÜ² • „ canvasè ß ûü" È Ĩ - Å, • å a Â ±² beginTextÂ canvas ĩ è  
O, • ÛÜEI • É J² textobjectÈ É Ĩ - Å, • å E • ±² drawTextf textobject» 5Š ca  
nvasÍ å
```

ß à Ý ÞÖ^ × Ø

```
path = canvas.beginPath()
```

```
canvas.drawPath(path, stroke=1, fill=0, fillMode=None)
```

```
canvas.clipPath(path, stroke=1, fill=0, fillMode=None)
```

```
Ý ÞÛÜôH•, • ÛÜÂŠZòæü...† " ³ ´ » 51 ° Ĩ 1 ° è ÔÉß 1 ° " Y² Ð~ å  
a Â ±² beginPath ĩ è OÝ ÞÛÜE ±² Ý ÞÛÜ" È É òÝ ÞST³ ´ EI • ±² drawPath  
g¹ ° Í » 5Ý Þå
```

```
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´ ³ Û" à QE¿ Jh³ Û" è Oã ´ Qg Í fè å
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```
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† Ý Þ" STÈ å d ±² Ĩ Ĩ " None™E $ ±² canvas" _fillModeý Ô™È É 1 ò 0E even-o  
dd¤å
```

Ä á Ö^ × Ø



```
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• test_pdfgen_general.pyq ŌMóò" < 7 Ef„ àšh " ' ' >? å
```

```
.. S©KnĨ L a " 1 ÛÈ å Ĩ „ " drawImageÈ É å Š• å Ĩ è OMÈ - Ey„ Šf„  
è Ý 1èO³ ÛEqª » 5ÆŠf¿ gPDF, ~ ÂÈ Nè å drawImagev. Ĩ è O° œ  
Ĩ EèOOž ÛP%EfĨ vó. ©ª å Ĩ Ĩ " ' ' E drawInlinelImageg " ÂÈ N#³ E  
Ed Šg, fÄ × è ±² B¥" ³ ÛE Qø1 Æwd ³ Ûø1 < ' &...E $f„  
ō™PDF© 67åYZ» E < EĨ " ÂOå
```

```
canvas.drawInlinelImage(self, image, x,y, width=None,height=None)
```

```
drawInlinelImageÈ É g¹ ° Í È ¥è ³ ~ å œ Ĩ imagef„ " è OPIL³ ÛÛÛ¾³ Û, ~, å  
qª 1 è " , ~ - Ç ÂÈ OGIFμ JPEGå Š„ ($E°)ä Â" ´ øR• ³ Û" Ûå <
```

å

```
canvas.drawImage(self, image, x,y, width=None,height=None,
mask=None)
```

```
œ| μøR™μ drawInlinelImageë . å l EYZ ± ² | ë OMË - Æë O5ÿ " ³ Ûf ¿ g
< ë ± ² Ë NE ¿ " g • S ± ² Ò² å
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d Š 1 ° | ë OPIL³ - EŠ g & e P | v ¼ ó t " ) " • Ä Å å
```

```
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Š • %6O | Û E q Ÿ 1 RGB™ " × V E ž • ™ f WX. ¾ ð ò Ož å ? d E ± ²
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136 â 137 ¾ 138 " Û å Ě g 0-255 " × V ¨ å ¯ ¼ Š " ¾ ½ " Z ÿ m © Ñ Ò " " Ož
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```
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> drawImageå
```

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```
canvas.showPage()
```

```
showPageË É € ... | î ¼ å y " B à " » ³ f g ^ ë O Í € ... å
```



```
ã î ! î Š g pdfgen Ā ¼ ê š ë O e " E y " " Å Ā 4 Ä Ě Û Ú 4 Ä Ě Ñ Ò ž ¥ E ý • Ä ÷ E
ê ê ¨ Ç ó _ ) å " • ^ ` a ' J " Ā Ā ž ¥ Û Û g a Ā b S » 5 v ¼ & e ž ¥ !
```

2.5 Ð Ñ è Ò ' Û é ê '(state change) Ě Ì

```
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ú Ā E < å
```

¥ è ì

```
canvas.setFillColorCMYK(c, m, y, k)
```

```
canvas.setStrikeColorCMYK(c, m, y, k)
```

```
canvas.setFillColorRGB(r, g, b)
```

```
canvas.setStrokeColorRGB(r, g, b)
```

```
canvas.setFillColor(acolor)
```

```
canvas.setStrokeColor(acolor)
```

```
canvas.setFillGray(gray)
```

```
canvas.setStrokeGray(gray)
```

```
PDFû ü þ © ¥ " Ñ Ò % $ Ā Û å à d (red/green/blue¾ RGB) å μ / l e Û œ | Ě f Ò / Z
g Ò / h Ò / e Û ¾ CMYK ¨ å ReportLab v 1 ° | ¿ Ñ Ò Ě d lawngreen å
ž Ā " ³ ´ Ā Ā h " S O ¶ • Ñ Ò œ | Ā Fill" ò ³ ´ " S T Ò μ Stroke ò ³ ´ " ; i Ò å
Í j S © Ě Ě û ü ± ² k © Ñ Ò Ā " " • ë © Ĩ ž ¥ S T ¾ l ; Ñ Ò å
```

“ ¥Úí

```
canvas.setFont(psfontname, size, leading = None)
setFontË É f î ¼" , • ÛÚ4ò5ÿ" ô $μ < å leadingœ| ~ÿ| Ãë ù, Û¼êš h ë
ü ù h h ¢ ö" %\ å
```

“ ¥ÄÄÖî ï ð

```
canvas.setLineWidth(width)

canvas.setLineCap(mode)

canvas.setLineJoin(mode)

canvas.setMiterLimit(limit)

canvas.setDash(self, array=[], phase=0)

gPDFÃ» 5" à Mf„ „ ª ©³ ´. â ã ä à Mf„ „ ¥" $ Û E Š Z f„ „ ¥" t ®.
mmE Š Z f„ „ ¥" ú . B E Š Z f„ „ ú S" E æ f„ „ 9 à ¾ n à å
Í j Ê É f„ J %ž • ¥" œ| å
```

¥ ñ ò Á Ù

```
canvas.setPageSize(pair)

canvas.transform(a,b,c,d,e,f):

canvas.translate(dx, dy)

canvas.scale(x, y)

canvas.rotate(theta)

canvas.skew(alpha, beta)

y “ ” PDF³ ½ Ç 4 e ~ÿ" < å g ~ÿ" v à » 5" ä å" f è" å à E y
“ » 5" ä å Ç Ó É ë O f J %œ# ¥μ/¾ o é Æ à p" q ß Ä ÷ å
setPageSizeË É f„ J %î ¼" < å transform, translate, scale, rotate, μ skew
Ë É Ó 5 î ¼" Ä ÷ r ß à" Ä ÷ å & % " " %) O E ž • " ÷ " á" å --
e" Ä ÷ Ó 3 4 î ¼" Ä ÷ (w Ó! ' Š)Æ
```

Ù é ó Ó

```
canvas.saveState()

canvas.restoreState()

Đª E' Ê î ¼" Û Û â³ ´ Ä ÷ å à M. μ Æ Ç³ ´ Ä Ä" Đ & %" E, Ž, • s ... Š Z
å saveStateË É ° ) | î ¼" ³ ´ Ä Ä E, Ž, • É t æ" restoreStateê ù s ... å " ¶ E'
Ê μ v Ê É" J² Û Û t æ -- v J² ó f Ä Ä v š E u' Ê" Ä Ä E E u" Ä Ä v " v
å w" E Š g è O Í' Ê Ä Ä E I • g h è O Í v Š -- v Đ ó' Ê Ä Ä å
```


2.6 ₣ £ canvas• × Ø

q ø y `` canvasÛ Ü " Ê É Ç 4 e "tool"¾"toolbox"ô R â
„ h " ë • e v " Ê É Ê ò | € % ò n è E g f ÿ â

```

canvas.setAuthor()
canvas.addOutlineEntry(title, key, level=0, closed=None)
canvas.setTitle(title)
canvas.setSubject(subj)
canvas.pageHasData()
canvas.showOutline()
canvas.bookmarkPage(name)
canvas.bookmarkHorizontalAbsolute(name, yhorizontal)
canvas.doForm()
canvas.beginForm(name, lowerx=0, lowery=0, upperx=None, uppery=None)
canvas.endForm()
canvas.linkAbsolute(contents, destinationname, Rect=None, addtopage=1,
name=None, **kw)
canvas.linkRect(contents, destinationname, Rect=None, addtopage=1,
relative=1, name=None, **kw)
canvas.getPageNumber()
canvas.addLiteral()
canvas.getAvailableFonts()
canvas.stringWidth(self, text, fontName, fontSize, encoding=None)
canvas.setPageCompression(onoff=1)
canvas.setPageTransition(self, effectname=None, duration=1,
direction=0,dimension='H',motion='l')
```

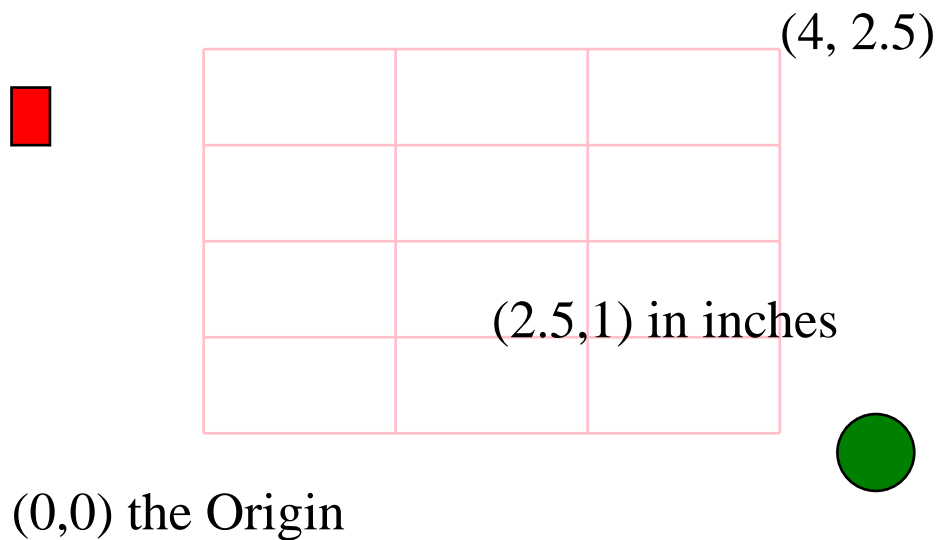
2.7 ô ¼ õ ö ÷ € • ø ù)

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1*inch)° [" " Í " # ¥ â ? d E ë Û (4.5*inch,
1*inch)Â h | E h ₣ õ 4.5 E ÷ h Í ₣ õ ë E Ĩ ° [Í " # ¥ â
? d E h " K | g canvasÍ » 5 ë • ä â â

```

def coords(canvas):
    from reportlab.lib.units import inch
    from reportlab.lib.colors import pink, black, red, blue, green
    c = canvas
    c.setStrokeColor(pink)
    c.grid([1inch, 2*inch, 3*inch, 4*inch], [0.5*inch, inch, 1.5*inch, 2*inch,
    2.5*inch])
    c.setStrokeColor(black)
    c.setFont("Times-Roman", 20)
    c.drawString(0,0, "(0,0) the Origin")
    c.drawString(2.5*inch, inch, "(2.5,1) in inches")
    c.drawString(4*inch, 2.5*inch, "(4, 2.5)")
    c.setFillColor(red)
    c.rect(0,2*inch,0.2*inch,0.3*inch, fill=1)
    c.setFillColor(green)
    c.circle(4.5*inch, 0.4*inch, 0.2*inch, fill=1)
```

g Ì Í " ² Î Ĩ Đ Æ " 9 "(0,0)9g h â g Ì Í " ² Î Ĩ Đ Æ æ Û coordsK | Ê - Û
"< > w\$ "ᄀ E Y Z ä š , h m â



3 2 - 2 : Ê ° -

ú û ü ý ò translate x Ø

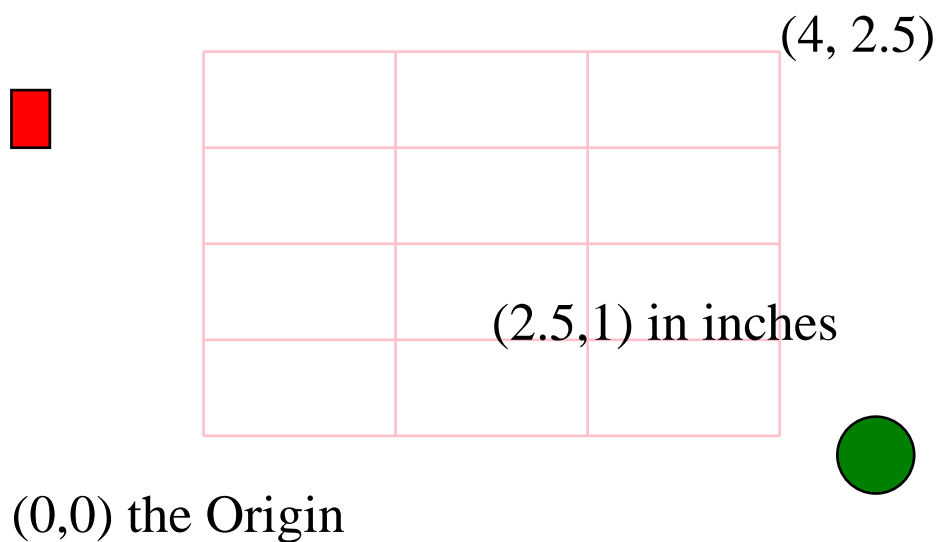
É 1 + , h E " ¢ õ 9 " š h " e 9 " Ð " 2 " å

canvas.translate(x,y) È É f î ¼ " 9 ¢ õ š î ¼ é (x,y) • ÿ " 9 å

? d h " ' ¢ K | | » ¢ õ 9 E I • ÷ » 5 d í y > " B ¥ Û Ü å

```
def translate(canvas):
    from reportlab.lib.units import cm
    canvas.translate(2.3*cm, 0.3*cm)
    coords(canvas)
```

ž ¬ í , | , h m Å



3 2 - 3 : ¢ õ 9 Å translate È É



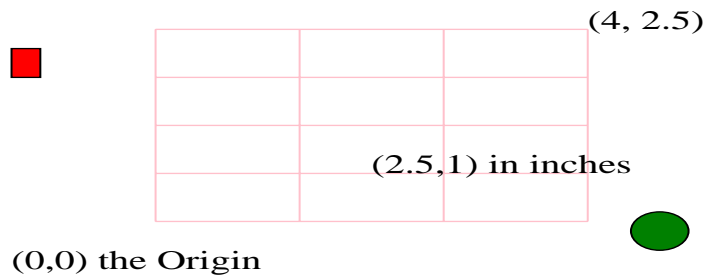
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y " V Å " f % O » ¾ Å " f è Q I ‡ ^ ô Ĩ " ‡ ^ ¼ ½ å
d è O a Å í „ | è O Ĩ E Å ' y " » 5 " Ũ Ũ Ç " f g í å

þ ÿ – Ò scale Ě Ĩ

^ è O & % " ¼ ½ " â Ě ¼ ½ å â Ě ¼ ½ canvas.scale(dx, dy) Q R „ dx,
dy- | Ĩ z { ¾ â < x μ y " å Ě 1 + , h E dx μ dy " B ¥ " --
? d E % g y " | Ũ Ĩ f ¾ ´ â < è } E ± 2 dx = dy = 0.5 å
I ò | • ž } ´ E Y Z c è O ? ® E Å Ě dx μ dy " ¥ " å

```
def scale(canvas):
    canvas.scale(0.75, 0.5)
    coords(canvas)
```

ž . ¬ ó í „ è O " ~ < Ÿ • " " â < € " v ¼ . > " ¼ ½ å



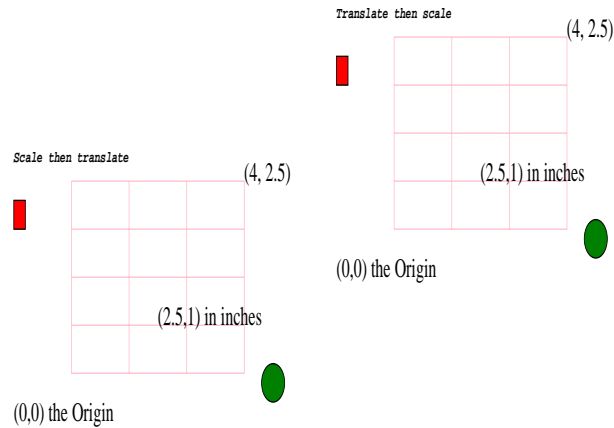
¾ 2 - 4 : â Ě Ě ° -



¶ Å â Ě x f ó f Ũ Ũ ¾ Ũ Ũ " è Q Å Ĩ ℄ E ¾ C f ó õ ™ Ũ Ũ " a ∈ ò Ó " a
â Ě μ ‡ ^ f „ m e n Ĩ E w ¼ ½ " Ž Á Đ & % å

```
def scaletranslate(canvas):
    from reportlab.lib.units import inch
    canvas.setFont("Courier-BoldOblique", 12)
    # save the state
    canvas.saveState()
    # scale then translate
    canvas.scale(0.3, 0.5)
    canvas.translate(2.4*inch, 1.5*inch)
    canvas.drawString(0, 2.7*inch, "Scale then translate")
    coords(canvas)
    # forget the scale and translate...
    canvas.restoreState()
    # translate then scale
    canvas.translate(2.4*inch, 1.5*inch)
    canvas.scale(0.3, 0.5)
    canvas.drawString(0, 2.7*inch, "Translate then scale")
    coords(canvas)
```

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3 2-5:â Ê µ ‡ ^



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ë Û t ¨ ¨ canvas.saveState() µ canvas.restoreState() ¼ ½ Å è O ¼ ½ Å ® E y ¨ Û Û â Ñ Ò
â à M. â â Ê â ‡ ^ ¾ canvas 3 ´ Å Å ¨ Æ Ç Ê ¨ Å Å Ç f ¨ s ... š saveState() 9 ¨ Å Å â
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à E ¨) OE ¨ ¨ canvas Å Å ó g Å Ò ´ Ê E ´ Ê / v Å 5 ó ³ è Q + ¾ ½ â

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```
def mirror(canvas):
    from reportlab.lib.units import inch
    canvas.translate(5.5*inch, 0)
    canvas.scale(-1.0, 1.0)
    coords(canvas)
```

i coordK | » 5 ¨ ä â ¨ • Û â

(2.2, 4)

(2.2, 1) in inches



(0,0) the Origin

3 2 - 6 : • Û

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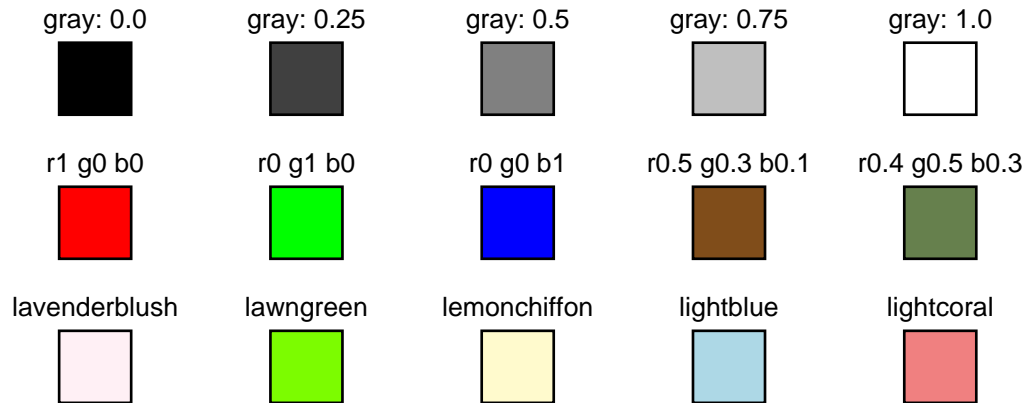
g pdfgen Ä E " p © È É f „ ~ ÿ RGB Ñ Ò Ä É ¹ È ± ² color % o ¢ E É Z / [/ D È É E R
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```
def colorsRGB(canvas):
    from reportlab.lib import colors
    from reportlab.lib.units import inch
    black = colors.black
    y = x = 0; dy=inch*3/4.0; dx=inch*5.5/5; w=h=dy/2; rdx=(dx-w)/2
    rdy=h/5.0; texty=h+2*rdy
    canvas.setFont("Helvetica",10)
    for [namedcolor, name] in (
        [colors.lavenderblush, "lavenderblush"],
        [colors.lawngreen, "lawngreen"],
        [colors.lemonchiffon, "lemonchiffon"],
        [colors.lightblue, "lightblue"],
        [colors.lightcoral, "lightcoral"]):
        canvas.setFillColor(namedcolor)
        canvas.rect(x+rdx, y+rdy, w, h, fill=1)
        canvas.setFillColor(black)
        canvas.drawCentredString(x+dx/2, y+texty, name)
        x = x+dx
    y = y + dy; x = 0
    for rgb in [(1,0,0), (0,1,0), (0,0,1), (0.5,0.3,0.1), (0.4,0.5,0.3)]:
        r,g,b = rgb
        canvas.setFillColorRGB(r,g,b)
        canvas.rect(x+rdx, y+rdy, w, h, fill=1)
        canvas.setFillColor(black)
        canvas.drawCentredString(x+dx/2, y+texty, "r%s g%s b%s"%rgb)
        x = x+dx
    y = y + dy; x = 0
    for gray in (0.0, 0.25, 0.50, 0.75, 1.0):
        canvas.setFillGray(gray)
```

```

canvas.rect(x+rdx, y+rdy, w, h, fill=1)
canvas.setFillColor(black)
canvas.drawCentredString(x+dx/2, y+texty, "gray: %s"%gray)
x = x+dx

```



3 2 - 7 : RGB Ñ Ò % o

RGB è ì

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1. d ^ " , f 2 # „ Y – " È 2 x E q ' ^ g CMYK Ò Ó Ĩ Æ Æ ¾ ½ E Æ ' ^ f „ ± 2 overPrint ã g overPrinting Æ E Ñ Ò ó g 2 x Æ Æ ž Š Ÿ e E Æ ã è © e " Ñ Ò ã Ĩ í + , h E f x 2 è O ĩ E ž " > Û Û ò ã ã d ^ 2 # ± 2 CMYK E " í Ĩ CMYK Q ã

2. d ^ " , f 2 # 2 • W • ó ô E q ' ^ ± 2 " " RGB Ñ Ò E Æ ' ^ f „ ž Ÿ è O alpha™ E Æ Æ a lpha " Ñ Ò " O ž Û ã Ĩ í " alpha™ " 1 Ĩ € ¢ O ž ¢ E § f „ ± 2 " • • ĩ ã

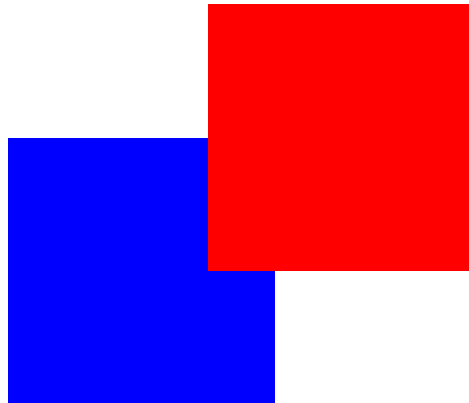
Alpha O ž Û (alpha) ô H • overprint E wg RGB Ò Ó Ĩ Æ Æ ¾ ½ E h ž O ? ® < > ĩ alpha ã " œ • Y Z " È ? http://www.reportlab.com/snippets/E q Ò ã overPrint µ alpha " - ' E „ Œ M „ ... h 3 " ' ñ ã

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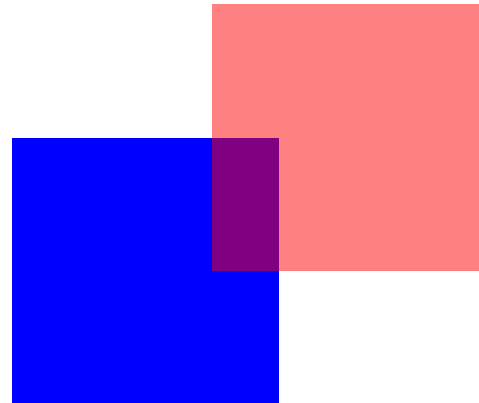
def alpha(canvas):
    from reportlab.graphics.shapes import Rect
    from reportlab.lib.colors import Color, black, blue, red
    red50transparent = Color(100, 0, 0, alpha=0.5)
    c = canvas
    c.setFillColor(black)
    c.setFont('Helvetica', 10)
    c.drawString(25, 180, 'solid')
    c.setFillColor(blue)
    c.rect(25, 25, 100, 100, fill=True, stroke=False)
    c.setFillColor(red)
    c.rect(100, 75, 100, 100, fill=True, stroke=False)
    c.setFillColor(black)
    c.drawString(225, 180, 'transparent')
    c.setFillColor(blue)
    c.rect(225, 25, 100, 100, fill=True, stroke=False)
    c.setFillColor(red50transparent)
    c.rect(300, 75, 100, 100, fill=True, stroke=False)

```

solid



transparent



3 2 - 8 : Alpha ? ®

CMYK ë ì

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CMYKÑÒ´S©>ÈÉÀ7ë©ÑÒÇf,²,hÈÉİ>f,"0š1vÐ"•™Eæf,"
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 "´"€"âCMYKColor(0.5,0,0,0)>50%"fÒâ

```
def colorsCMYK(canvas):
    from reportlab.lib.colors import CMYKColor, PCMYKColor
    from reportlab.lib.units import inch
    # creates a black CMYK ; CMYKColor use real values
    black = CMYKColor(0,0,0,1)
    # creates a cyan CMYK ; PCMYKColor use integer values
    cyan = PCMYKColor(100,0,0,0)
    y = x = 0; dy=inch*3/4.0; dx=inch*5.5/5; w=h=dy/2; rdx=(dx-w)/2
    rdy=h/5.0; texty=h+2*rdy
    canvas.setFont("Helvetica",10)
    y = y + dy; x = 0
    for cmyk in [(1,0,0,0), (0,1,0,0), (0,0,1,0), (0,0,0,1), (0,0,0,0)]:
        c,m,y1,k = cmyk
        canvas.setFillColorsCMYK(c,m,y1,k)
        canvas.rect(x+rdx, y+rdy, w, h, fill=1)
        canvas.setFillColors(black)
        canvas.drawCentredString(x+dx/2, y+texty, "c%s m%s y%s k%s"%cmyk)
        x = x+dx
```



³ 2 - 9 : CMYK Ñ Ò % \$

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¹ ° " enforceColorSpaceœ | ² • 5æü , f Ä ± ² " Ñ Ò % \$ " è ™ ô å Š Ä ž • ™ å CMY K, RGB, SEP, SEP_BLACK, SEP_CMYK. "SEP" ~ " " Q Ò E d Pantone Y Ò -- Š ± ² " œ | E ž • Ñ Ò f „ • CMYK¾ RGB Ÿ e å Ĩ Í ™ " 'MIXED' E ç q Š ± ² " • Ñ Ò Ĩ Đ " Ñ Ò å d ± ² " " • Ñ Ò " ÷ ò ~ Ÿ " % \$ E ? d rgb μ cmyk E ¬ ó í „ è Op 1 Ě ©ª « ¬ " œ è test_pd fgen_general ¤ å ž © Ě Ě Ō Ō , f Ä " à ³ Ū å

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overprint



knockout

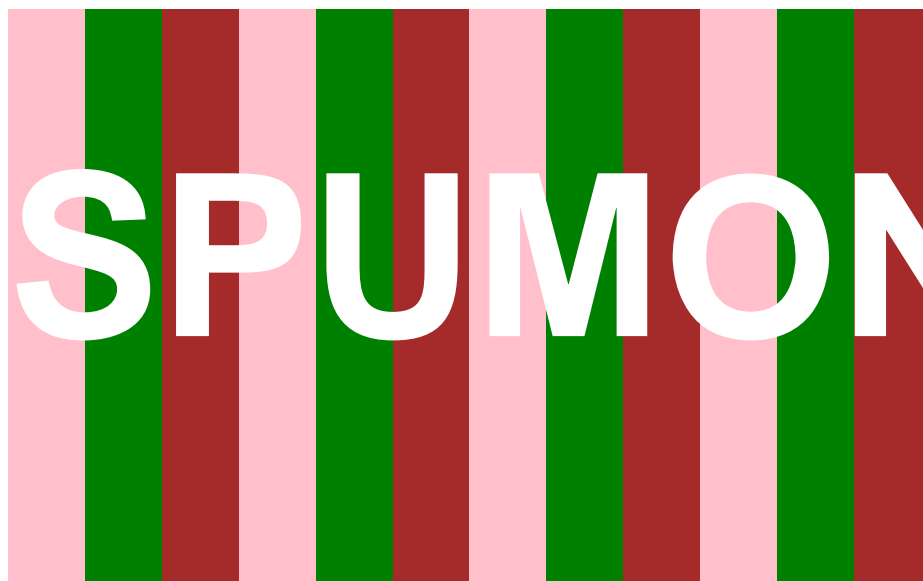


³ 2 - 10 : OverPrint > ?

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```
def spumoni(canvas):
    from reportlab.lib.units import inch
    from reportlab.lib.colors import pink, green, brown, white
    x = 0; dx = 0.4*inch
    for i in range(4):
        for color in (pink, green, brown):
            canvas.setFillColor(color)
            canvas.rect(x,0,dx,3*inch,stroke=0,fill=1)
            x = x+dx
        canvas.setFillColor(white)
        canvas.setStrokeColor(white)
        canvas.setFont("Helvetica-Bold", 85)
        canvas.drawCentredString(2.75*inch, 1.3*inch, "SPUMONI")
```

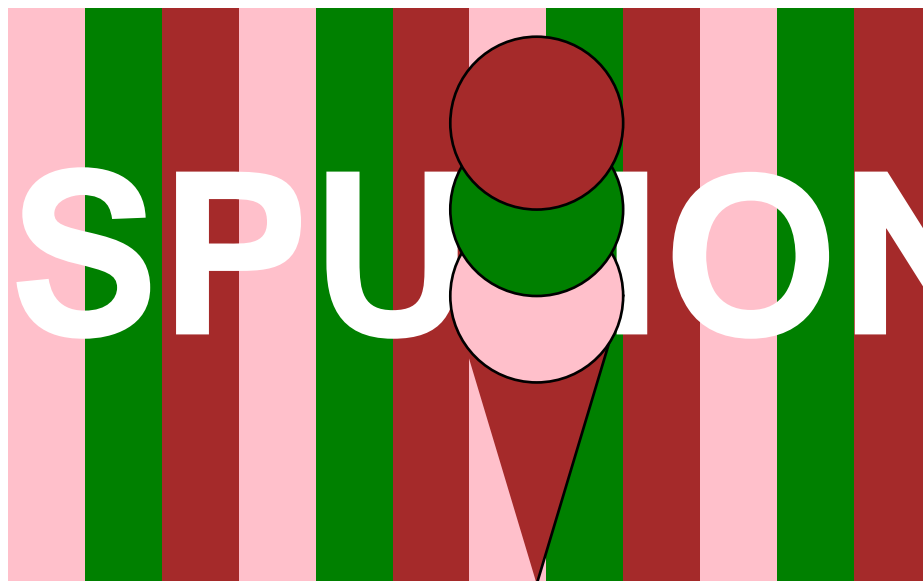


³ 2 - 11 : BCÑÒ

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```
def spumoni2(canvas):
    from reportlab.lib.units import inch
    from reportlab.lib.colors import pink, green, brown, white, black
    # draw the previous drawing
    spumoni(canvas)
    # now put an ice cream cone on top of it:
    # first draw a triangle (ice cream cone)
    p = canvas.beginPath()
    xcenter = 2.75*inch
    radius = 0.45*inch
    p.moveTo(xcenter-radius, 1.5*inch)
    p.lineTo(xcenter+radius, 1.5*inch)
    p.lineTo(xcenter, 0)
    canvas.setFillColor(brown)
    canvas.setStrokeColor(black)
    canvas.drawPath(p, fill=1)
    # draw some circles (scoops)
    y = 1.5*inch
    for color in (pink, green, brown):
        canvas.setFillColor(color)
        canvas.circle(xcenter, y, radius, fill=1)
        y = y+radius
```

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³ 2 - 12: X

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```
def textSize(canvas):
    from reportlab.lib.units import inch
    from reportlab.lib.colors import magenta, red
    canvas.setFont("Times-Roman", 20)
    canvas.setFillColor(red)
    canvas.drawCentredString(2.75*inch, 2.5*inch, "Font size examples")
    canvas.setFillColor(magenta)
    size = 7
```

```
y = 2.3*inch
x = 1.3*inch
for line in lyrics:
    canvas.setFont("Helvetica", size)
    canvas.drawRightString(x,y,"%s points: " % size)
    canvas.drawString(x,y, line)
    y = y-size*1.2
    size = size+1.5
```

textsizeK | „ ... | „ h ä

Font size examples

7 points: well she hit Net Solutions
 8.5 points: and she registered her own .com site now
 10.0 points: and filled it up with yahoo profile pics
 11.5 points: she snarfed in one night now
 13.0 points: and she made 50 million when Hugh Hefner
 14.5 points: bought up the rights now
 16.0 points: and she'll have fun fun fun
 17.5 points: til her Daddy takes the keyboard away

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```
def fonts(canvas):
    from reportlab.lib.units import inch
    text = "Now is the time for all good men to..."
    x = 1.8*inch
    y = 2.7*inch
    for font in canvas.getAvailableFonts():
        canvas.setFont(font, 10)
        canvas.drawString(x,y,text)
        canvas.setFont("Helvetica", 10)
        canvas.drawRightString(x-10,y, font+":")
    y = y-13
```

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 – ° Ê ¥ g ë Ö [Z " # ¥ Ê textLineµ textLinesÊ Ê \$ f , · – ° h h ¢ õ Ê \ ½ ú " à Mä

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```

textobject.textLines("""
With many apologies to the Beach Boys
and anyone else who finds this objectionable
""")
canvas.drawText(textobject)

```

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*well she hit Net Solutions
and she registered her own .com site now
and filled it up with yahoo profile pics
she snarfed in one night now
and she made 50 million when Hugh Hefner
bought up the rights now
and she'll have fun fun fun
til her Daddy takes the keyboard away
With many apologies to the Beach Boys
and anyone else who finds this objectionable*

³ 2 - 15 : , • – ° " ¢ õ Ĩ

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```

def cursormoves2(canvas):
    from reportlab.lib.units import inch
    textobject = canvas.beginText()
    textobject.setTextOrigin(2, 2.5*inch)
    textobject.setFont("Helvetica-Oblique", 14)
    for line in lyrics:
        textobject.textOut(line)
        textobject.moveCursor(14,14) # POSITIVE Y moves down!!!
    textobject.setFillColorRGB(0.4,0,1)
    textobject.textLines("""
    With many apologies to the Beach Boys
    and anyone else who finds this objectionable
    """)
    canvas.drawText(textobject)

```

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*well she hit Net Solutions
and she registered her own .com site now
and filled it up with yahoo profile pics
she snarfed in one night now
and she made 50 million when Hugh Hefner
bought up the rights now
and she'll have fun fun fun
til her Daddy takes the keyboard away
With many apologies to the Beach Boys
and anyone else who finds this objectionable*

³ 2 - 16 :, • — ° d • ÷ ¢ Õ

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textobject.setCharSpace(charSpace)

setCharSpaceË É Ĵ %, • " è Œ œ | --Û + Ð " Ð % å

```
def charspace(canvas):
    from reportlab.lib.units import inch
    textobject = canvas.beginText()
    textobject.setTextOrigin(3, 2.5*inch)
    textobject.setFont("Helvetica-Oblique", 10)
    charspace = 0
    for line in lyrics:
        textobject.setCharSpace(charspace)
        textobject.textLine("%s: %s" %(charspace,line))
        charspace = charspace+0.5
    textobject.setFillGray(0.4)
    textobject.textLines("""
    With many apologies to the Beach Boys
    and anyone else who finds this objectionable
    """)
    canvas.drawText(textobject)
```

charspaceK | ù ± ¨ © Ð % Ž ¥ å Š í „ , h å

0: well she hit Net Solutions
 0.5: and she registered her own .com site now
 1.0: and filled it up with yahoo profile pics
 1.5: she snarfed in one night now
 2.0: and she made 50 million when Hugh Hefner
 2.5: bought up the rights now
 3.0: and she'll have fun fun fun
 3.5: til her Daddy takes the keyboard away
 With many apologies to the Beach Boys
 and anyone else who finds this objectionable

³ 2 - 17 : J %₀ Û + Ð %

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```

textobject.setWordSpace(wordSpace)
setWordSpaceË É J %0 Û • Û v Ð " Ĩ Ð å

def wordSpace(canvas):
    from reportlab.lib.units import inch
    textobject = canvas.beginText()
    textobject.setTextOrigin(3, 2.5*inch)
    textobject.setFont("Helvetica-Oblique", 12)
    wordSpace = 0
    for line in lyrics:
        textobject.setWordSpace(wordSpace)
        textobject.textLine("%s: %s" %(wordSpace,line))
        wordSpace = wordSpace+2.5
    textobject.setFillColorsCMYK(0.4,0,0.4,0.2)
    textobject.textLines("""
    With many apologies to the Beach Boys
    and anyone else who finds this objectionable
    """)
    canvas.drawText(textobject)

wordSpaceK | · > | h ¨ ©, Û Ĩ Ð ž ¥ " . ® å
    
```

0: well she hit Net Solutions
 2.5: and she registered her own .com site now
 5.0: and filled it up with yahoo profile pics
 7.5: she snarfed in one night now
 10.0: and she made 50 million when Hugh Hefner
 12.5: bought up the rights now
 15.0: and she'll have fun fun fun
 17.5: til her Daddy takes the keyboard away
 With many apologies to the Beach Boys
 and anyone else who finds this objectionable

³ 2 - 18 : J % ð Û %

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textobject.setHorizScale(horizScale)

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```
def horizontalscale(canvas):
    from reportlab.lib.units import inch
    textobject = canvas.beginPath()
    textobject.setTextOrigin(3, 2.5*inch)
    textobject.setFont("Helvetica-Oblique", 12)
    horizontalscale = 80 # 100 is default
    for line in lyrics:
        textobject.setHorizScale(horizontalscale)
        textobject.textLine("%s: %s" %(horizontalscale,line))
        horizontalscale = horizontalscale+10
    textobject.setFillColorsCMYK(0.0,0.4,0.4,0.2)
    textobject.textLines("""
    With many apologies to the Beach Boys
    and anyone else who finds this objectionable
    """)
    canvas.drawText(textobject)
```

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80: well she hit Net Solutions
 90: and she registered her own .com site now
 100: and filled it up with yahoo profile pics
 110: she snarfed in one night now
 120: and she made 50 million when Hugh Hefner
 130: bought up the rights now
 140: and she'll have fun fun fun
 150: til her Daddy takes the keyboard away
*With many apologies to the Beach Boys
 and anyone else who finds this objectionable*

³ 2 - 19 : J %₀ € ´ , • " å ?

ù ù ()

textobject.setLeading(leading)

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 setLeading È É J %₀ ¼ õ Þ Ç å

```
def leading(canvas):
    from reportlab.lib.units import inch
    textobject = canvas.beginText()
    textobject.setTextOrigin(3, 2.5*inch)
    textobject.setFont("Helvetica-Oblique", 14)
    leading = 8
    for line in lyrics:
        textobject.setLeading(leading)
        textobject.textLine("%s: %s" %(leading,line))
        leading = leading+2.5
    textobject.setFillColorCMYK(0.8,0,0,0.3)
    textobject.textLines("""
    With many apologies to the Beach Boys
    and anyone else who finds this objectionable
    """)
    canvas.drawText(textobject)
```

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8: well she hit Net Solutions
 10.5: and she registered her own .com site now
 13.0: and filled it up with yahoo profile pics
 15.5: she snarfed in one night now
 18.0: and she made 50 million when Hugh Hefner
 20.5: bought up the rights now
 23.0: and she'll have fun fun fun
 25.5: til her Daddy takes the keyboard away

With many apologies to the Beach Boys
and anyone else who finds this objectionable

³ 2 - 20 : ³ ´

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textobject.setTextRenderMode(mode)

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textobject.setRise(rise)

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textobject.setFillColor(aColor);
 textobject.setStrokeColor(self, aColor)
 # and similar

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```
def star(canvas, title="Title Here", aka="Comment here.",
        xcenter=None, ycenter=None, nvertices=5):
    from math import pi
    from reportlab.lib.units import inch
    radius=inch/3.0
    if xcenter is None: xcenter=2.75*inch
    if ycenter is None: ycenter=1.5*inch
    canvas.drawCentredString(xcenter, ycenter+1.3*radius, title)
    canvas.drawCentredString(xcenter, ycenter-1.4*radius, aka)
    p = canvas.beginPath()
    p.moveTo(xcenter,ycenter+radius)
    from math import pi, cos, sin
    angle = (2*pi)*2/5.0
    startangle = pi/2.0
    for vertex in range(nvertices-1):
        nextangle = angle*(vertex+1)+startangle
        x = xcenter + radius*cos(nextangle)
        y = ycenter + radius*sin(nextangle)
```

```

        p.lineTo(x,y)
    if nvertices==5:
        p.close()
    canvas.drawPath(p)
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```

def joins(canvas):
    from reportlab.lib.units import inch
    # make lines big
    canvas.setLineWidth(5)
    star(canvas, "Default: mitered join", "0: pointed", xcenter = 1*inch)
    canvas.setLineJoin(1)
    star(canvas, "Round join", "1: rounded")
    canvas.setLineJoin(2)
    star(canvas, "Bevelled join", "2: square", xcenter=4.5*inch)
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```

Default: mitered join



0: pointed

Round join



1: rounded

Bevelled join



2: square

³ 2 - 22 : ¥ " ß à ú .

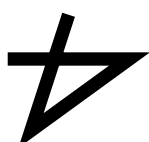
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```
def caps(canvas):
    from reportlab.lib.units import inch
    # make lines big
    canvas.setLineWidth(5)
    star(canvas, "Default", "no projection", xcenter = 1*inch,
          nvertices=4)
    canvas.setLineCap(1)
    star(canvas, "Round cap", "1: ends in half circle", nvertices=4)
    canvas.setLineCap(2)
    star(canvas, "Square cap", "2: projects out half a width", xcenter=4.5*inch,
          nvertices=4)
```

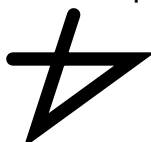
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Default



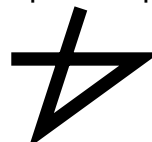
no projection

Round cap



1: ends in half circle

Square cap



2: projects out half a width

³ 2 - 23 : ß à ¹ ® ž ¥

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² setDash È É ¢ „ ¢ à MQ... 9¾° 8, å

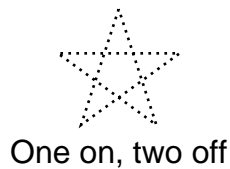
```
def dashes(canvas):
    from reportlab.lib.units import inch
    # make lines big
    canvas.setDash(6,3)
    star(canvas, "Simple dashes", "6 points on, 3 off", xcenter = 1*inch)
    canvas.setDash(1,2)
    star(canvas, "Dots", "One on, two off")
    canvas.setDash([1,1,3,3,1,4,4,1], 0)
    star(canvas, "Complex Pattern", "[1,1,3,3,1,4,4,1]", xcenter=4.5*inch)
```

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Simple dashes



Dots



Complex Pattern



³ 2 - 24 : ° 8,

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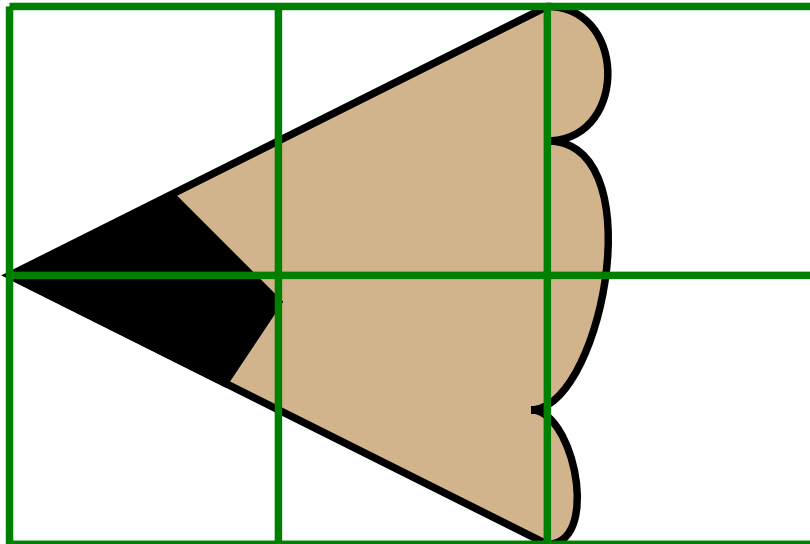
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```
def penciltip(canvas, debug=1):
    from reportlab.lib.colors import tan, black, green
    from reportlab.lib.units import inch
    u = inch/10.0
    canvas.setLineWidth(4)
    if debug:
        canvas.scale(2.8,2.8) # make it big
        canvas.setLineWidth(1) # small lines
    canvas.setStrokeColor(black)
    canvas.setFill(tan)
    p = canvas.beginPath()
    p.moveTo(10*u,0)
    p.lineTo(0,5*u)
    p.lineTo(10*u,10*u)
    p.curveTo(11.5*u,10*u, 11.5*u,7.5*u, 10*u,7.5*u)
    p.curveTo(12*u,7.5*u, 11*u,2.5*u, 9.7*u,2.5*u)
    p.curveTo(10.5*u,2.5*u, 11*u,0, 10*u,0)
    canvas.drawPath(p, stroke=1, fill=1)
    canvas.setFill(black)
    p = canvas.beginPath()
    p.moveTo(0,5*u)
    p.lineTo(4*u,3*u)
    p.lineTo(5*u,4.5*u)
    p.lineTo(3*u,6.5*u)
```

```

canvas.drawPath(p, stroke=1, fill=1)
if debug:
    canvas.setStrokeColor(green) # put in a frame of reference
    canvas.grid([0,5*u,10*u,15*u], [0,5*u,10*u])
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def pencil(canvas, text="No.2"):
    from reportlab.lib.colors import yellow, red, black, white
    from reportlab.lib.units import inch
    u = inch/10.0
    canvas.setStrokeColor(black)
    canvas.setLineWidth(4)
    # draw eraser
    canvas.setFillColor(red)
    canvas.circle(30*u, 5*u, 5*u, stroke=1, fill=1)
    # draw all else but the tip (mainly rectangles with different fills)
    canvas.setFillColor(yellow)
    canvas.rect(10*u, 0, 20*u, 10*u, stroke=1, fill=1)
    canvas.setFillColor(black)
    canvas.rect(23*u, 0, 8*u, 10*u, fill=1)
    canvas.roundRect(14*u, 3.5*u, 8*u, 3*u, 1.5*u, stroke=1, fill=1)
    canvas.setFillColor(white)
    canvas.rect(25*u, u, 1.2*u, 8*u, fill=1, stroke=0)
    canvas.rect(27.5*u, u, 1.2*u, 8*u, fill=1, stroke=0)
    canvas.setFont("Times-Roman", 3*u)
    canvas.drawCentredString(18*u, 4*u, text)
    # now draw the tip
    penciltip(canvas, debug=0)
    # draw broken lines across the body.
    canvas.setDash([10, 5, 16, 10], 0)
    canvas.line(11*u, 2.5*u, 22*u, 2.5*u)
    canvas.line(22*u, 7.5*u, 12*u, 7.5*u)

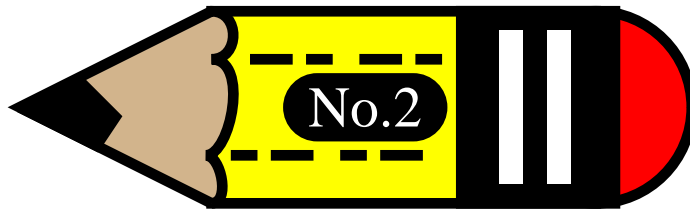
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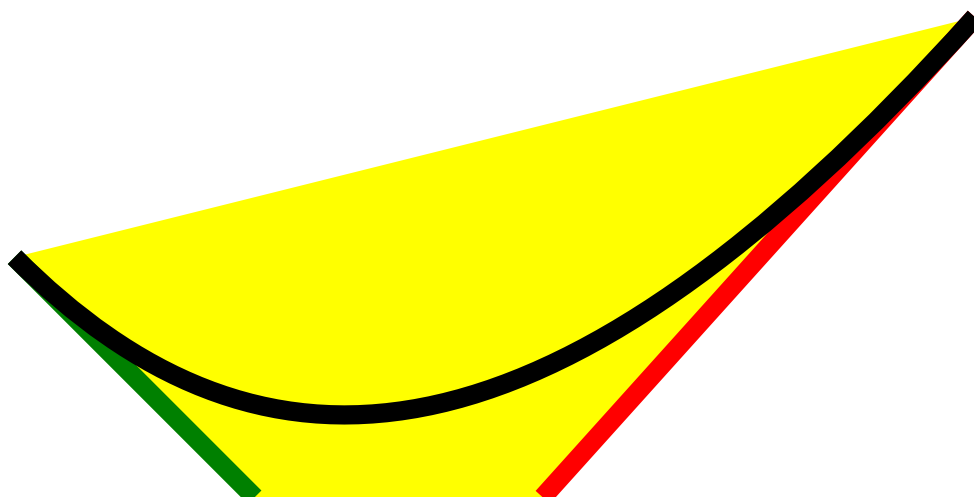
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```
def bezier(canvas):
    from reportlab.lib.colors import yellow, green, red, black
    from reportlab.lib.units import inch
    i = inch
    d = i/4
    # define the bezier curve control points
    x1,y1, x2,y2, x3,y3, x4,y4 = d,1.5*i, 1.5*i,d, 3*i,d, 5.5*i-d,3*i-d
    # draw a figure enclosing the control points
    canvas.setFillColor(yellow)
    p = canvas.beginPath()
    p.moveTo(x1,y1)
    for (x,y) in [(x2,y2), (x3,y3), (x4,y4)]:
        p.lineTo(x,y)
    canvas.drawPath(p, fill=1, stroke=0)
    # draw the tangent lines
    canvas.setLineWidth(inch*0.1)
    canvas.setStrokeColor(green)
    canvas.line(x1,y1,x2,y2)
    canvas.setStrokeColor(red)
    canvas.line(x3,y3,x4,y4)
    # finally draw the curve
    canvas.setStrokeColor(black)
    canvas.bezier(x1,y1, x2,y2, x3,y3, x4,y4)
```

Bezier é à é k O Ð 5 9 (x1,y1)E (x2,y2)E (x3,y3)E (x4,y4) ~ Ÿ å é à n • (x1,y1)E × • (x4,y4)E Ā
 (x1,y1)š (x2,y2)" à ' μ Ā (x3,y3)š (x4,y4)" à ' Ç • é à ´ ...& à å
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Í 3 (testbezier" ó ô) · > | è O bezier é à â Ð 5 9 ÿ 1 " & à μ Ð 5 9 " > 9 " Á 3 ´ å

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```
def bezier2(canvas):
    from reportlab.lib.colors import yellow, green, red, black
    from reportlab.lib.units import inch
    # make a sequence of control points
    xd,yd = 5.5*inch/2, 3*inch/2
    xc,yc = xd,yd
    dx,dy = [(0,0.33), (0.33,0.33), (0.75,1), (0.875,0.875),
             (0.875,0.875), (1,0.75), (0.33,0.33), (0.33,0)]
    pointlist = []
    for xoffset in (1,-1):
        yoffset = xoffset
        for (dx,dy) in dx,dy:
            px = xc + xd*xoffset*dx
            py = yc + yd*yoffset*dy
            pointlist.append((px,py))
        yoffset = -xoffset
        for (dy,dx) in dx,dy:
            px = xc + xd*xoffset*dx
            py = yc + yd*yoffset*dy
            pointlist.append((px,py))
    # draw tangent lines and curves
    canvas.setLineWidth(inch*0.1)
    while pointlist:
        [(x1,y1),(x2,y2),(x3,y3),(x4,y4)] = pointlist[:4]
        del pointlist[:4]
        canvas.setLineWidth(inch*0.1)
        canvas.setStrokeColor(green)
        canvas.line(x1,y1,x2,y2)
        canvas.setStrokeColor(red)
        canvas.line(x3,y3,x4,y4)
        # finally draw the curve
        canvas.setStrokeColor(black)
        canvas.bezier(x1,y1, x2,y2, x3,y3, x4,y4)
```

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3 2 - 28 : bezier curves

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 | ... † " 3 ´ ā a | ¼½ Ç " Ā Í ë ¼½ " 9 ĭ g¹ ° Í BC Ñ 4 Eq ge " 9 J h¹
 @ ā

pathobject.moveTo(x,y)

moveTo Ē É Ā n¹ @ (mm " • ĭ ¼ " à M¾ é à Ā ® (d " ")) Eq g¹ ° Í e " (x,y) # ¥
 Ö ÷¹ @ E ĭ ë O e " Ý Þ Ā ® ā

pathobject.lineTo(x,y)

lineTo Ē É Ā ĭ ¼ @ ' # ¥ š e " (x,y) # ¥ » 5 ß à ' ā

pathobject.curveTo(x1,y1,x2,y2,x3,y3)

curveTo Ē É Ā ĭ ¼¹ @ # ¥ ĭ » 5 ë M æ Ā è é à E ±² (x1,y1) â (x2,y2) μ (x3,y3) ½ ò
 Æ Ç þ O Ð 5 9 E f¹ @ J g (x3,y3) Í ā

pathobject.arc(x1,y1,x2,y2,startAng=0,extent=90)

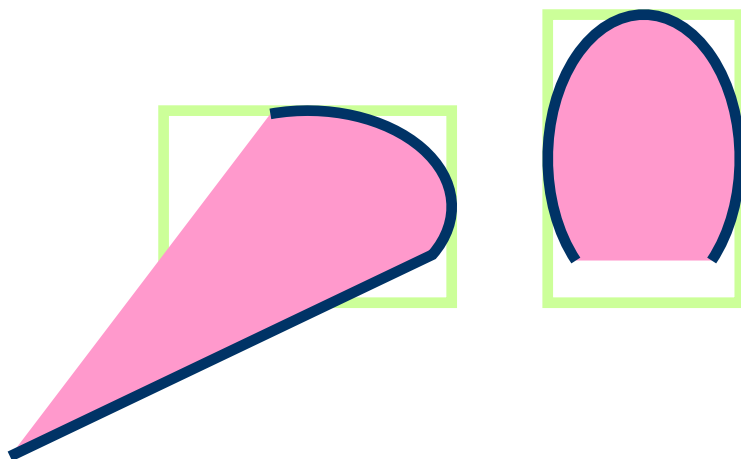
pathobject.arcTo(x1,y1,x2,y2,startAng=0,extent=90)

arc μ arcTo Ē É f , » 5 Q ä ā ā arc Ē É | » " ĭ n¹ @
 " q ĭ ë O e " ´ Ā Ā ® ā arcTo Ē É \$ " f Q ä ā " n ĭ 9 • ĭ ¼ " ´ Ā Ā ®² à ú n ĭ
 ā g¹ Q ä ā v ¼ E »¹ ò Q ä ā " à ' ā 9 (x1,y1) μ (x2,y2) Ÿ 1 V ä ā " á ´ " B Ū
 9 ā startAng " è O Û (Ū |) E ~ Ÿ | Q ä ā " ĭ # ¥ E Ā Ā 0 " ; è " Ā 9 ā V ..."
 á ´ Ē ĭ (x1,y1) ò h E (x2,y2) ò Í ¨ ā extent " ~ • ä ā Í " Æ Ç ā

```
def arcs(canvas):
    from reportlab.lib.units import inch
    canvas.setLineWidth(4)
    canvas.setStrokeColorRGB(0.8, 1, 0.6)
    # draw rectangles enclosing the arcs
    canvas.rect(inch, inch, 1.5*inch, inch)
    canvas.rect(3*inch, inch, inch, 1.5*inch)
    canvas.setStrokeColorRGB(0, 0.2, 0.4)
    canvas.setFillColorsRGB(1, 0.6, 0.8)
    p = canvas.beginPath()
    p.moveTo(0.2*inch, 0.2*inch)
```

```
p.lineTo(1, 1, 2.5*inch, 2*inch, startAng=-30, extent=135)
p.lineTo(3*inch, 1, 4*inch, 2.5*inch, startAng=-45, extent=270)
canvas.drawPath(p, fill=1, stroke=1)
```

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pathobject.rect(x, y, width, height)
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pathobject.ellipse(x, y, width, height)
```

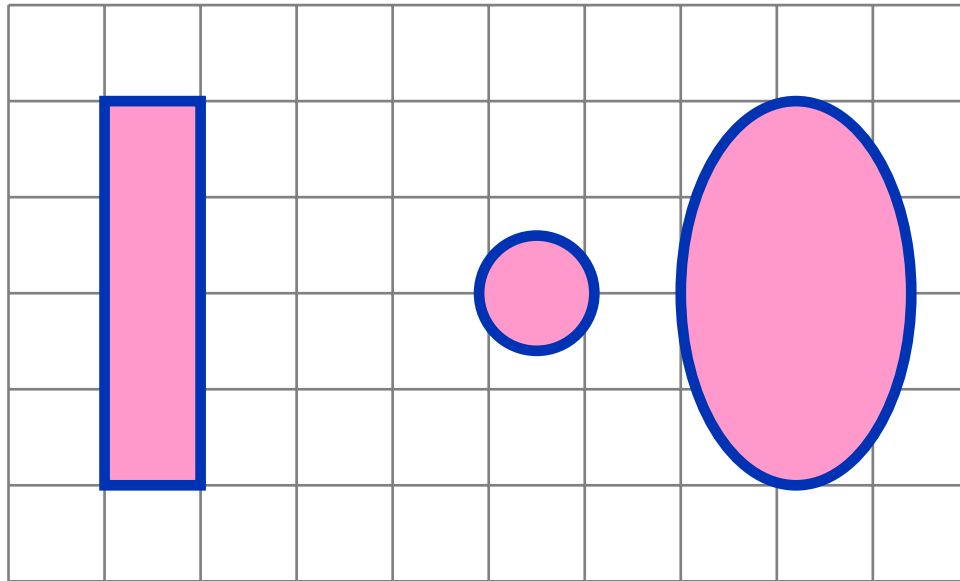
ellipseÈ É g ~ Ý " width μ height" (x,y) » 5 è O h " á ´ V" ä ã å

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pathobject.circle(x_cen, y_cen, r)
```

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```
def variousshapes(canvas):
    from reportlab.lib.units import inch
    inch = int(inch)
    canvas.setStrokeGray(0.5)
    canvas.grid(range(0, int(11*inch/2), int(inch/2)), range(0, int(7*inch/2),
    int(inch/2)))
    canvas.setLineWidth(4)
    canvas.setStrokeColorRGB(0, 0.2, 0.7)
    canvas.setFillColorsRGB(1, 0.6, 0.8)
    p = canvas.beginPath()
    p.rect(0.5*inch, 0.5*inch, 0.5*inch, 2*inch)
    p.circle(2.75*inch, 1.5*inch, 0.3*inch)
    p.ellipse(3.5*inch, 0.5*inch, 1.2*inch, 2*inch)
    canvas.drawPath(p, fill=1, stroke=1)
```

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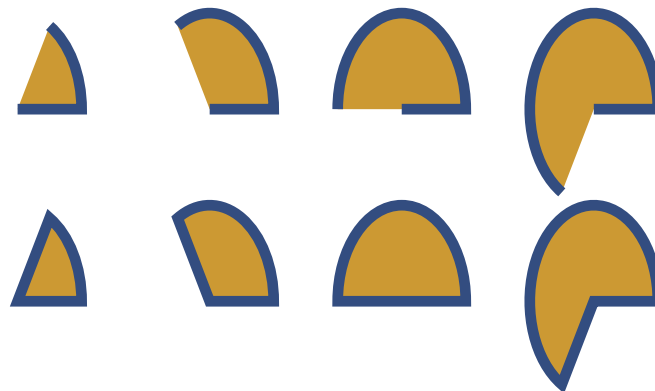
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pathobject.close()

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 Ê Æ Ñ Ò Ó Ô Õ Ö × Ø Ù Ú Û Ü Ý Þ ß à á â ã ä å æ ç è é ê ë ì í î ï ð ñ ò ó ô õ ö ø ù ú û ü ý þ ÿ

```
def closingfigures(canvas):
    from reportlab.lib.units import inch
    h = inch/3.0; k = inch/2.0
    canvas.setStrokeColorRGB(0.2,0.3,0.5)
    canvas.setFillColors(0.8,0.6,0.2)
    canvas.setLineWidth(4)
    p = canvas.beginPath()
    for i in (1,2,3,4):
        for j in (1,2):
            xc,yc = inch*i, inch*j
            p.moveTo(xc,yc)
            p.arcTo(xc-h, yc-k, xc+h, yc+k, startAng=0, extent=60*i)
            # close only the first one, not the second one
            if j==1:
                p.close()
    canvas.drawPath(p, fill=1, stroke=1)
```

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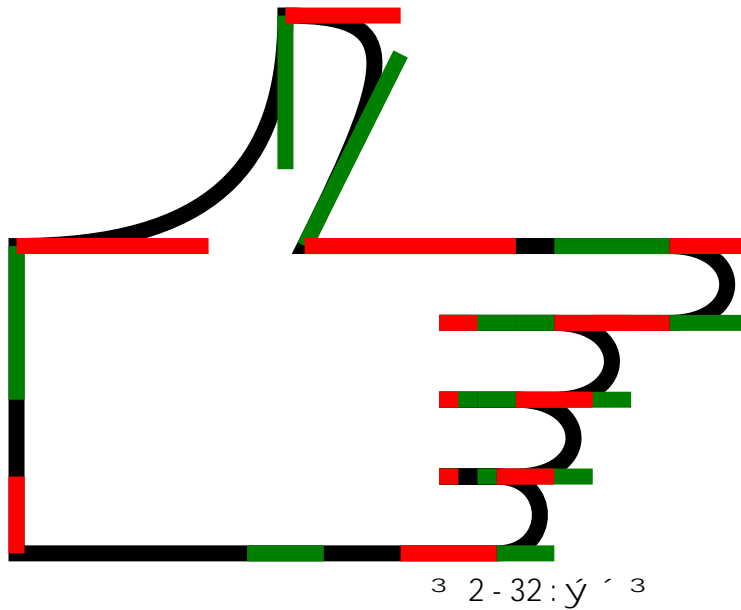


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```
def hand(canvas, debug=1, fill=0):
    (startx, starty) = (0,0)
    curves = [
        (0, 2), (0, 4), (0, 8), # back of hand
        (5, 8), (7, 10), (7, 14),
        (10, 14), (10, 13), (7.5, 8), # thumb
        (13, 8), (14, 8), (17, 8),
        (19, 8), (19, 6), (17, 6),
        (15, 6), (13, 6), (11, 6), # index, pointing
        (12, 6), (13, 6), (14, 6),
        (16, 6), (16, 4), (14, 4),
        (13, 4), (12, 4), (11, 4), # middle
        (11.5, 4), (12, 4), (13, 4),
        (15, 4), (15, 2), (13, 2),
        (12.5, 2), (11.5, 2), (11, 2), # ring
        (11.5, 2), (12, 2), (12.5, 2),
        (14, 2), (14, 0), (12.5, 0),
        (10, 0), (8, 0), (6, 0), # pinky, then close
    ]
    from reportlab.lib.units import inch
    if debug: canvas.setLineWidth(6)
    u = inch*0.2
    p = canvas.beginPath()
    p.moveTo(startx, starty)
    ccopy = list(curves)
    while ccopy:
        [(x1,y1), (x2,y2), (x3,y3)] = ccopy[:3]
        del ccopy[:3]
        p.curveTo(x1*u,y1*u,x2*u,y2*u,x3*u,y3*u)
    p.close()
    canvas.drawPath(p, fill=fill)
    if debug:
        from reportlab.lib.colors import red, green
        (lastx, lasty) = (startx, starty)
        ccopy = list(curves)
        while ccopy:
            [(x1,y1), (x2,y2), (x3,y3)] = ccopy[:3]
            del ccopy[:3]
            canvas.setStrokeColor(red)
            canvas.line(lastx*u,lasty*u, x1*u,y1*u)
            canvas.setStrokeColor(green)
            canvas.line(x2*u,y2*u, x3*u,y3*u)
            (lastx,lasty) = (x3,y3)
```

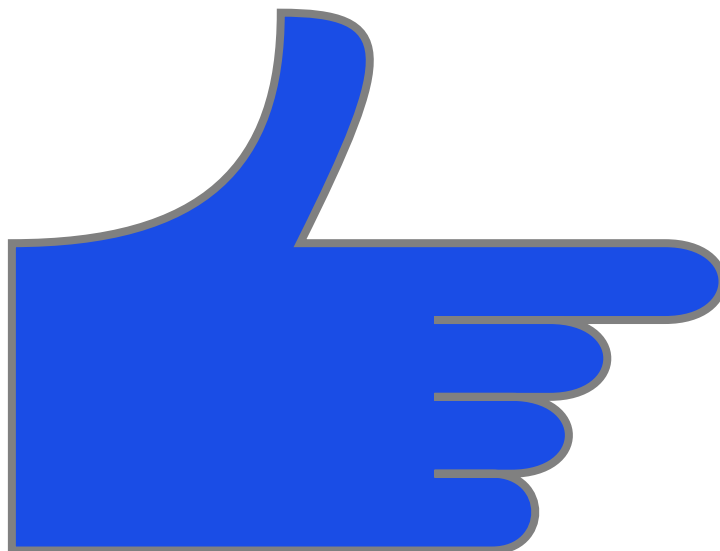
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```
def hand2(canvas):
    canvas.translate(20,10)
    canvas.setLineWidth(3)
    canvas.setFillColorRGB(0.1,0.3,0.9)
    canvas.setStrokeGray(0.5)
    hand(canvas, debug=0, fill=1)
```

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3.1 Unicode Â UTF8 Ĺ < Ö ÷ ² ;

Â reportlab 2.0 € • (2006 z 5 Ñ) Ĺ E ^ 1 ° 5 Y Z API" y " , • ó Ĺ Ç x k " UTF8 ¾ Python Unicode Û Ú â ž 4² • canvas.drawString μ B • API" œ Ĺ â - ù â - t â » ³ Û Ú œ Ĺ μ ' (H, • â

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d ^ g 4 Ð ReportLab 1.x x² a Á E ¾ C Â Æ Ç ù Û ú Ĺ Š " H Ĩ î ! Ĺ Š (? d latin-1 ¾ WinAnsi) E ^ • % œ Û Unicode" ÷ â Python Ð Š ñ É ā g Ĺ y " 1² ð ñ " ÷ É E O " ð ñ â

d Š " Ĺ Š " UTF8 ð ñ E Â ' è Ô Š ó Ĺ è O Ø ASCII Û + E Š - ó ä š è O Unicode Decode Error â ? d E h ž O ' ñ ' ³ î ! q² x è - ® ù E O è O² " É s Ô " ù â Marc - Andr / é Lemburg . ° Ø Æ L ø 1 " ² E Š ĩ Ĺ Š Š F G ' ' Û + â

```
>>> from reportlab.pdfgen.canvas import Canvas
>>> c = Canvas('temp.pdf')
>>> y = 700
>>> for line in file('latin_python_gurus.txt', 'r'):
...     c.drawString(100, y, line.strip())
...
Traceback (most recent call last):
...
UnicodeDecodeError: 'utf8' codec can't decode bytes in position 9-11: invalid
data
-->= L<--emburg
>>>
```

E 2 ù " Š = Ê É - " f Š " Ĺ Š " ÷ ò unicode E q • ž Š Ĩ t m O ð ñ E - Û ž . â

```
>>> for line in file('latin_input.txt', 'r'):
...     uniLine = unicode(line, 'latin-1')
...     c.drawString(100, y, uniLine.strip())
>>>
>>> c.save()
```

3.2 > ? Ú í @ ù A B

g' ñ Ã v " Ðª Ê E Orl_config.defaultEncoding œ Ĺ E „ # 5 " © Font 9 X K Ĺ " œ Ĺ E ž • œ Ĺ Ç " ~ ð ñ â g Ĺ E î ò Z • % ± ² PDF Ä 8 ž D Û Ú " Symbol μ Z apf Dingbats Û Ú " Û ' E ž • œ Ĺ ø 1 " ² â Ĺ Ĺ + , h E ° Ø Û Ú Ê Helvetica â Courier â Times Roman ¤ f 1 ° Latin-1" Û ' â Ĺ E d Y Z " Ò Ô š è O Û Ú Ä " " Û + E Š f U & ÷ š Symbol ¾ Zapf Dingbats Ĺ . > ž • Û + â ? d E d Š g Û drawString" Ĵ² Ä Ĺ Ĺ è Û H Ö " Unicode Û + E \u2702 (x) , Š x k ó M š Š Z (g test_pdfgen_general.py/pdf Ä " è O ? ®) â g Š " ' ñ Ã • % & ÷ Û Ú â

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^ f , ±² h | j " Å 5 g ^ " , f Ã " ¶ ÛÚ å Y Z " è O , ò *DarkGardenMK* " H Û
 Û E Y Z f , f Æ² • µ ¾ , f " (^ ¤ f , ±² Š) å Š • ReportLab ù € Ø Û g è n E g r
 eportlab/fonts ÿ h å

¼ E Û Ú P | 5 6 • Adobe AFM ("Adobe Font Metrics") µ PFB ("Printer Font Binary") - " Û Ú
 | j , ~ å ¼ C " è O ASCII , ~ E Û Ú Å " Û + È " Û ´ " ¤ « - E d ° Û å \$ Û å ; è i « -
 µ Æ Ç "metrics" (~ °) E • C " è O Ó è 5 , ~ E | j Û Ú " ´ Å å g reportlab/fonts ÿ h E
 | "DarkGardenMK.afm" µ "DarkGardenMK.pfb" S O , ~ E ž S O , ~ ² Ĩ ½ ò è O ? ® Û
 Ú å

g h " ? ® Æ E à š Û Ú " , ~ é E q² pdfmetrics % o þ Š E , Ž f Ĩ ±² E v •
 Y Z f , Û Æ Ç ° Ø Û Ú è . ±² Š å

```
import os
import reportlab
folder = os.path.dirname(reportlab.__file__) + os.sep + 'fonts'
afmFile = os.path.join(folder, 'DarkGardenMK.afm')
pfbFile = os.path.join(folder, 'DarkGardenMK.pfb')
```

```
from reportlab.pdfbase import pdfmetrics
justFace = pdfmetrics.EmbeddedType1Face(afmFile, pfbFile)
faceName = 'DarkGardenMK' # pulled from AFM file
pdfmetrics.registerTypeFace(justFace)
justFont = pdfmetrics.Font('DarkGardenMK',
                             faceName,
                             'WinAnsiEncoding')
pdfmetrics.registerFont(justFont)
```

```
canvas.setFont('DarkGardenMK', 32)
canvas.drawString(10, 150, 'This should be in')
canvas.drawString(10, 100, 'DarkGardenMK')
```

" ¶ E œ | "WinAnsiEncoding" • ó | Ô • E Š " • Û Ú , ~ " m è Å Û + f Û Ú q f² å

This should be in DarkGardenMK

³ 3 - 1 : ±² ø 1 ° Ø " Û Ú

Û Ú " ¹ Ĩ + AFM , ~ " FontName Û ' å g Í " ? ® Æ E Y Z] » Z ý | ž O , Û E w " Ðª
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 þ © ... + " È É E Š f , ±² è • Û ž . 2 ù " ' ñ å

```
class FontNameNotFoundError(Exception):
    pass
```

```
def findFontName(path):
    "Extract a font name from an AFM file."
```



```

f = open(path)

found = 0
while not found:
    line = f.readline()[:-1]
    if not found and line[:16] == 'StartCharMetrics':
        raise FontNameNotFoundError, path
    if line[:8] == 'FontName':
        fontName = line[9:]
        found = 1

```

```

return fontName

```

g DarkGardenMK" ? ®ÃEYZž • ~ÿ| % Û" ÛÚÍ j , ~ " #¥åëóİ • EŞó©Βh
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î 5ÛÚëOŠÖË»5" Û+ EÛÚó² xëO "notdef"Û+ --É1" èOblobâ9¾İ -
åI EŞf, %` ĩ āİ ŞÆh " ' ñËg ÛÚÛv¼æü ¢f õ™gŞ þÛÚ EÛ"
• gÛÚÃ" Û' ĩ , āİ å

```

import reportlab.rl_config
reportlab.rl_config.warnOnMissingFontGlyphs = 0

```

3.4 ¼ • HÚI ÚÍ ² ;

• úò^x>1² ðñÃf² " Û' å

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ðñåž " g! µOİ " Windowsµqª Unix- Í " ° ØðñE ¢ ¹ òCode Page
1252E• Í • ISO-Latin-1B¥Ë èO¾SOΒà " Û+ ¢åž " Reportlab PDFİ ±² " ĩ
İ ðñå Šéreportlab/libÃ" èO° Ø? a codecharts.py, ...Ef² •. >ÛÚ" t å
è; " ÑÒ, " , éêë5 >" å

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³ 3 - 2 : WinAnsi Encoding

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³ 3 - 3 : MacRoman Encoding

ž Š © ð ñ 4 ² • ° Ø Û Ú Ë Helveticaâ Times-Romanμ Courier# Æ Ä Ú ¼ E q f 4 ² • ª | •
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| 60 | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | ✂ | |
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³ 3 - 4 : ZapfDingbatsμ Š " è è ð ñ å

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| 80 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| A0 | € | Υ | ′ | ≤ | / | ∞ | f | ♣ | ♦ | ♥ | ♠ | ↔ | ← | ↑ | → | ↓ | ° | ± | " | ≥ | × | ∞ | ∂ | • | ÷ | ≠ | ≡ | ≈ | ... | | — | ↵ |
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³ 3 - 5 : Symbol# Æ è è " ð ñ

3.5 J K TrueTypeÚ ĭ

Marius Gedminas (mgedmin@delfi.lt)g Viktorija Zaksienė(vika@pov.lt)" z { h E ò P | TrueT
ypeÛ Ú¹ ° | Û Û ã TrueTypeÛ Úƒ „ g Unicode/UTF8Ã ±² E q' %• 256O Û + ã

Y Z ±² reportlab.pdfbase.ttfonts.TTFontĭ ĭ è O* " Û Û Û Û E q ±² reportlab.pdfbase.
pdfmetrics.registerFontê Û þ ã g pdfgenB g¹ ° ĭ »³ Y Z ƒ „ ž . Æ

```
# we know some glyphs are missing, suppress warnings
import reportlab.rl_config
reportlab.rl_config.warnOnMissingFontGlyphs = 0

from reportlab.pdfbase import pdfmetrics
from reportlab.pdfbase.ttfonts import TTFont

pdfmetrics.registerFont(TTFont('Vera', 'Vera.ttf'))
pdfmetrics.registerFont(TTFont('VeraBd', 'VeraBd.ttf'))
pdfmetrics.registerFont(TTFont('Veralt', 'Veralt.ttf'))
pdfmetrics.registerFont(TTFont('VeraBI', 'VeraBI.ttf'))
canvas.setFont('Vera', 32)
canvas.drawString(10, 150, "Some text encoded in UTF-8")
canvas.drawString(10, 100, "In the Vera TT Font!")
```

Some UTF-8 text encoded in the Vera TT Font!

3 3 - 6 : ±² Vera TrueTypeÛ Ú

g ĭ " ? ® ã E True TypeÛ Ú Û Û " ±²

```
TTFont(name,filename)

y „ ReportLab" „1 é < è Oœ | 5 ô E < Ó Oœ | " è O Û + » Ë ¾ ô H, ~ " Û Û æ E
> Û Ú " TTF, ~ ã g Marius E ê " • – ã E, ~ „ x k " € ¢ • " E w Y Z [ \ 3 4 | E d ,
~ „ " B Û " E ã ' g ĭ ¼ ~ ÿ h à Ñ B x " , ~ E ĭ • g reportlab.rl_config.TTFSearchpath!

g ±2 Platypus ã " TT Û Ú v ¼ E Y Z x k g < b > μ < i > ý ô h r è O ã ĭ „1 š ĭ j ù ò " ù
O Û Ú „1 " Þ ß ã
```

```
from reportlab.pdfbase.pdfmetrics import registerFontFamily
registerFontFamily('Vera',normal='Vera',bold='VeraBd',italic='Veralt',
boldItalic='VeraBI')
```

d Y Z ž " è O Vera1 Û Û Ú E " © Ú ¾ ĭ Ú E ã ' Y Z Û Û f y " Û Û Þ ß š ¥ è O Û
Ú „ ã < b > μ < i > ° ã g ƒ „ > ¢ ±² E w " ã d ĭ y j þ μ Þ ß Vera Û Û • E Y Z ƒ „
±² ' (, • E d

```
<font name="Times-Roman" size="14">This
is in Times-Roman</font> <font
name="Vera" color="magenta"
size="14">and this is in magenta
<b>Vera!</b></font>
```

This is in Times-Roman
and this is in magenta
Vera!

³ 3-7: Using TTF fonts in paragraphs

3.6 L MÚÍ J K

Reportlab PDFĭ ĩ ġ ò ÛÚ¹ ° ¢ ûü å PDF" < ë O* f ¢ £" , • Š Š = È >
å " S © P %" È È å Adobe" b c E ¾ C TrueType ÛÚ å

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Æ « ¬ E Š Û Ü Z ŷ k ð ' Æ å

=, å ñ Ú Å, (μ ò / ó ô) å 2 Ú Å, (Å ò) μ ò, Ç û ü E Y Z " — ~ Z ŷ , h Û Ú å

- chs = Chinese Simplified (mainland): 'SourceHanSansSC'
- cht = Chinese Traditional (Taiwan): 'MSung-Light', 'MHei-Medium'
- kor = Korean: 'HYSMyeongJoStd-Medium', 'HYGothic-Medium'
- jpn = Japanese: 'HeiseiMin-W3', 'HeiseiKakuGo-W5'

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| 20 | 梓 | 庠 | 幹 | 拔 | 宛 | 姐 | 虻 | 飴 | 絢 | 綾 | 鮎 | 或 | 粟 | 裕 | 安 | 庵 | 按 | 暗 | 案 | 闇 |
| 40 | 鞍 | 杏 | 以 | 伊 | 位 | 依 | 偉 | 困 | 夷 | 委 | 威 | 尉 | 惟 | 意 | 慰 | 易 | 椅 | 為 | 畏 | 異 |
| 60 | 移 | 維 | 緯 | 胃 | 萎 | 衣 | 謂 | 違 | 遺 | 医 | 井 | 亥 | 域 | 育 | 郁 | 磯 | 一 | 壹 | 溢 | 逸 |
| 80 | 稻 | 茨 | 芋 | 鰓 | 允 | 印 | 咽 | 員 | 因 | 姻 | 引 | 飲 | 淫 | 胤 | 蔭 | | | | | |

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² è O e " UnicodeCIDFont ô å

```
from reportlab.pdfbase import pdfmetrics
from reportlab.pdfbase.cidfonts import UnicodeCIDFont
pdfmetrics.registerFont(UnicodeCIDFont('HeiseiMin-W3'))
canvas.setFont('HeiseiMin-W3', 16)
```

```
# the two unicode characters below are "Tokyo"
msg = u'\u6771\u4eac : Unicode font, unicode input'
canvas.drawString(100, 675, msg)
```

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° " ġ r ĩ ò UnicodeCIDFont 9 X K | r © ¢ f ĩ " € ´ μ ° ß , • , * å , h k O ³ • ó
, ... B x b c " . • å

```
tests/test_multibyte_jpn.py
tests/test_multibyte_kor.py
tests/test_multibyte_chs.py
```

tests/test_multibyte_cht.py

g „ ¼€ • " ReportLab
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3.7 RenderPM QR

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 d e r P M (" P i x M a p R e n d e r " E B Û • r e n d e r P D F ā r e n d e r P S ¾ r e n d e r S V G) " " Ö x Ē ā

d Š Ā ù ù ù ž O E Š x k ó M š Ð ā Û h ž . " ó ò ā

```
C:\code\reportlab\graphics>renderPM.py
wrote pmout\renderPM0.gif
wrote pmout\renderPM0.tif
wrote pmout\renderPM0.png
wrote pmout\renderPM0.jpg
wrote pmout\renderPM0.pct
...
wrote pmout\renderPM12.gif
wrote pmout\renderPM12.tif
wrote pmout\renderPM12.png
wrote pmout\renderPM12.jpg
wrote pmout\renderPM12.pct
wrote pmout\index.html
```

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 μ Û Ē " , • Û + » Æ ¶ • ´ Ā Æ " ÷ μ " Ā Æ ā Ē Ē ° Æ " Û + » Æ P Ö Ā Æ Ý μ ø
 ° Ø Û Û ā

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 • y " m ā

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„ 4 ... PDF• S T U V

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4.1 WH

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h " > ? • > | ±² " ¶ • Ž Á å
* " a Ä f ó » Ÿ 1 ù E I • Ä ^ è O # ¥ Ò² Š Z å

```
def forms(canvas):
    #first create a form...
    canvas.beginForm("SpumoniForm")
    #re-use some drawing functions from earlier
    spumoni(canvas)
    canvas.endForm()

    #then draw it
    canvas.doForm("SpumoniForm")
```

4.2 X! Â» • 4(Y Z)

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è O Q " Š ^ è Q q g " • Ð 5 r s " å È R" ¶ • å bookmarkPage È È Ÿ 1 è
O ~ ° E k ~ ° " " " 9 å

```
canvas.bookmarkPage(name, fit="Fit", left=None,
    top=None, bottom=None, right=None, zoom=None
)
```

Ì Í +, h E bookmarkPage È È f • ; Ÿ 1 ò ~ ° å " Š é bookmarkPage Ÿ 1 " 9 v
• E PDF Ä 8 È f • > % O E q f Æ å È, 4 e W • < Ä

```
canvas.bookmarkPage(name)
```

É ¹ ° è O fit œ | E bookmarkPage È È f, ²ª © ¥ " È • > å

| | | |
|------|-----------------------|--|
| fit | [\] | ^ _ |
| Fit | | † 4 x r s (Ĩ Í) Entire page fits in window (the default) |
| FitH | top | Ê ° g r s Í È , † 4 x \$ Ù Top coord at top of window, width scaled to fit |
| FitV | left | Ê ° g r s ; , † 4 x ° Ù Left coord at left of window, height scaled to fit |
| FitR | left bottom right top | â Ê r s , 4 x ~ Ÿ " á ´ Scale window to fit the specified rectangle |
| XYZ | left top zoom | ™ " Ð 5 å d ^ 2 3 è O œ E PDF Ä 8 È ó f Æ Š ò " ù . " å Fine grained control. If you omit a parameter the PDF browser interprets it as "leave as is" |

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 %f · > ž ¥ ò " Ÿ xµ yÊ ° E q ß ± ² fit="XYZ"Ð 5 â Ê á

canvas.bookmarkPage('my_bookmark',fit="XYZ",left=0,top=200)

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 ' . ® E â Ê Ç ó ' ù g ž O # ¥ á

canvas.bookmarkPage('my_bookmark',fit="XYZ",left=0,top=200,zoom=2)

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 right)â Š Z ó : 3¹ ° 3 ´ Å Å h " " • ý • Å ÷ á

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 ookmarkHorizontalAbsoluteµ bookmarkHorizontalā

~ ` a b X!

canvas.linkAbsolute(contents,destinationname,Rect=None,addtopage=1,
 name=None,thickness=0,color=None,dashArray=None,**kw)

linkAbsoluteÈ É Ÿ 1 | ë O " n 9 â î ² Î ± ² õ Ã Ō Mé (d Acrobat Reader)Ä 8 , ..." ,
 f E î ° g Rect~ Ÿ " á ´ 9 E Ō Mé f " š • destinationnameB • " 9 â d
 ¥ bookmarkHorizontalAbsoluteè . E á ´ RectÛ Ü ² Î Í " ² Î Ĩ Ð Ĩ ~ Ÿ ā œ | contents~ Ÿ
 | î ² Î Ō 9 k QI g Ō Mé Å · > " , • o ā

á ´ RectÛ Ü ² ä Å (x1,y1,x2,y2)Ĩ ~ Ÿ E , • Ÿ g Ĩ Í ² Î Ĩ Ð Å á ´ " h µ Í ā
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canvas.bookmarkPage("Meaning_of_life")

Ÿ 1 | ë O # ¥ E ½ ò î ¼ " %O ° [+ Meaning_of_life
 ā ò | g » 5 ë O f ¥ " | ë O á ´ š Š E Y Z f ± ² , h ' ñ ā

canvas.linkAbsolute("Find the Meaning of Life","Meaning_of_life",
 (inch,inch,6*inch,2*inch))

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canvas.linkAbsolute("Meaning of Life","Meaning_of_life",
 (inch,inch,6*inch,2*inch),Border='[0 0 0]')

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 p M PDF | Å)ā

canvas.linkRectÈ É " ¶ ³ • linkAbsoluteÈ É ô H E wª | ë O œ | relative=1E y , ² # ä Å •
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4.3 c d

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 x g š V , f Å " 7 O ° ´ E ó J ² È É canvas.addOutlineEntry(self, title, key,
 level=0, closed=None)ā

```
title" f· >g   r - " ° ´ å keyÛÜ" ëOÛ+» EŠg, fÃ" ëë" Eq' µÚ   ë
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?dEg0 ° ´ •   Í 2 ° ´ )å E• Eclosedœ| ~ÿ   r - Ã" ú9" Ì Í • Öv" ²
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```
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å Ō" Å Œ ú, Å   ä " Ě ž Ã   `` • > æ Ey, < 2Ĭ" Ō ò "ch2"
å   | s ~ h"   " - Ū %₀ " EwŠ æ f, Đ t u   ... ò ë O ù - " ' ( å
```

#abridged code from our document template

```
if paragraph.style == 'Heading1':
    self.chapter = paragraph.getPlainText()
    key = 'ch%d' % self.chapterNo
    self.canv.bookmarkPage(key)
    self.canv.addOutlineEntry(paragraph.getPlainText(),
                              key, 0, 0)
```

4.4 æç e f g h

```
canvas.setPageTransition(self, effectname=None, duration=1,
                          direction=0,dimension='H',motion='I')

setPageTransitionĚ Ě ~ÿ| ëO   d•   hëO   ö ÷ å ? dEĚ f   " ÷   ž ¥ ò
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å ž •   g! Å   ~ - < > ê   Ě Đ `` ² å • • d • ± ²   Ě Ě E" œ í œ • ý þ å
```

4.5 a b ñ ' i j

```
canvas.setAuthor(name)
canvas.setTitle(title)
canvas.setSubject(subj)

ž • Ě Ě Ū, f   `` † ö f è"   å ŠZh, ~r   å ž •   f, ±² Ä8Ě"
", f« ñ "   ù * Ĩ ŌMEŠZ æ f, ½ ò ë © 2 ù " ° ØĚ   Eh • %₀$ Ū %₀O, ~ " ¶ f—
~ 1 ° `` • , ~ " ¶ • « ñ å %₀à Š   E" ±² ° Ø, • Ō å Ě Ě d MS/WindowsÍ " notepad¾
unixÍ " vi¾4emacs æ ŌM*.pdfó ò, ~ E q g, ~   t Å Ō à Ū + » /Authorå
```

```
def annotations(canvas):
    from reportlab.lib.units import inch
    canvas.drawString(inch, 2.5*inch,
        "setAuthor, setTitle, setSubject have no visible effect")
    canvas.drawString(inch, inch, "But if you are viewing this document   dynamically")
    canvas.drawString(inch, 0.5*inch, "please look at File/Document Info")
    canvas.setAuthor("the ReportLab Team")
    canvas.setTitle("ReportLab PDF Generation User Guide")
    canvas.setSubject("How to Generate PDF files using the ReportLab modules")
```

```
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```


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4.6 k l

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| " | - | 2 , ~ Ô • ñ â 4 2 • y " ò â No password required when opening file. Restrictions apply to everyone. |

| | | |
|---|---|--|
| - | " | 2 , ~ • %02 Î ñ å 4 2 • y `` ò å User password required when opening file. Restrictions apply to everyone. |
| " | " | 2 , ~ • %0è O ñ å ¿ `` g 1 ° 2 Î ñ " +, h 1 `` %5 å A password required when opening file. Restrictions apply only if user password supplied. |

4-2 - PDF È

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StandardEncryption 9 X K | Ä , h æ | å

```
def __init__(self, userPassword,
              ownerPassword=None,
              canPrint=1,
              canModify=1,
              canCopy=1,
              canAnnotate=1,
              strength=40):
```

userPassword µ ownerPassword œ | g " PDF Í ž ¥ | B • ñ å

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```
from reportlab.pdfgen import canvas
from reportlab.lib import pdfencrypt

enc=pdfencrypt.StandardEncryption("rptlab",canPrint=0)

def hello(c):
    c.drawString(100,100,"Hello World")
    c = canvas.Canvas("hello.pdf",encrypt=enc)
    hello(c)
    c.showPage()
    c.save()
```

4.7 s t ð WH

s t Œ Wu Ä _

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 • ™ f , ± ² textfield ~ ê ũ ó | å y " " widgetÇ " É J ² canvas.acroformý ô Í "
 È È ĩ " å

İ

ž · > | g î ¼ Í ĩ ä å " ¶ • Å 5 å

```
canvas.acroform.checkbox(
    name='CB0',
    tooltip='Field CB0',
    checked=True,
    x=72,y=72+4*36,
    buttonStyle='diamond',
    borderStyle='bevelled',
    borderWidth=2,
    borderColor=red,
    fillColor=green,
    textColor=blue,
    forceBorder=True)
```

¶ Åacroform¹ ° ý ô " Š • ` t õ ĩ " E ' è O, f Ä Ç q " è O ù å

v w € Ø

canvas.acroform.checkboxÈ È g î ¼ Í ĩ | è Ocheckbox< ~ å ..., ĩ " ™ " YES
 ¾OFFå œ | ò :

| canvas.acroform.checkbox] ° W | | |
|--------------------------------|--|----------|
|] x | ^ _ | ö ÷ y |
| name | ũ œ the parameter's name | None |
| x | g Í " € ' # ¥ (, ũ È °) the horizontal position on the page (absolute coordinates) | 0 |
| y | g Í " ° ß # ¥ (, ũ È °) the vertical position on the page (absolute coordinates) | 0 |
| size | Ç È Ä size x size The outline dimensions size x size | 20 |
| checked | d ò * E \$ k ..., ĩ ê ĩ , Ä if True the checkbox is initially checked | False |
| buttonStyle | d ò * E \$ k ..., ĩ È ê , Ä È ..., ĩ . È è h , æ å the checkbox style (see below) | 'check' |
| shape | < Ä ~ " Ç È È è h , æ å The outline of the widget (see below) | 'square' |
| fillColor | ST Ñ Ò colour to be used to fill the widget | None |
| textColor | + , " Ñ Ò the colour of the symbol or text | None |
| borderWidth | ; ĩ \$ Ũ as it says | 1 |
| borderColor | ; ĩ Ñ Ò the widget's border colour | None |
| borderStyle | ; ĩ . The border style name | 'solid' |
| tooltip | g < Ä ~ Í % º > " , • å The text to display when hovering over the widget | None |
| annotationFlags | İ Q " Š ° > Ũ + » blank separated string of annotation flags | 'print' |

| canvas.acroform.checkbox] ° W | | |
|--------------------------------|--|------------|
|] x | ^ _ | ö ÷ y |
| fieldFlags | Ï Q " Û' ° > È è h, ð å Blank separated field flags (see below) | 'required' |
| forceBorder | ò True " ó Û¹ ; i when true a border force a border to be drawn | False |
| relative | d ò True ä Ä î ¼¹ ° " Ä ÷ if true obey the current canvas transform | False |
| dashLen | d borderStyle=='dashed' E %± ² " 8 à å the dashline to be used if the borderStyle=='dashed' | 3 |

Hv w½€ × Ø

canvas.acroform.radio È É g î ¼ Í j è O radio < Å ~ å radio"™" radio Å , ..."™
E d " , ...E \$ " OFF å œ | "

| canvas.acroform.radio] ° W | | |
|-----------------------------|--|--------------------------------|
|] x | ^ _ | ö ÷ y |
| name | Û , i Å " ¹ (k œ) the radio's group (ie parameter) name | None |
| value | Û , i Å " ¹ the radio's group name | None |
| x | g Í " € ^ # ¥ (, Û È °) the horizontal position on the page (absolute coordinates) | 0 |
| y | g Í " ° ß # ¥ (, Û È °) the vertical position on the page (absolute coordinates) | 0 |
| size | Ç È E size x size The outline dimensions size x size | 20 |
| selected | d ò 'true' E \$ k Û , Å g Æ Ä Å , Å å if True this radio is the selected one in its group | False |
| buttonStyle | œ ! . the checkbox style (see below) | 'check' |
| shape | < Å ~ " Ç È È è h, ð å The outline of the widget (see below) | 'square' |
| fillColor | ² Ï S T < Å ~ " Ñ Ò colour to be used to fill the widget | None |
| textColor | + , " Ñ Ò the colour of the symbol or text | None |
| borderWidth | ; i \$ Û as it says | 1 |
| borderColor | ; i Ñ Ò the widget's border colour | None |
| borderStyle | ; i . The border style name | 'solid' |
| tooltip | g < Å ~ Í %· > " , • å The text to display when hovering over the widget | None |
| annotationFlags | Ï Q " S ° > Û + » blank separated string of annotation flags | 'print' |
| fieldFlags | Ï Q " Û' ° > È è h, ð å Blank separated field flags (see below) | 'noToggleToOff required radio' |
| forceBorder | î * " ó Û¹ ; i when true a border force a border to be drawn | False |
| relative | d ò true E \$ " ø î ¼¹ ¹ ° " ÷ if true obey the current canvas transform | False |
| dashLen | d borderStyle=='dashed' E %± ² " 8 à å the dashline to be used if the borderStyle=='dashed' | 3 |

° Ww€Ø

canvas.acroform.listBox Ë É g î ¼ Í Ì Ì Ì Ì O listBox < Å ~ å listBox Ë O, *
® E Æ Ã Ë O ¾ª O, * É ! = • fieldFlags ð f, , Å å

| canvas.acroform.listBox] ° W | | |
|-------------------------------|---|-------------|
|] | ^ _ | ö ÷ y |
| name | Å the radio's group (ie parameter) name | None |
| options | f 2 , * " ® ¾ª Å List or tuple of available options | [] |
| value | Û O ¾ª, Ý, * " Û + » ® å Singleton or list of strings of selected options | [] |
| x | g Í " € ´ # ¥(, Û É °) the horizontal position on the page (absolute coordinates) | 0 |
| y | g Í " ° ß # ¥(, Û É °) the vertical position on the page (absolute coordinates) | 0 |
| width | < Å ~ \$ Û The widget width | 120 |
| height | < Å ~ ° Û The widget height | 36 |
| fontName | %0± 2 " < 1 © Û Û " , 1 å The name of the type 1 font to be used | 'Helvetica' |
| fontSize | %0± 2 " Û Û < The size of font to be used | 12 |
| fillColor | ² Ý S T < Å ~ " Ñ Ò colour to be used to fill the widget | None |
| textColor | + , ¾ª , • " Ñ Ò the colour of the symbol or text | None |
| borderWidth | ; i \$ Û as it says | 1 |
| borderColor | ; i Ñ Ò the widget's border colour | None |
| borderStyle | ; i . The border style name | 'solid' |
| tooltip | g < Å ~ Í %0 > " , • å The text to display when hovering over the widget | None |
| annotationFlags | Ï Q " S ° > Û + » blank separated string of annotation flags | 'print' |
| fieldFlags | Ï Q " Û ' ° > É è h, ð å Blank separated field flags (see below) | " |
| forceBorder | î * " ó Û ¹ ; i when true a border force a border to be drawn | False |
| relative | d ò * E ä Å î ¼¹ ° " Å ÷ if true obey the current canvas transform | False |
| dashLen | d borderStyle=='dashed' E %0± 2 " 8 à å the dashline to be used if the borderStyle=='dashed' | 3 |

z { | H • ½ €

canvas.acroform.choice Ë É g î ¼ Í Ì Ì Ì Ì O dropdown < ~ å h z ù Ë O
, * ® E Æ Ã Ë O ¾ª O, * É ! = • fieldFlags ð f, , Å å d ^ g fieldFlags Å r ed
it E Å ' m f, ò å å

| canvas.acroform.choice] ° W | | |
|------------------------------|--|-------|
|] | ^ _ | ö ÷ y |
| name | Å the radio's group (ie parameter) name | None |

| canvas.acroform.choice] ° W | | |
|------------------------------|--|-------------|
|] | ^ _ | ö ÷ y |
| options | $f^2, *, " ® ¾ ä Å$ List or tuple of available options | [] |
| value | $ù O¾, Ÿ, *, " Û + » ® ä$ Singleton or list of strings of selected options | [] |
| x | $g í " € ´ # ¥ (, Û Ê °)$ the horizontal position on the page (absolute coordinates) | 0 |
| y | $g í " ° ß # ¥ (, Û Ê °)$ the vertical position on the page (absolute coordinates) | 0 |
| width | $< Å ~ $ Û$ The widget width | 120 |
| height | $< Å ~ ° Û$ The widget height | 36 |
| fontName | $%_{0±2} " < 1 © Û Û " , 1 ä$ The name of the type 1 font to be used | 'Helvetica' |
| fontSize | $%_{0±2} " Û Û <$ The size of font to be used | 12 |
| fillColor | $² ï S T < Å ~ " Ñ Ö$ colour to be used to fill the widget | None |
| textColor | $+ , " Ñ Ö$ the colour of the symbol or text | None |
| borderWidth | $; i $ Û$ as it says | 1 |
| borderColor | $; i Ñ Ö$ the widget's border colour | None |
| borderStyle | $; i .$ The border style name | 'solid' |
| tooltip | $g < Å ~ í %_{0±2} " > " , • ä$ The text to display when hovering over the widget | None |
| annotationFlags | $ï Q " S ° > Û + »$ blank separated string of annotation flags | 'print' |
| fieldFlags | $ï Q " Û ' ° > Ê è h, ð ä$ Blank separated field flags (see below) | 'combo' |
| forceBorder | $î * " ó Û ¹ ; i$ when true a border force a border to be drawn | False |
| relative | $d ò * E ä Å î ¼¹ ° " Å ÷$ if true obey the current canvas transform | False |
| dashLen | $d \text{ borderStyle} == \text{'dashed'} E %_{0±2} " ° 8, ä$ the dashline to be used if the borderStyle='dashed' | 3 |
| maxlen | $Ö¾ < Å ~ ^{TM} " E Ø Û$ None or maximum length of the widget value | None |

¬ , Û } ∈ ∅

canvas.acroform.textfield È É g î ¼ í ; ï ò *OtextfieldM* ~ ä , • Û ' f
„ ò ä E , 4 Å < Å ~ " ^{TM} ä

| canvas.acroform.textfield] ° W | | |
|---------------------------------|--|-------|
|] | ^ _ | ö ÷ y |
| name | $Å _$ the radio's group (ie parameter) name | None |
| value | $, • Û ' " ^{TM}$ Value of the text field | " |
| maxlen | $Ö¾ < Å ~ ^{TM} " E Ø Û$ None or maximum length of the widget value | 100 |
| x | $g í " € ´ # ¥ (, Û Ê °)$ the horizontal position on the page (absolute coordinates) | 0 |

| canvas.acroform.textfield] ° W | | |
|---------------------------------|--|-------------|
|] | ^ _ | ö ÷ y |
| y | g í " ° ß # ¥ (, Ü Ê °) the vertical position on the page (absolute coordinates) | 0 |
| width | < Å ~ \$ Ü The widget width | 120 |
| height | < Å ~ ° Ü The widget height | 36 |
| fontName | % ± ² " < 1 © Ü Ü " ¹ å The name of the type 1 font to be used | 'Helvetica' |
| fontSize | % ± ² " Ü Ü < The size of font to be used | 12 |
| fillColor | ² İ S T < Å ~ " Ñ Ò colour to be used to fill the widget | None |
| textColor | + , ¾ , • " Ñ Ò the colour of the symbol or text | None |
| borderWidth | ; i \$ Ü as it says | 1 |
| borderColor | ; i Ñ Ò the widget's border colour | None |
| borderStyle | ; i . The border style name | 'solid' |
| tooltip | g < Å ~ í % ° > " , • å The text to display when hovering over the widget | None |
| annotationFlags | İ Q " S ° > Ü + » blank separated string of annotation flags | 'print' |
| fieldFlags | İ Q " Ü ' ° > È è h , ¨ å Blank separated field flags (see below) | " |
| forceBorder | î * " ó ü ¹ ; i when true a border force a border to be drawn | False |
| relative | d ò * E ä Å î ¼ ¹ ° " Å ÷ if true obey the current canvas transform | False |
| dashLen | d borderStyle=='dashed'E % ± ² ° 8 , å the dashline to be used if the borderStyle=='dashed' | 3 |

~ • İ Ò

Æ! . œ | > î Æ! , Å E x k g Æ! Å ô ã ' ' . " + , å " ý © , ...:
checkâ crossâ circleâ starâ diamondâ

" ¶ E , f 6 7 É f ó ± ž • + , Å " ¾ • + , g Æ (x ² Å ô ã V Æ å Acrobat í î É © F
G g Ö x Ö Y x k • > " t í ± ² † 2 " 6 7 É R " g ± ² - ° "

ÿ Ð Ñ Å Ü

´ Å œ | l j | ... , i ¾ Ü , ~ " Ç È x k d • • > E § f , ± ² :circleâ squareâ
6 7 É f ó † ü = Y < Å ~ " à p E y , Acrobat Reader © F G ä ´ Ç È " f Ö Å å

€ w İ Ò

borderStyleœ | ó 4 Å Í < Å ~ " 3 D à p E § f , ± ² :
solidâ dashedâ insetâ bevelledâ underlinedâ

fieldFlags]

fieldFlagsœ | f , " è O % | ¾ è O İ " - | °) " Ü + » E Æ™ d h y > å ©ª « ¬ "
œ • PDF Ö x å

| Ú} ¼• Tokens Å values | | |
|-----------------------|---|-------|
| Token | ^ _ | y |
| readOnly | < ~ ĵ ĥ The widget is read only | 1<<0 |
| required | < ~ " Ů• " the widget is required | 1<<1 |
| noExport | %œ Œ Œ < Å ~ " ™ don't export the widget value | 1<<2 |
| noToggleToOff | Ů, ĩ Å Ů, , ...ë Œ radios one only must be on | 1<<14 |
| radio | Ů, É added by the radio method | 1<<15 |
| pushButton | ĥ Ć! ò. Ć! if the button is a push button | 1<<16 |
| radiosInUnison | Ů, ĩ €" ë. " ™ ën&÷ radios with the same value toggle together | 1<<25 |
| multiline | ² • ª Ů, • < Å ~ for multiline text widget | 1<<12 |
| password | ñ, • ĩ password textfield | 1<<13 |
| fileSelect | , ~ , ...< Å ~ file selection widget | 1<<20 |
| doNotSpellCheck | " / Œ Œ as it says | 1<<22 |
| doNotScroll | , • ĩ # Œ text fields do not scroll | 1<<23 |
| comb | § E Ø Ů ™ 5 ½ comb. " , Ů make a comb style text based on the maxlen value | 1<<24 |
| richText | d ± ² D, • if rich text is used | 1<<25 |
| combo | - Ů h z ĩ for choice fields | 1<<17 |
| edit | d , ... " f Œ â " if the choice is editable | 1<<18 |
| sort | ") %œ Ů ĩ ™ ê Ů Å if the values should be sorted | 1<<19 |
| multiSelect | d , ...ç q ª , if the choice allows multi-select | 1<<21 |
| commitOnSelChange | reportlab " ± ² not used by reportlab | 1<<26 |

annotationFlags]

PDF< Å ~ " E q ĵ " ý Œ E ž • ý Œ • > g h " - Å å

| Ú} ¼• Tokens Å values | | |
|-----------------------|---|-------|
| Token | ^ _ | y |
| readOnly | < ~ ĵ ĥ The widget is read only | 1<<0 |
| required | < ~ " Ů• " the widget is required | 1<<1 |
| noExport | %œ Œ Œ < Å ~ " ™ don't export the widget value | 1<<2 |
| noToggleToOff | Ů, ĩ Å Ů, , ...ë Œ radios one only must be on | 1<<14 |
| radio | Ů, É added by the radio method | 1<<15 |

| Ú} ¼• Tokens Å values | | |
|-----------------------|--|-------|
| Token | ^ _ | y |
| pushButton | î Æ! ò. Æ! if the button is a push button | 1<<16 |
| radiosInUnison | ù, i €¨ è. " ¢ ò n & ÷ radios with the same value toggle together | 1<<25 |
| multiline | ² • ¢ ü, • < Å ~ for multiline text widget | 1<<12 |
| password | ñ, • l password textfield | 1<<13 |
| fileSelect | , ~ , ...< Å ~ file selection widget | 1<<20 |
| doNotSpellCheck | " / Ö Ö as it says | 1<<22 |
| doNotScroll | , • i # ö text fields do not scroll | 1<<23 |
| comb | § E Ø Ü ¢ ½ comb . " , Ü make a comb style text based on the maxlen value | 1<<24 |
| richText | d ± ² D, • if rich text is used | 1<<25 |
| combo | - Ü h z i for choice fields | 1<<17 |
| edit | d , ... " f ö â " if the choice is editable | 1<<18 |
| sort | ") % Ü ¢ è ü Å if the values should be sorted | 1<<19 |
| multiSelect | d , ... Ç q ¢ , if the choice allows multi-select | 1<<21 |
| commitOnSelChange | reportlab ¢ ± ² not used by reportlab | 1<<26 |

„ 5 ... PLATYPUS - æç É œÂ , .

5.1 —f » ¼

Platypus" "Page Layout and Typography Using Scripts" â / â Š " è O° € ´ " ° £ ï E
 Ÿ Š f , ² E * " \$ † , ð a È j ... † " , f â

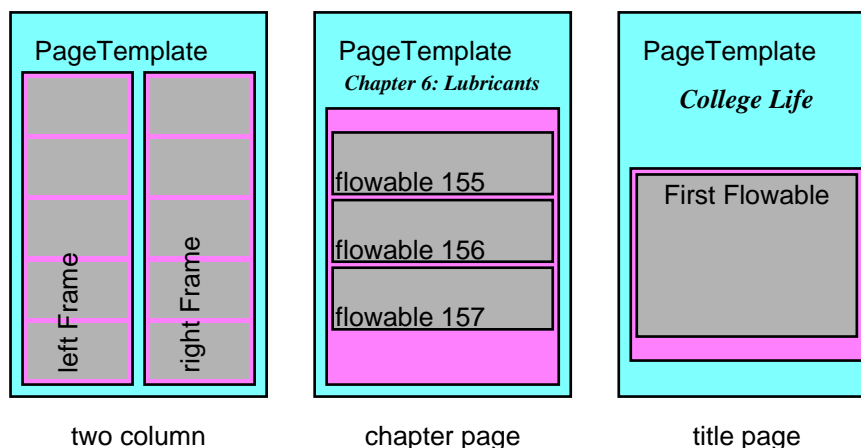
Platypus" ž ! † ` f "° " " ° £ = Ÿ • , f † Ÿ f Q â ? d E ' (± ² ' (. E
 ± ² % & E - " " Ÿ | u O ` | % " , ~ f , Œ ¢ ¥ " . Ö - & e - Å E ĺ • g è
 O ' (. µ ° £ Ö - " , ~ Å 3 4 Ÿ ù E f â

Platypus" % Ű ž ! f , í ò `` ý O E † í h E ž • " :

- DocTemplates½ ò , f " E à † É â
- PageTemplates½ ò `` © ° £ " Ö - â
- Frames Å f " ò , • ¾ ³ ´ " Q I Ö - â
- Flowables Ű x "flowed into the document" | , f " , • ¾ ³ ´ ä â È £ ³ Ű â ' (µ
 - è † E w O æ , ¾ ... ~ æ ç Å Å è † æ â

pdfgen.Canvas ò E Å Æ Ç ³ f , f » ¹ " E â

DocTemplate



³ 5 - 1 : DocTemplate m 9 • ž

í " ÷ ³ ´ Ű • ž | DocTemplateâ PageTemplateµ Flowables" . Ÿ â | E Š ĺ `` & ' ò
 E ò 7 è O PageTemplate • í f , ~ Ÿ " • | « " " - È " Ű Å ³ Å F Ö " Å . ĺ
 ~ Ÿ è O æ â

DocTemplate è O ¾ a O PageTemplate E 7 O PageTemplate è O ¾ a O Frame â Flowa
 bles " ~ f , flowed (" |) Frame " NO E ? d Paragraph ¾ Table â

% Ű ± ² platypus E Š • % Å DocTemplate ò Å j è O , f E q h Æ build È É è O Flowables
 ® â document" build È É ž Ÿ d • f flowable° W Š ... e Š " NO â

g E DocTemplate ò ± ² `` ©] ~ í • ā ° £ µ - Å â 7 O] ~ Ç `` è O Ű x " Š È
 É E ¹ ò handle_XXX E Æ Å XXX"] ~ , ¹ â è O (\$ "] ~ " frameBegin E Š ~ , g Å) j <
 è ± ² è O i * " â

Platypus+] é è - ® ¶ • ä â Å ... E ž • ä â ¹ ò Flowables E Š ž ĺ ö Ű | Š ĺ ö " Platypus
 - Å Ö â ò | 3 4 Ö " ü ò E è © " f " ä â ActionFlowables i j ° £ Ö E ? d E
 š h è ® ¾ C ÷ ... ^ è O PageTemplate â

5.2 ™ Š

• a , h ' ñ Á ® E Š ò Platypus¹ ° | ë Oø 1 2 ù " "hello world "? ® â

```
from reportlab.platypus import SimpleDocTemplate, Paragraph, Spacer
from reportlab.lib.styles import import getSampleStyleSheet
from reportlab.rl_config import import defaultPageSize
from reportlab.lib.units import inch
PAGE_HEIGHT=defaultPageSize[1]; PAGE_WIDTH=defaultPageSize[0]
styles = getSampleStyleSheet()
```

| » E Y Z Â Æ Ç % o Ã ö | ë • 9 X K | â è • ' (. μ Æ Ç È Ž â

```
Title = "Hello world"
pageinfo = "platypus example"
def myFirstPage(canvas, doc):
    canvas.saveState()
    canvas.setFont('Times-Bold',16)
    canvas.drawCentredString(PAGE_WIDTH/2.0, PAGE_HEIGHT-108, Title)
    canvas.setFont('Times-Roman',9)
    canvas.drawString(inch, 0.75 * inch, "First Page / %s" % pageinfo)
    canvas.restoreState()
```

Y Z ² Ĩ " K | Ÿ 1 , f | " , Ÿ - â

```
def myLaterPages(canvas, doc):
    canvas.saveState()
    canvas.setFont('Times-Roman',9)
    canvas.drawString(inch, 0.75 * inch, "Page %d %s" % (doc.page, pageinfo))
    canvas.restoreState()
```

é • Y Z ` a < è O v • " Mn Ĩ • < è O ¥ E Y Z ò Æ Ç " , Ÿ - Ÿ 1 |
è O D ² ° £ â " ¶ E Ĩ " S O K | ± ² pdfgen R " ¹ ° ¼ ½ Ĩ ò » 5 â

```
def go():
    doc = SimpleDocTemplate("phello.pdf")
    Story = [Spacer(1,2*inch)]
    style = styles["Normal"]
    for i in range(100):
        bogustext = ("This is Paragraph number %s. " % i) * 20
        p = Paragraph(bogustext, style)
        Story.append(p)
        Story.append(Spacer(1,0.2*inch))
    doc.build(Story, onFirstPage=myFirstPage, onLaterPages=myLaterPages)
```

E • E Y Z | ë O "store" q 9 i , f â " ¶ E Y Z g ž Ą ± ² " "canned" (Ĩ), f % & E
Š " i " % & â Y Z v ± ² | i " ' (. â Y Z g ž Ą ± ² | S © ò \$ " "flowables"
--Spacers μ Paragraphs â < è O Spacer • ' ' (° ´ Ũ + » â

% Ō M ž O > ? a Á " ó ô E " , "> ³ • " " ´ Ũ Ũ % o docs/userguide/doc_examples.py Ě
Ĩ † ReportLab docs ~ ũ € ¢ â ³ • § python
doc_examples.pyf , ... Platypus ó ô phello.pdf â

5.3 Flowables

Flowables" f , » 5 " NOE Š " wrap, draw μ f " split È É â Flowable" è O / Ũ " ¶ ô
E ² • » 5] ž E è O • ? Z Ÿ Š " < E q g Š † 2 " Ê ° - Ą » 5 (ž • % ¶ API g J ² Flowabl
e.draw È É ¹ ° è O, Ũ Ê ° -) â % ä è O • ? E ± ² f=Flowable() â

¶ Å Flowable ô " è O / Ũ ô E É 1 ĺ ½ ò ¶ ô ± ² â

ò | • ž ±² Flowables" ë 6 Ě E Y Z f x > d • g ¹ ° Í ±² µ » 5 O, ô Paragraphå Para
graph" d &%E Š Z f `` ë %œ" 1 2 Ĩ • Ž å

```
from reportlab.lib.styles import getSampleStyleSheet
from reportlab.platypus import Paragraph
from reportlab.pdfgen.canvas import Canvas
styleSheet = getSampleStyleSheet()
style = styleSheet['BodyText']
P=Paragraph('This is a very silly example',style)
canv = Canvas('doc.pdf')
aW = 460 # available width and height
aH = 800
w,h = P.wrap(aW, aH) # find required space
if w<=aW and h<=aH:
    P.drawOn(canv,0,aH)
    aH = aH - h # reduce the available height
    canv.save()
else:
    raise ValueError, "Not enough room"
```

Flowable × Ø

Flowable.draw()

ž f J ² Ĩ %œ` flowable • 6 7 † 2 å Flowableô `` • å drawå J ² ' ñ x k • ' flowable `` ë O ý ô canvE Š " pdfgen.CanvasE Š x k » 5 Š CanvasÍ E q ' Canvas • ë O 4 ĩ " Å Å (¬ ‡ ^ å " ë c)å É 1 ž O Ě É Œ g drawOn Ě É J ² E 3, ô Ŭ Ŭ • å ž O Ě É å 3, ô Ŭ Ŭ • å ž O Ě É å

Flowable.drawOn(canvas,x,y)

ž " Ð 5 Ò ² Ĩ f flowable 6 7 š Ÿ ¹ ° " Ě É å Š Š " ÷ ò ¹ ° Ě ° (x,y)E q • ' flowabl e `` ë O canvý ô E ž . draw Ě É (g ¶ ô Å `` • å)¬ f, g ë O, Ŭ Ě ° i * Å 6 7 å

Flowable.wrap(availWidth, availHeight)

g Ÿ } Ŭ Ŭ " < å » 5¾ÆÇ' ' v¼E ž OK | f V " i * J ² å Š ø R • ±² "

Flowable.split(self, availWidth, availheight)

î wrapú 4 E ©...† " i * ó J ² ž OK | å 5 6" flowablesx k ø R[],ž ¶ T U Š Z Ô É 7 Q å 8 ž " flowablesx k † 2 7 Q q ø R è O flowables® å 9 Í ' ñ %œ • ' œ &...U 7 Q å d Ĩ Ð: ^ E 7 Q Ě É x k ø R[self]å) \$ E flowablex k & e ® E q ø R è O Ě Ž Å • a " fl owable® [f0,...]å • å " 7 Q Ě É x k œ 4 Å selfE ò ž f ç q...† " ° £ Å 5 g è O f" ô " ® Í ë Ŭ^a å

5.4 † Ŭ ~ ‡ • ^

`` S © Ě É Ě Ĩ Í +, h ø R Ó E ò f" õ ž " ° ß Ð %¹ ° ~ õ å

Flowable.getSpaceAfter(self):
Flowable.getSpaceBefore(self):

ž • Ě É ó ø R flowable • ¾¼ x k `` a * Ĩ Ð å ž • Ĩ Ð ý • flowable • ; E œ ¬ " • E fl owable" draw Ě É g 6 7 x k • a Š å Ð 5 a Á f ±² ø R" ™ Ĩ • Ÿ Í h, Å Ÿ flowable • %^a * Ĩ Ð å

y `` " flowablesÇ `` ë OhAligný ô À ('LEFT','RIGHT','CENTER'%œ'CENTRE')å Ŭ • ; <%œ Oi * \$ Ŭ " ' (E ž O ý ô `` • , å Ŭ • < i * \$ Ŭ " - å ³ Ŭ¾ÆÇ Ŭ Ŭ E ž = Ÿ | Š Z " € ' # ¥ å

h " Œ ú f = t E &%œ Ÿ ô \$ " f" õ, ~ E' (µ - å

5.5 Frames

Frames" Ū Ō" t Ě E Š • ; ¬ g PageTemplateÃ E Frames" è O# ¥ µ < E q' ü è O
> Ð f » 5 Ĩ Ð" · , å d Å

```
Frame(x1,y1,width,height,leftPadding=6,bottomPadding=6,
      rightPadding=6,topPadding=6,id=None,showBoundary=0)
```

i è O h Ê ° ò (x1,y1)" Frame• ? (g ± ² B Ū • ¹ °)E ò width x heightå Paddin
gœ| " ² • / * » ¹ Ĩ Ð" « å œ| id" Ū Ū ± ² " ° [+ E ? d "LeftColumn"¾"RightColu
mn"è å d showBoundaryœ| " Ø Ó E Å' i * " ; è f g Ū Ū » 5 Ō Ĩ Ě ž " Ð " ²
æ å

Frame × Ø

```
Frame.addFromList(drawlist,canvas)
```

ù ? drawlist¼ " FlowablesE ß Š @ < ò × å d t è O Ū Ū E \$ Ō ~ è Op 1 å

```
Frame.split(flowable,canv)
```

%o` flowable± ² f ² Ĩ Ð ê Ū Q A E q Ø R flowable" ® å

```
Frame.drawBoundary(canvas)
```

f i * ; è ¹ ...è O á ´ Ě P %o² • J æ å

½€ Frames

Framesf , ß • canvasesµ flowablesè n ± ² Ĩ i , f å Frame.addFromListĚ Ě ò Š Š
wrap µ drawOnJ ² å Š • %oy " " PlatypusÆ Ç Ĩ ä " ² " NO Š PDF Ě å

```
from reportlab.pdfgen.canvas import Canvas
from reportlab.lib.styles import import getSampleStyleSheet
from reportlab.lib.units import inch
from reportlab.platypus import Paragraph, Frame
styles = getSampleStyleSheet()
styleN = styles['Normal']
styleH = styles['Heading1']
story = []

#add some flowables
story.append(Paragraph("This is a Heading",styleH))
story.append(Paragraph("This is a paragraph in <i>Normal</i> style.",
    styleN))
c = Canvas('mydoc.pdf')
f = Frame(inch, inch, 6*inch, 9*inch, showBoundary=1)
f.addFromList(story,c)
c.save()
```

5.6 ¬ - Å Š <

BaseDocTemplateŌ • ã | , f - Å " ¶ • Å 5 å k Ō " è O • ? | è O¾ª OPageTempl
ate" ® Ě ž • PageTemplatef ² • Ĩ j Ū « ¬ " ° £ å buildĚ Ě f ² • Š Flowables° W
E , , ...è O PDF, f å

BaseDocTemplate

```
BaseDocTemplate(self, filename,
                 pagesize=defaultPageSize,
                 pageTemplates=[],
                 showBoundary=0,
                 leftMargin=inch,
                 rightMargin=inch,
                 topMargin=inch,
                 bottomMargin=inch,
                 allowSplitting=1,
                 title=None,
                 author=None,
                 _pageBreakQuick=1,
                 encrypt=None)
```

```
    i è O4e i ¶ • , f " , f % & â Š ² " B î ª " À 5 E w " ì í " % & â y •
    " filename f , " è O Û + » E è O ² • f i " PDF, f " , ~ , Æ æ f , " è O " write È É
    " Û Ü E d BytesIO ¾ file ¾ socket â
```

```
ç q " œ | x k " c t ž " E w " showBoundary Ð 5 " ) » 5 Frame " ; è E ž Û • J i •
    " Ð " ² " â allowSplitting œ | = Ÿ | ¥ È É " ) x k U split Û O Flowables³ è Frame â _pa
    geBreakQuick œ | = Ÿ | g m m v ¼ E " ) x k U m m í " y " i * â encrypt œ | =
    Ÿ | " ) Û , f è ü E , # d • â ì í + , h E , f " â d encrypt " è O Û +
    » Û Ü E Â ' Š f ½ ò pdf " ² Î ñ â d encrypt " è Oreportlab.lib.pdfencrypt.StandardEncr
    yption " ? E Â ' ž O Û Û - ² Î pdf â ž ç q Û ž ¥ è ü © Ý " Ð 5 â
```

BaseDocTemplate × Ø

```
ž • Ç " 9 Î a Á L ß • Ç " } ´ E ò Ç Z É 1 ó ± ² â
```

```
BaseDocTemplate.addPageTemplates(self, pageTemplates)
```

```
È É ² • g ā " , f Ą r è O ¾ è - ® PageTemplate â
```

```
BaseDocTemplate.build(self, flowables, filename=None,
                      canvasmaker=canvas.Canvas)
```

```
ž " x ² a Á a Á L ^ > Š " P % È É â ] ž , f • ? • ž ¥ E build È É f story , flowables
    ° W " ´ f È flowables ] æ E q g ® Ą ø ù E f flowables ° W è è O 5 É - Ą
    À 5 â • í E ž ± â BaseDocTemplate • ? ~ ò Û • ? handle_XXX È É " J ² î Š " © ] ~ â
```

BaseDocTemplate Œ Þ × Ø

```
ž • g ¶ ô Ą • " b 1 â Š Z " - " " ½ ò ° £ À 5 " B n C ® â D 3 , ô " i C f ,
    s t ž • E ² E Ç • , ° £ Ò " ý ò â
```

```
BaseDocTemplate.afterInit(self)
```

```
ž O È É g ¶ ô è j Ą • J ² Æ 3 , ô f , s t k È É ĩ r ì í " PageTemplates â
```

```
BaseDocTemplate.afterPage(self)
```

```
ž " g Š • E D U î ¼ % & " afterDrawPage È É J ² â è O 3 , ô f , ± ² ž O È
    É ĩ Œ è • 5 6 • « - " ] + E â d Û ( í " | Û µ þ Û â
```

```
BaseDocTemplate.beforeDocument(self)
```

```
g Û , f è ü " • Š v ¼ E w g Š À 5 Ø D , v • E - ó J ² ž OK | E Š f , ² ĩ Û •
    ? " pdfgen.canvas è è ü Š â E Š f , ² ĩ Û • ? " pdfgen.canvas è è ü ¼ ½ â
```

```
BaseDocTemplate.beforePage(self)
```

```
ž " g Š i E g î ¼ % & " beforeDrawPage È É v ¼ J ² " â Š f , ² ĩ & ¥
    Ÿ " « - ü " C â
```

BaseDocTemplate.filterFlowables(self,flowables)

g P handle_flowable Ě Ě ĩ EJ ² ž OK Ĩ Ĩ F flowableså g Ø R Ed flowables[0]
ž ¥ ò None E \$ ó G(E P Ě Ě ĩ £ Ø R å

BaseDocTemplate.afterFlowable(self, flowable)

g flowable 6 7 • J ² å `` > Š " ô f , ± ² ž OC @ Ĩ f ý Ÿ ¾ i * Ĩ Ě g " « ¬ å

BaseDocTemplate • ' Ž •

ž • Ě Ě 9 ... ĩ ° £ Ò " P % Q å a Ą L x k ß J ² ¾ s t ž • Ě Ě E ü ø Ç Z ³ 3 4
° £ Ò å ĩ ĩ E `` \ ò " a Ą L d ñ g ¾ O Ÿ " Ĩ ~ E £ XXX è ü E ž O Ĩ ~ q Ů
x • Ą Ą " è On Ě Ě Ą ' W " f , s t q J ² drived ô € • Ą " ¶ Ě Ě å Y Z ò 7 O Š Ě
Ě ¹ ° ĩ ò O ¶ ò ¥ 1 ¥ E , ¹ B ¥ E ¼ H ò h ĩ à " _ " E ž . ¬ Ð t u ĩ å

```
def handle_pageBegin(self):
    doStuff()
    BaseDocTemplate.handle_pageBegin(self)
    doMoreStuff()
```

```
#using the synonym
def handle_pageEnd(self):
    doStuff()
    self._handle_pageEnd()
    doMoreStuff()
```

g ž Ą Y Z ® ò ž • Ě Ě Ĩ " ò ĩ • ž g Š " Ĩ ~ å `` > Š " a Ą L f , M è h H ñ å

```
handle_currentFrame(self,fx)
handle_documentBegin(self)
handle_flowable(self,flowables)
handle_frameBegin(self,*args)
handle_frameEnd(self)
handle_nextFrame(self,fx)
handle_nextPageTemplate(self,pt)
handle_pageBegin(self)
handle_pageBreak(self)
handle_pageEnd(self)
```

± ² , f % & f , ø 1 2 ù E SimpleDocTemplate" é BaseDocTemplate3 , ô Ĩ " è O ô E Š ¹
° ĩ † 2 " PageTemplate µ Frame ž ¥ å

```
from reportlab.lib.styles import getSampleStyleSheet
from reportlab.lib.pagesizes import letter
from reportlab.platypus import Paragraph, SimpleDocTemplate
styles = getSampleStyleSheet()
styleN = styles['Normal']
styleH = styles['Heading1']
story = []

#add some flowables
story.append(Paragraph("This is a Heading",styleH))
story.append(Paragraph("This is a paragraph in <i>Normal</i> style.",
    styleN))
doc = SimpleDocTemplate('mydoc.pdf',pagesize = letter)
doc.build(story)
```

PageTemplates

PageTemplate ô " è O b 1 B ĩ 2 ù " t Ě ô å 7 O • ? Ç è O Frames" ® E q ' `` è •
Ě Ě x k g 7 O " ĩ µ mm J ² å

PageTemplate(id=None,frames=[],onPage=_doNothing,onPageEnd=_doNothing)

² • è ĩ Ą è O • ? E framesœ ĩ x k " è O Frames" ® E f , " onPage µ onPageEndœ ĩ
" f J ² " E Š Z " x k " def XXX(canvas,document) E Ą Ą canvas µ document " g » 5
" ¹ ° µ , f å ž • ? a " - " " ² Ĩ » 5 " ø " ö Ě £ ° Ø ¤ Q å ž • ý ô K ĩ • B n
Ě Ě PageTemplate.beforePage µ PageTemplate.afterPage € ¤ ´ ü E ž S O Ě Ě " µ " before
Page(self,canvas,document) å ž • Ě Ě Ç q ± ² ô 3 , Ĩ Ÿ ¹ ° Ø ü ò E ý ô \$ Ç q 4 Ą • ?

å g û ü E id œ | ² • æ ü PageTemplate " & ÷ E y „ id='FirstPage' ¾ id='TwoColumns'
" (\$ " å

„ 6 ... Paragraphs - ↯ , } •

```
reportlab.platypus.ParagraphÔ " Platypus FlowablesÃ E " ² " è OÆŠƒ„ - Å Bî " ¶ "
, • E q¹ ° | ±² XMLï Ø¼' " ÛÚ. μÑÒÄÅå - Å• " , • " %ú´ Åƒ„ " .
" E © " E¾CJ Å " å XML¼' ^ ) ƒ„ ² ï ÷ | ` ÓÛ +¾Eh° å
```

```
h " , Û | | è OParagraphÔ " • ? å
```

```
Paragraph(text, style, bulletText=None)
```

```
œ| text | ' ( " , • Æg , • " mþμ÷ü• Eª Ð" Ĩ ó ûüåžçqgPython³ • Ã
ÿK±² â ê" þÒ, , • å bulletTextœ|¹ ° | ' ( " Ĩ Í ®L, • å' ( , • μ®L" ÛÚμ
ÆÇý ôƒ„ ±² . œ| Ĩ ž ¥å
```

```
œ| style x k " è O ParagraphStyle Ô " • ? E É 1 ±²
```

```
from reportlab.lib.styles import ParagraphStyle
```

```
ž O t É ô „ m9Å" È¹ ° |ª O Ĩ Í ' ( ý ô" ž ¥åž • . > g è O, ò stylesheet
" Û( . ÛÜÄ E Š ç q„ stylesheet['BodyText']" ´ Å} ž • . å YZ¹ ° | è O>?.
å
```

```
from reportlab.lib.styles import getSampleStyleSheet
stylesheet=getSampleStyleSheet()
normalStyle = stylesheet['Normal']
```

```
ƒ„ ò Paragraphž ¥" „ * ƒ„ Å ParagraphStyle Ĩ Í™ Å M ô å¼ ² h I à ('_)"™ Ĩ † •
reportlab.rl_config %O Å" Ĩ Í™ E ž •™ Ĩ † • reportlab.rl_settings%o å
```

6.1 ParagraphStyle

```
class ParagraphStyle(PropertySet):
    defaults = {
        'fontName':_baseFontName,
        'fontSize':10,
        'leading':12,
        'leftIndent':0,
        'rightIndent':0,
        'firstLineIndent':0,
        'alignment':TA_LEFT,
        'spaceBefore':0,
        'spaceAfter':0,
        'bulletFontName':_baseFontName,
        'bulletFontSize':10,
        'bulletIndent':0,
        'textColor': black,
        'backColor':None,
        'wordWrap':None,
        'borderWidth': 0,
        'borderPadding': 0,
        'borderColor': None,
        'borderRadius': None,
        'allowWidows': 1,
        'allowOrphans': 0,
        'textTransform':None,
        'endDots':None,
        'splitLongWords':1,
        'underlineWidth': _baseUnderlineWidth,
        'bulletAnchor': 'start',
        'justifyLastLine': 0,
        'justifyBreaks': 0,
        'spaceShrinkage': _spaceShrinkage,
        'strikeWidth': _baseStrikeWidth, #stroke width
        'underlineOffset': _baseUnderlineOffset, #fraction of fontsize
        to
        offset underlines
        'underlineGap': _baseUnderlineGap, #gap for double/triple
        underline
        'strikeOffset': _baseStrikeOffset, #fraction of fontsize to offset
```

```

strikethrough
'strikeGap': _baseStrikeGap, #gap for double/triple strike
'linkUnderline': _platypus_link_underline,
#'underlineColor': None,
#'strikeColor': None,
'hyphenationLang': _hyphenationLang,
'uriWasteReduce': _uriWasteReduce,
'embeddedHyphenation': _embeddedHyphenation,
}

```

± ² , Û' (. : ParagraphStyle

Paragraphµ ParagraphStyleö ë n Š ª | 1 è " - Å • ` å h " > ? „ ¥ " . » 5
' (E q r | ë O; è i E ž . Š ¬ f „ Mš • & " Ĩ Đ ; ² | å

```

alignment = 0
allowOrphans = 0
allowWidows = 1
backgroundColor = None
borderColor = None
borderPadding = 0
borderRadius = None
borderWidth = 0
bulletAnchor = start
bulletFontName = Helvetica
bulletFontSize = 10
bulletIndent = 0
embeddedHyphenation = 0
endDots = None
firstLineIndent = 0
fontName = SourceHanSans-ExtraLight
fontSize = 10
hyphenationLang =
justifyBreaks = 0
justifyLastLine = 0
leading = 12
leftIndent = 0
linkUnderline = 0
rightIndent = 0
spaceAfter = 0
spaceBefore = 6
spaceShrinkage = 0.05
splitLongWords = 1
strikeGap = 1
strikeOffset = 0.25 * F
strikeWidth =
textColor = Color(0,0,0,1)
textTransform = None
underlineGap = 1
underlineOffset = -0.125 * F
underlineWidth =
uriWasteReduce = 0
wordWrap = None

```

```

Š g ~ Đ g 1970z 5Ñ28= E
Š + ¶ E ø É E q • M ¶ " ñ E
ò € è O y N" b -
OP ÿ ~ b E ¶ ³ X ... ° Q µ ´ å
Š d • R • <

```

³ 6-1: Ĩ Í ParagraphStyle

spaceBeforeµ spaceAfterž SOý ô d Š Z y • " Å. E ü | g è O i * " > ¾² å g è O i
* " > E spaceBefore : 3 E g² E spaceAfter : 3 å ž ¶ T U Š f „ ~ Ÿ è O'Heading
2'. g Å Đ ô ã E Š v ¼ " S " Ĩ Đ E w ó g > ä š | S " Ĩ å
ž SOý ô x k Í ò " ÛFrame" "" ` " E " ' (• ; y ; Ĩ Đ " è Q å

fontSizeµ fontName° " . u è " E w & % " " ž ¥ leading å
ž " B Å , • ü v Đ " Đ % Æ è O , " \ ò É \$ " Ÿ ž O Đ % å 9 " < 20 % å % ä T ü %
" , • E " ± ² i ° " leading å d ^ f autoLeading(Ĩ Í ò "off")ž ¥ ò "min"(± ² p f š " ¼
ō E £ ± å ~ Ÿ " <)¾ "max"(± ² p f š " µ ~ Ÿ " i ™)E Å ' ¬ ó U U ü • Ÿ ¼ ò å d ü

Ā ¥" ÛÚ <ê Êžƒ " ``²" ā
h³ ò¼• Ĭ Đμ á " Òõā

alignment = 0
allowOrphans = 0
allowWidows = 1
backColor = None
borderColor = None
borderPadding = 0
borderRadius = None
borderWidth = 0
bulletAnchor = start
bulletFontName = Helvetica
bulletFontSize = 10
bulletIndent = 0
embeddedHyphenation = 0
endDots = None
firstLineIndent = 0
fontName = SourceHanSans-ExtraLight
fontSize = 10
hyphenationLang =
justifyBreaks = 0
justifyLastLine = 0
leading = 16
leftIndent = 0
linkUnderline = 0
rightIndent = 0
spaceAfter = 6
spaceBefore = 6
spaceShrinkage = 0.05
splitLongWords = 1
strikeGap = 1
strikeOffset = 0.25°F
strikeWidth =
textColor = Color(0,0,0,1)
textTransform = None
underlineGap = 1
underlineOffset = -0.125°F
underlineWidth =
uriWasteReduce = 0
wordWrap = None

Šg ~Đg 1970z 5Ñ28= E
Š + ¶ E ø É E q • M¶ " ñ E
ö € ë O y N" b -
OPÿ ~b E ¶ ³ X...° Qμ ´ ā
Š d • R • <

³ 6-2: ¼• Ĭ Đμ á leading

ý ò borderPadding J %' (• NO; i v Đ" padding ā Šƒ, " è O ù è " ™ E ƒ, " è O
2Š 4O ™ " ä Å ā ž • ™ " x² Ě • X. Ě CSS ƒ B ¥ ā d 5Ÿ è O ™ E k ™ ƒ x²
• y `` k M; i ā d 5| è O, Ĭ " ™ E \$ Ā > ĩ Œ Ž - Ž Ā x² š; Ĭ ā d 5| SO
¾ p O ™ E \$ ½ ú " ™ ƒ Ā B – " ; ĩ x² ā " ¶ E gh " ? ® Ā E h Ō Ě i " é' (• ;
» 5" ā

alignment = 0
allowOrphans = 0
allowWidows = 1
backColor = #FFFF00
borderColor = #000000
borderPadding = (7, 2, 20)
borderRadius = None
borderWidth = 1
bulletAnchor = start
bulletFontName = Helvetica
bulletFontSize = 10
bulletIndent = 0
embeddedHyphenation = 0
endDots = None
firstLineIndent = 0
fontName = SourceHanSans-ExtraLight
fontSize = 10
hyphenationLang =
justifyBreaks = 0
justifyLastLine = 0
leading = 12
leftIndent = 0
linkUnderline = 0
rightIndent = 0
spaceAfter = 0
spaceBefore = 0
spaceShrinkage = 0.05
splitLongWords = 1
strikeGap = 1
strikeOffset = 0.25*F
strikeWidth =
textColor = Color(0,0,0,1)
textTransform = None
underlineGap = 1
underlineOffset = -0.125*F
underlineWidth =
uriWasteReduce = 0
wordWrap = None

Š g ~ Ðg 1970z 5Ñ28= E
Š + ¶ E ø É E q • M¶ " ñ E
ô € è Oy N" b -
OPÿ ~ b E ¶ ³ X...º Qµ ´ å
Š d • R • <

³ 6-3: f Ä padding

leftIndent µ rightIndent ý ò " ½² " Š y (a " ÆfirstLineIndent r š < è ü "
leftIndent Ä å d Š ñ %øë O@ß " ; « E) ä f firstLineIndentê • 0å

alignment = 0
 allowOrphans = 0
 allowWidows = 1
 backColor = None
 borderColor = None
 borderPadding = 0
 borderRadius = None
 borderWidth = 0
 bulletAnchor = start
 bulletFontName = Helvetica
 bulletFontSize = 10
 bulletIndent = 0
 embeddedHyphenation = 0
 endDots = None
 firstLineIndent = 24
 fontName = SourceHanSans-ExtraLight
 fontSize = 10
 hyphenationLang =
 justifyBreaks = 0
 justifyLastLine = 0
 leading = 12
 leftIndent = 24
 linkUnderline = 0
 rightIndent = 24
 spaceAfter = 0
 spaceBefore = 0
 spaceShrinkage = 0.05
 splitLongWords = 1
 strikeGap = 1
 strikeOffset = 0.25*F
 strikeWidth =
 textColor = Color(0,0,0,1)
 textTransform = None
 underlineGap = 1
 underlineOffset = -0.125*F
 underlineWidth =
 uriWasteReduce = 0
 wordWrap = None

Š g ~ Ðg 1970z
 5Ñ28= E Š + ¶ E ø É E
 q • M¶ " ñ E
 ô € ë Oy N" b - OPÿ
 ~ b E ¶ ³ X ... ° Qµ ´
 å Š d • R • <

³ 6-4: â ê þ Që E | ü â ê þ QÓ

f firstLineIndentŽ ¥ ò ¶ | E leftIndent\$ ° ä ª E q ± ² ¥ " Ù Ú Ë Y Z F • ó i j Š ð ' ¶
 _ ¼ f , 5 Š ë Ö ÿ 1 ® Å

```

alignment = 0
allowOrphans = 0
allowWidows = 1
backColor = None
borderColor = None
borderPadding = 0
borderRadius = None
borderWidth = 0
bulletAnchor = start
bulletFontName = Helvetica
bulletFontSize = 10
bulletIndent = 0
embeddedHyphenation = 0
endDots = None
firstLineIndent = 0
fontName = SourceHanSans-ExtraLight
fontSize = 10
hyphenationLang =
justifyBreaks = 0
justifyLastLine = 0
leading = 12
leftIndent = 36
linkUnderline = 0
rightIndent = 0
spaceAfter = 0
spaceBefore = 0
spaceShrinkage = 0.05
splitLongWords = 1
strikeGap = 1
strikeOffset = 0.25*F
strikeWidth =
textColor = Color(0,0,0,1)
textTransform = None
underlineGap = 1
underlineOffset = -0.125*F
underlineWidth =
uriWasteReduce = 0
wordWrap = None

```

```

' " 1 " Ø • : Š g ~ Đ g
1970z 5Ñ28= E Š + ¶ E ø É
E q • M¶ " ñ E
ô € è Oy N" b - OPÿ ~
b E ¶ ³ X...º Qµ ´ â
Š d • R • <

```

³ 6-5: â ê þ Që E | ü â ê þ QÖ

g %O reportlab.lib.enumsÅ E alignment` k O f "™E ÿ 1 ò 1 « â ž •™" TA_LEFT,
TA_CENTER¾ TA_CENTRE, TA_RIGHT µ TA_JUSTIFY E™QR ò 0, 1, 2µ 4â
ž • Çµ Š y (a " è . â

f wordWrapž ¥ ò 'CJK'İ ä b c " ÷ ü â Ů • V É " OÈ , • E Š f , É allowWidows
µ allowOrphansİ 4 Å Ò ü # É Š widowsµorphans" È â ž SO™É 1 Ç x k ž ¥ ò 0E w
é • WX E Y Z ç q widowsâ , • " İ Í Ñ Ò f , ² textColorž ¥ E ' (" NOÑ Ò f , ² b
ackColorž ¥ â ' (" ; i ý Ò f , ±² borderWidth, borderPadding,
borderColorµ borderRadiusİ 4 Å â

textTransformý Ò f , " NoneE uppercase¾ lowercaseä Š ž . " m E capitalizeä Š ê j Û
• / â

ý Ò endDotsf , " NoneE è O Ů + » E¾ C è O Ů Û E Æ ý ò ò text µ f , "
fontName, fontSize, textColor, backColorµ dy(y offset)
E² • ~ Ÿ / Ů ' (E • è ü " þ t â

splitLongWordsý Ò f , ž ¥ ò]™E , œ 7 Q Ø 1 Ø " ù ¥ â

ý Ò bulletAnchorf , " 'start','middle','end'¾'numeric'İ Đ 5 ® L " Ÿ # ¥ â

justifyBreaksý Ò Đ 5 | ") x k ²
º + ¶ Ů Û â

ý Ò spaceShrinkage" è O < | E ~ Ÿ ' (ü " İ Đ f , â <ª * , ±Æ e 4Æ É 1 " 0.05 â

ĭ ± 2 <u>¾ ° E underlineWidthâ underlineOffsetâ underlineGap µ
 underlineColorý ô Ð5 ĭ ħ ĭ à ü ò å ž • ° f „ „ ž • ý ô " s t ™ å width µ offset
 " ý ô ™ " è O fraction * Letter E Æ Å letter f „ " P â L â f ¾ F Å " è O E ' Ü Ü < å ? å P
 ± 2 ° " Ü Ü < E F " ° Å " E Ü Ü < E f " ° " è ĭ Ü Ü < å L
 > ¶ E ¶ ParagraphStyle ¢ Ü Ü < å strikeWidth, strikeOffset, strikeGap µ
 strikeColorý ô Ü ü ü à " ¥. " ½ 2 å

ý ô linkUnderline Ð5 ° ") † ö ħ ĭ à å

d > œ ĭ pyphen python % o E \$ ý ô hyphenationLang
 Ð5 m © b c f ² • g „ ž • P ĭ ú Ü + " +, ħ ú Ü + å

d ž ¥ ĭ embeddedHyphenation E Å ' ¬ ó U 7 Q ² " P ĭ ú Ü + " ù ¥ å

ý ô uriWasteReduce Ð5 Y Z d • U Q A Ø " uri å Š " Y Z Í ò ± Y „ " ü " Q ĭ E g % o
 reportlab.rl_settings Å " ĭ ĭ ™ " 0.5 å ž ¶ T U d Y Z f Y „) * è } " ü ĭ E Y Z f U 7
 Q è O M n ĭ Ü uri " ù ¥ å

¬ ¼ E ú Ü + µ uri Q A " ĭ ĭ • Ô " å ^ • % E ± 2 ¬ / . rl_settings , ¬ ¾ g python
 Ý Þ Å r reportlab_settings.py % o ĭ 3 4 ĭ ĭ ž ¥ å e 4 " ™ "

```
hyphenationLanguage='en_GB'
embeddedHyphenation=1
uriWasteReduce=0.3
```

6.2 ¬ „ } • XML ¼ ' ¼ Z

XML °) f „ ² ĭ 3 4 ¾ ~ Ý % Ü ' (. E ¢ f „ ~ Ý ' (" °) å

— — ~ <para> ¼ Z

' (, • f „ „ ... é <para attributes....> </para> ° V å ĭ " <para>
 ° " " • ý ô Ç Ó • , Paragraph text µ ¾ bulletTexty ± 2 " . å

| ý ô | ¥ 1 ¥ |
|--------------------------|---|
| alignment | align, alignment |
| allowOrphans | allowOrphans, alloworphans |
| allowWidows | allowWidows, allowwidows |
| autoLeading | autoLeading, autoleading |
| backColor | backColor, backcolor, bg, bgcolor |
| borderColor | borderColor, bordercolor |
| borderRadius | borderRadius, borderradius |
| borderWidth | borderWidth, borderwidth |
| borderpadding | borderpadding |
| bulletAnchor | banchor, bulletAnchor, bulletanchor |
| bulletColor | bcolor, bulletColor, bulletcolor |
| bulletFontName | bfont, bulletFontName, bulletfontname |
| bulletFontSize | bfontsize, bulletFontSize, bulletfontsize |
| bulletIndent | bindent, bulletIndent, bulletindent |
| bulletOffsetY | boffsety, bulletOffsetY, bulletoffsety |
| embeddedHyphenation | embeddedHyphenation, embeddedhyphenation |
| endDots | endDots, enddots |
| firstLineIndent | findent, firstLineIndent, firstlineindent |
| fontName | face, font, fontName, fontname |
| fontSize | fontSize, fontsize, size |
| hyphenationLang | hyphenationLang, hyphenationLanguage, hyphenationlang |
| hyphenationMinWordLength | hyphenationMinWordLength, hyphenationminwordlength |

| | |
|---------------------|--|
| hyphenationOverflow | hyphenationOverflow, hyphenationoverflow |
| justifyBreaks | justifyBreaks, justifybreaks |
| justifyLastLine | justifyLastLine, justifylastline |
| leading | leading |
| leftIndent | leftIndent, leftindent, lindent |
| rightIndent | rightIndent, rightindent, rindent |
| spaceAfter | spaceAfter, spacea, spaceafter |
| spaceBefore | spaceBefore, spaceb, spacebefore |
| spaceShrinkage | spaceShrinkage, spaceshrinkage |
| splitLongWords | splitLongWords, splitlongwords |
| strikeColor | strikeColor, strikecolor |
| strikeGap | strikeGap, strikegap |
| strikeOffset | strikeOffset, strikeoffset |
| strikeWidth | strikeWidth, strikewidth |
| textColor | color, fg, textColor, textcolor |
| textTransform | textTransform, texttransform |
| underlineColor | underlineColor, underlinecolor |
| underlineGap | underlineGap, underlinegap |
| underlineOffset | underlineOffset, underlineoffset |
| underlineWidth | underlineWidth, underlinewidth |
| uriWasteReduce | uriWasteReduce, uriwastereduce |
| wordWrap | wordWrap, wordwrap |

6-3-. ý ô " ¥1 ¥

Y Z ò Y Z " Python ý ô , 1 ° | è • " 2 " ¥1 ¥ E O < / € • E , # HTML
 ° Ø Ã È g " è Z ý ô å ž • á " t ± 9 Ĩ XML 2 x x 2 a Á Ä ä © t u E ò q a ' °
) f • % ‡ ^ å h · > | E à ' (° Ã ç q " ý ô µ ¥1 ¥ å

6.3 } a ¼'

<_[CDATA[g 7 O' (Ã E Y Z ± 2 è Å ¶ • " XML ° Ĩ 1 ° °) å Æ Ã E ¶ • " " © Ú
 (...)â í Ú (<i>...</i>) µ h l à (<u>...</u>)å Æ Ç Ç [" ° " J (...)E
 µ û ü à (<strike>...</strike>)å <link>µ <a> ° f 2 • Ö 2 Ĩ ¼, f Ã " URI â , f ¾ å <a>
 ° " a Ä Ú f 2 • °) , f Ã " è O # ¥ å ð ç q ± 2 break (
)° å]>å

<nobr
 >Ç ~ Ð</nobr>§ • 1970z 5Ñ28=
 + ¶ å ø É µ M ¶ \ ô € è • y N"
 O ~ b E ¶ 3 ° Q µ ' å
 <u>§ d • R • </u><

O™ ó § • 1970z 5Ñ28 = + ¶ å ø
 É µ M ¶ \ ô € è • y N"
 O ~ b E ¶ 3 ° Q µ ' å
§ d • R • <

3 6-6: 2 ù " J Ú µ í Ú °

ž " è O ° " <a href="#MYANCHOR"
 color="blue"> E È
 ž Ã å ž " ^ è O ~ h ¥ è ° " <
 link href="#MYANCHOR" color="blue" fontNa
 me="SourceHanSans-ExtraLight"> </link
 >å

ž " è O ° " E È ž Ã å
 ž " ^ è O ~ h ¥ è ° "
 å

3 6-7: µ

link ° f , 2 ½ œ • E w 2 ½ å a µ link Ú ° " = ý ô fontNameâ fontSizeâ co
 lor µ backColor ý ô å Ú Ö 2 f , " http: È à È ð å pdf: È ¥ " pdf, f ð ¾ docume

nt:Ē B¥" pdf, f ƒ ê Ē >Æ½* " Ē >f ð ò documentE Ñ Û Ò² , # Ĩ " +, ë . Ē g
ž ©+, hE x k 23Š ƒ Ą " • ÆÇĒ >Çó ð ò¾©URLă

Ç ~ ÐŠ • 1970z 5Ń28=
+ ¶ Ą ø Ē μ <strike>M¶ \ </strike>
ô € è • y N" O~b Ē Š ð' RŠ
<

Ç ~ ÐŠ • 1970z 5Ń28= + ¶ Ą ø
Ē μ M¶ \
ô € è • y N" O~b Ē Š ð
' RŠ <

³ 6-8: J , û ü à , μ ÷ ü °

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bottom"â "text-bottom"Æk ™ ƒ , " è O | Ů u Qă ¾, Ů ™ă


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 is
aligned <b>bottom</b>.<br/><br/> This
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<b>middle</b>.<br/><br/>This &lt;img/&gt;
 is aligned
<b>-4</b>.<br/><br/>This &lt;img/&gt;  is aligned
<b>+4</b>.<br/><br/>This &lt;img/&gt;  has
width<b>10</b>.<br/><br/></para>

```

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This  is aligned +4.

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3 6-11: 3 -

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alignment = 0
allowOrphans = 0
allowWidows = 1
backColor = None
borderColor = None
borderPadding = 0
borderRadius = None
borderWidth = 0
bulletAnchor = start
bulletFontName = Symbol
bulletFontSize = 10
bulletIndent = 18
embeddedHyphenation = 0
endDots = None
firstLineIndent = 0
fontName = SourceHanSans-ExtraLight
fontSize = 10
hyphenationLang =
justifyBreaks = 0
justifyLastLine = 0
leading = 12
leftIndent = 32
linkUnderline = 0
rightIndent = 0
spaceAfter = 0
spaceBefore = 0
spaceShrinkage = 0.05
splitLongWords = 1
strikeGap = 1
strikeOffset = 0.25*F
strikeWidth =
textColor = Color(0,0,0,1)
textTransform = None
underlineGap = 1
underlineOffset = -0.125*F
underlineWidth =
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wordWrap = None

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7.1 Table

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Table ŕš ê

```
Table(
  data,
  colWidths=None,
  rowHeights=None,
  style=None,
  splitByRow=1,
  repeatRows=0,
  repeatCols=0,
  rowSplitRange=None,
  spaceBefore=None,
  spaceAfter=None,
)
```

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- ™" < è ùg data[0] ĀE ŕ¬" • Eùă - ™" ĚŪž Á ®" âĭ,jthùă - ™gdata[ĭ][j]Āâ
ùă - ™Ā" e ŪŪ+ 'n' ðò ùQAŪ+E qgdraw ² • f ùă - - Āò ùă

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Ě®ê ùQAâ ¼v " • ā Ě®QA TableEy, f splitByRowž ¥ò Falsef ð ™NotImplem

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~ ¼E repeatColsoe| : 3 E ò Table Ē®ë ù 7 Qā

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Table.setStyle(tblStyle)

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7.2 TableStyle

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7.3 TableStyle × Ø

TableStyle(commandSequence)

i È É , œ| Á ® ò ? ê i Å TableStyleå

```
LIST_STYLE = TableStyle(
    [('LINEABOVE', (0,0), (-1,0), 2, colors.green),
     ('LINEABOVE', (0,1), (-1,-1), 0.25, colors.black),
     ('LINEBELOW', (0,-1), (-1,-1), 2, colors.green),
     ('ALIGN', (1,1), (-1,-1), 'RIGHT')])
```

TableStyle.add(commandSequence)

È É ç q § h ā " " TableStyler E £ § f , gª O b t Ã i | TableStyleså

```
LIST_STYLE.add('BACKGROUND', (0,0), (-1,0), colors.Color(0,0.7,0.7))
```

TableStyle.getCommands()

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```
cmds = LIST_STYLE.getCommands()
```

7.4 TableStyle Commands

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Ē È ° Å È %™ h • | E ¬ Û Python Ñ Ò è . ā Ê ° " , (® E ù) " ´ 5 ô " E Š " ø - ® - "
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TableStyle Cell Formatting Commands

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| FONTNAME | FACE | Ů Ů „ 1 . |
| FONTSIZE | SIZE | „ 9 ò ù # " Ů Ů < ; Ů + Ð %(leading) f ó ¥ ĩ . |
| LEADING | | „ 9 ò ù # " Ů + Ð %(leading). |
| TEXTCOLOR | | Ũ Ŭ „ 1 ¾ (R,G,B) ä Å . |
| ALIGNMENT | ALIGN | LEFT, RIGHT μ CENTRE (¾ CENTER) ¾ DECIMAL Å " ë Ò . |
| LEFTPADDING | | %o ĩ ; %E ĩ ĩ ò 6. |
| RIGHTPADDING | | %o ĩ ; %E ĩ ĩ ò 6. |
| BOTTOMPADDING | | %o ĩ h ; %E ĩ ĩ ò 3. |
| TOPPADDING | | %o ĩ ĩ ; %E ĩ ĩ ò 3. |
| BACKGROUND | | ! ë Ò é Ů Ů ä Ů + » „ 1 ¾ ĩ Ů ä Å /® Ÿ 1 " Ũ Ò Ē ¾ C! ë Ò ĩ j y • v Å S T " ® /ä Å Ē k ® /ä Å x [DIRECTION, startColor, endColor] þ Ò ä ä Ē Æ Å DIRECTION " VERTICAL ¾ HORIZONTAL ä |
| ROWBACKGROUNDS | | ë Ò %o ò Ů ± 2 " Ũ Ò ® ä |
| COLBACKGROUNDS | | ë Ò %o ò Ů ± 2 " Ũ Ò ® ä |
| VALIGN | | ! TOP, MIDDLE ¾ ĩ ĩ " BOTTOM Å " ë Ò ä |

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```
from reportlab.platypus.tables import Table, TableStyle
from reportlab.lib import colors

data= [['00', '01', '02', '03', '04'],
        ['10', '11', '12', '13', '14'],
        ['20', '21', '22', '23', '24'],
        ['30', '31', '32', '33', '34']]
t=Table(data)
t.setStyle(TableStyle([('BACKGROUND',(1,1),(-2,-2),colors.green),
                       ('TEXTCOLOR',(0,0),(1,-1),colors.red)]))
```

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10 11 12 13 14
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```

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```
from reportlab.platypus.tables import Table, TableStyle
from reportlab.lib import colors
from reportlab.lib.units import inch

data = [['00', '01', '02', '03', '04'],
        ['10', '11', '12', '13', '14'],
        ['20', '21', '22', '23', '24'],
        ['30', '31', '32', '33', '34']]
t = Table(data, 5*[0.4*inch], 4*[0.4*inch])
t.setStyle(TableStyle([('ALIGN',(1,1),(-2,-2),'RIGHT'),
                       ('TEXTCOLOR',(1,1),(-2,-2),colors.red),
                       ('VALIGN',(0,0),(0,-1),'TOP'),
                       ('TEXTCOLOR',(0,0),(0,-1),colors.blue),
                       ('ALIGN',(0,-1),(-1,-1),'CENTER'),
                       ('VALIGN',(0,-1),(-1,-1),'MIDDLE'),
                       ('TEXTCOLOR',(0,-1),(-1,-1),colors.green),
```

```
('INNERGRID', (0,0), (-1,-1), 0.25, colors.black),
('BOX', (0,0), (-1,-1), 0.25, colors.black),
)])
```

m :

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TableStyle Line Commands

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```
from reportlab.platypus.tables import Table
from reportlab.lib import colors

data= [['00', '01', '02', '03', '04'],
        ['10', '11', '12', '13', '14'],
        ['20', '21', '22', '23', '24'],
        ['30', '31', '32', '33', '34']]

t=Table(data,style=[('GRID',(1,1),(-2,-2),1,colors.green),
                    ('BOX',(0,0),(1,-1),2,colors.red),
                    ('LINEABOVE',(1,2),(-2,2),1,colors.blue),
                    ('LINEBEFORE',(2,1),(2,-2),1,colors.pink),
                    ])
```

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```
from reportlab.platypus.tables import Table
from reportlab.lib import colors

data= [['00', '01', '02', '03', '04'],
        ['10', '11', '12', '13', '14'],
        ['20', '21', '22', '23', '24'],
        ['30', '31', '32', '33', '34']]

t=Table(data,style=[
    ('GRID',(0,0),(-1,-1),0.5,colors.grey),
    ('GRID',(1,1),(-2,-2),1,colors.green),
    ('BOX',(0,0),(1,-1),2,colors.red),
    ('BOX',(0,0),(-1,-1),2,colors.black),
    ('LINEABOVE',(1,2),(-2,2),1,colors.blue),
    ('LINEBEFORE',(2,1),(2,-2),1,colors.pink),
    ('BACKGROUND',(0,0),(0,1),colors.pink),
    ('BACKGROUND',(1,1),(1,2),colors.lavender),
    ('BACKGROUND',(2,2),(2,3),colors.orange),
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```

from reportlab.platypus.flowables import Image
from reportlab.platypus import Paragraph
from reportlab.platypus.tables import Table
from reportlab.lib import colors
from reportlab.lib.units import inch
from reportlab.lib.styles import ParagraphStyle

l = Image('G:/wangjun/python/cn_docs-master/cn_docs-master/user_guide_cn/report/images/replogo.gif')
l.drawHeight = 1.25*inch*l.drawHeight / l.drawWidth
l.drawWidth = 1.25*inch

normal_style = ParagraphStyle(
    name='Normal',
    fontName='SourceHanSans-Light',
    fontSize=10,
    leading=12,
    spaceBefore=6,
)
_body_text = ParagraphStyle(
    name='BodyText',
    parent=normal_style,
    spaceBefore=6,
)



P0 = Paragraph("""
    <b>A pa<font color=red>r</font>a<i>graph</i></b>
    <sup><font color=yellow>1</font></sup>""",
    _body_text)
P = Paragraph("""
    <para align=center spaceb=3>The <b>ReportLab Left
    <font color=red>Logo</font></b>
    Image</para>""",
    _body_text)
    
```

```
data= [['A', 'B', 'C', 'P0', 'D'],
        ['00', '01', '02', ['I,P], '04'],
        ['10', '11', '12', ['P,I], '14'],
        ['20', '21', '22', '23', '24'],
        ['30', '31', '32', '33', '34']]

t=Table(data,style=[('GRID',(1,1),(-2,-2),1,colors.green),
                    ('BOX',(0,0),(1,-1),2,colors.red),
                    ('LINEABOVE',(1,2),(-2,2),1,colors.blue),
                    ('LINEBEFORE',(2,1),(2,-2),1,colors.pink),
                    ('BACKGROUND',(0,0),(0,1), colors.pink),
                    ('BACKGROUND',(1,1),(1,2), colors.lavender),
                    ('BACKGROUND',(2,2),(2,3), colors.orange),
                    ('BOX',(0,0),(-1,-1),2,colors.black),
                    ('GRID',(0,0),(-1,-1),0.5,colors.black),
                    ('VALIGN',(3,0),(3,0),'BOTTOM'),
                    ('BACKGROUND',(3,0),(3,0),colors.limegreen),
                    ('BACKGROUND',(3,1),(3,1),colors.khaki),
                    ('ALIGN',(3,1),(3,1),'CENTER'),
                    ('BACKGROUND',(3,2),(3,2),colors.beige),
                    ('ALIGN',(3,2),(3,2),'LEFT'),
                    ])

t._argW[3]=1.5*inch
```

m :

| A | B | C | A paragraph ¹ | D |
|----|----|----|---|----|
| 00 | 01 | 02 |  <p>The ReportLab Left Logo Image</p> | 04 |
| 10 | 11 | 12 | <p>The ReportLab Left Logo Image</p>  | 14 |
| 20 | 21 | 22 | 23 | 24 |
| 30 | 31 | 32 | 33 | 34 |

TableStyle § H | ũ ¨ ©

Y Z " Tableô ũ ü ß Û " . , E wŠ " ~ Ÿ È • html ¥ å . Ö ×

SPAN, (sc,sr), (ec,er)

> ® sc - ec μ ũ sr - er Ã " ù ä - x k e q ... è O Ú ù ä - E Æ t é ù ä - (sc, sr)
= Ÿ å Æ Ç ù ä - x k È g E w x k Ĩ Ũ + » E) \$ f ó ä Š ¶ ñ š " m å

```
from reportlab.platypus.tables import Table
from reportlab.lib import colors

data= [['Top\nLeft', '', '02', '03', '04'],
        ['', '', '12', '13', '14'],
        ['20', '21', '22', 'Bottom\nRight', ''],
        ['30', '31', '32', '', '']]

t=Table(data,style=[
    ('GRID',(0,0),(-1,-1),0.5,colors.grey),
    ('BACKGROUND',(0,0),(1,1),colors.palegreen),
    ('SPAN',(0,0),(1,1)),
```

```
('BACKGROUND',(-2,-2),(-1,-1), colors.pink),
('SPAN',(-2,-2),(-1,-1)),
])
```

m :

| | | | | |
|-------------|----|----|-----------------|----|
| Top Left | | 02 | 03 | 04 |
| | | 12 | 13 | 14 |
| 20 | 21 | 22 | Bottom Right | |
| 30 | 31 | 32 | | |

¶ š Y Z " GRID • %₀± ' y å ³ ë " ù ä - ó ¹ z å

TableStyle ¢ £ ¨ ©

%₀Ð5 Table " 7 QE f , ± ² NOSPLIT å

NOSPLIT, (sc,sr), (ec,er)

%₀` ® sc-ec μ ù sr-er Ã " ù ä - 7 Q å

TableStyle S T • ™¼

g " • . Ã E < ë ü Ñ Ò f , ž ¥ ò Û + » splitlast¾splitfirstÃ " ë OE , ž k . ¿ ² • 7 Q " E • ë ü ¾ { S " < ë ü å ž . f , ± 7 Q g 7 Q • ¨ © , " å

„ 8 ... Flowables

h @flowable± ^ f „ g œ, • Ĩ M˘ Ĩ ™qæü V μ b t Å

8.1 DocAssign

Ÿ 1 :

```
DocAssign(self, var, expr, life='forever')
```

ò V expr~ Ÿ ë O „ 1 ò var" Ä « å ? d Å

```
DocAssign('i',3)
```

8.2 DocExec

Ÿ 1 :

```
DocExec(self, stmt, lifetime='forever')
```

æü b t stmtå ? d Å

```
DocExec('i-=1')
```

8.3 DocPara

Ÿ 1 :

```
DocPara(self, expr, format=None, style=None, klass=None, escape=True)
```

i ë O „ expr " ™ò , • " ' (å d ~ Ÿ | - E Š x k ± ² %(__expr__)s Ũ V expr
(d Ĩ " ") ê ü Ũ + » ÷ ™å Š œ f „ ± ² %(name)sŨ ĩ Đ Å " Æ Ç Ä « ê ü ÷ ™å ? d

```
DocPara('i',format='The value of i is %(__expr__)d',style=normal)
```

8.4 DocAssert

Ÿ 1 :

```
DocAssert(self, cond, format=None)
```

d cond@Z ò FalseE \$ Ò˘ formatŨ + » " AssertionErrorå

```
DocAssert(val, 'val is False')
```

8.5 DocIf

Ÿ 1 :

```
DocIf(self, cond, thenBlock, elseBlock=[])
```

d cond" ™ò TrueE Å ' ž Oflowable→ ó thenBlock elsethe elseBlock! ' å

```
DocIf('i>3',Paragraph('The value of i is larger than 3',normal),\
Paragraph('The value of i is not larger than 3',normal))
```

8.6 DocWhile

Ÿ 1 :

```
DocWhile(self, cond, whileBlock)
```

ĥ cond™ ÷ True Ē Ů Ů whileBlockă ? d Ā

```
DocAssign('i',5)
DocWhile('i',[DocPara('i',format='The value of i is %(__expr__)d',style=normal),DocExec('i-=1')])
```

ž O? ® í „ " ë Ā' (" ´ " Ā

```
The value of i is 5
The value of i is 4
The value of i is 3
The value of i is 2
The value of i is 1
```

„ 9 ... Ç £ Ÿ € • Flowables

9.1 Preformatted

Ÿ 1 :

```
Preformatted(text, style, bulletText=None, dedent=0, maxLineLength=None, splitChars=None, newLineChars=None)

i ë O - Å " ' ( E ê ü " • œâ Qü ¾ÆÇ¼½å g, • Ã • a XML. ° å d
dedent" øÓE dedent" . ¼öĬ - f Å 7 ü ¼ Ç ü å
```

~ ` - C

```
^ f „ ± ² ý ô maxLineLengthĭ Ÿ 1 E ü Ø å d ü Ø Ú ž OE ™E ü f † ö QA å
ü f QA ...splitCharsÃ Ÿ 1 " " • ë O Û + å d " ò k ý ô ¹ ° ™E $ ü f g „ h " • ° Ø
Û + Í ê ü QA Ä Ĭ - â | , â t , â Q, â ` , â ú Û + â ¼ í à â • í à â O, â È O,
µ O, å
Û + f „ † ÷ ÷ | š [ i " 7 ë ü " Ĭ å § f „ ž ¥ ý ô newLineChars ò § ñ ± ² " Û + å
```

```
from reportlab.platypus.flowables import Preformatted
from reportlab.lib.styles import import getSampleStyleSheet

stylesheet=getSampleStyleSheet()
normalStyle = stylesheet['Code']
text=""
class XPreformatted(Paragraph):
    def __init__(self, text, style, bulletText = None, frags=None, caseSensitive=1):
        self.caseSensitive = caseSensitive
        if maximumLineLength and text:
            text = self.stopLine(text, maximumLineLength, splitCharacters)
        cleaner = lambda text, dedent=dedent: ".join(_dedenter(text or "", dedent))
        self._setup(text, style, bulletText, frags, cleaner)
    ...
t=Preformatted(text,normalStyle,maxLineLength=60, newLineChars='>')
```

m :

```
class XPreformatted(Paragraph):
    def __init__(self, text, style, bulletText = None,
> frags=None, caseSensitive=1):
        self.caseSensitive = caseSensitive
        if maximumLineLength and text:
            text = self.stopLine(text, maximumLineLength,
> splitCharacters)
        cleaner = lambda text, dedent=dedent: ''.join(
> _dedenter(text or '', dedent))
        self._setup(text, style, bulletText, frags, cleaner)
```

9.2 XPreformatted

Ÿ 1 :

```
$XPreformatted(text, style, bulletText=None, dedent=0, frags=None)

ž " Paragraphô " è © Ø & ´ Æ textÃ Ç q ± ² XML° E Æ 1 • Paragraphô B ¥ å ) •
PreformattedE d dedent" øÓE dedentV É " ¼öĬ - f Å 7 ü " ¼ Ç ü å
```

```
from reportlab.platypus import XPreformatted
from reportlab.lib.styles import getSampleStyleSheet

stylesheet=getSampleStyleSheet()
normalStyle = stylesheet['Code']
text=""

This is a non rearranging form of the <b>Paragraph</b> class;
<b><font color=red>XML</font></b> tags are allowed in <i>text</i> and have the same
```

meanings as for the Paragraph class.
 As for Preformatted, if dedent is non zero dedent
 common leading spaces will be removed from the
 front of each line.
 You can have & style entities as well for & < > and ".

'''

```
t=XPreformatted(text,normalStyle,dedent=3)
```

m :

```
This is a non rearranging form of the Paragraph class;  

XML tags are allowed in text and have the same
```

```
meanings as for the Paragraph class.  

As for Preformatted, if dedent is non zero dedent  

common leading spaces will be removed from the  

front of each line.  

You can have &amp; style entities as well for & < > and ".
```

9.3 Image

ÿ 1 :

```
Image(filename, width=None, height=None)
```

```
ĩ ë O flowableE Š f é, ~ filename  

Ã " | Š Ÿ 1 " ³ Ū E k, ~ f " , ~ Ÿ Þ â ô H, ~ " Ū Ū ¾  

reportlab.graphics.shapes.Drawing" • ? å ĩ Í " PDF  

³ Ū ô $ jpeg ū ū E d > œ | PILwx š PythonE Æ Ç ³ Ū ô $ α f " Š å d ~ Ÿ | width  

hµ heightE Å' Š Z = Ÿ | · > ³ Ū " E ù # " pointså d ~ Ÿ " • ë O (¾ C ~ Ÿ  

ò None)E Å' ³ Ū " B x Ū å ] Ÿ ò pointsq ± ² å
```

```
Image("G:/wangjun/python/cn_docs-master/cn_docs-master/user_guide_cn/report/images/lj8100.jpg")
```

f · > ò



l

```
im = Image("G:/wangjun/python/cn_docs-master/cn_docs-master/user_guide_cn/report/images/lj8100.jpg", width=2*inch, height=2*inch)  

im.hAlign = 'CENTER'
```

í Ò



9.4 Spacer

Ÿ 1 :

Spacer(width, height)

ž • (" ë . E Š ò storyá | ë Ÿ " Ĩ Đă ĩ ¼ E ž ĵ Ũ ° B Ĩ Đ " ħ

9.5 PageBreak

ž O Flowable ' | ë O Ą Òă Š " ¾ ½ Š " " ù ? y " 5 Š " ° B Ĩ Đă ž Ũ • ù O
Frame , f Ĩ • [\ : ^ | E w Ũ • ª O i * Ĩ • E ž ĵ " ë O i * Ą Ò E y , BaseDocTemplate
Ą 5 ó g Œ š pageBreaks q ě ũ Šă

9.6 CondPageBreak

Ÿ 1 :

CondPageBreak(height)

d ĩ ¼ " Frame Ą " : ^ " ° B Ĩ Đ E Ą ' ž O Flowable ³ 5 Frame Ò Ră E Š "
„ f " V Ą E E q x k & e „ ò CondFrameBreakă

9.7 KeepTogether

Ÿ 1 :

KeepTogether(flowables)

ž O ... e " Flowable f ë O Flowables " ® E q ³ f Š Z Ē g ¥ ë O Frame
Ąă d ® Ą flowables Ą " Flowables
" W ° Ũ Ů | ĩ ¼ i * " f ² Ĩ Đ E Ą ' y " Ĩ Đ Ç ó ± ² E q ' ó 5 Ą Ò i *ă

9.8 TableOfContents

Ÿ 1 :

TableOfContents()

É ± ² TableOfContents flowable
f , „ ... ë O - Ÿă h " ĩ " g ^ " , f Ą r ë O - Ÿ y • % "ă
j ě O TableOfContents " • ?ă s t • . Ē f , q f Ũ Ů r š story Ąă

```
toc = TableOfContents()
PS = ParagraphStyle
toc.levelStyles = [
    PS(fontName='Times-Bold', fontSize=14, name='TOCHeading1',
```



```

        leftIndent=20, firstLineIndent=-20, spaceBefore=5, leading=16),
    PS(fontSize=12, name='TOCHeading2',
        leftIndent=40, firstLineIndent=-20, spaceBefore=0, leading=12),
    PS(fontSize=10, name='TOCHeading3',
        leftIndent=60, firstLineIndent=-20, spaceBefore=0, leading=12),
    PS(fontSize=10, name='TOCHeading4',
        leftIndent=100, firstLineIndent=-20, spaceBefore=0, leading=12),
]
story.append(toc)

Ü ¨ ý " ó | ¢ , É J ² TableOfContents Ü Ü " addEntry È É ý ò € ...E ¤ ¢ , É g
DocTemplate " afterFlowable È É Ą † ò ~ ™ è O 'TOCEntry' É Z ā 5 notify " | § " è O
é þ O¾k O * - Ą ... " ® E Ą Ą O è O R, EM⁻ , • E ñ µ è O ¢ , " - ° Ö E k M
⁻ x k ~ h ā ž O ® É 1 ó g, ¢ % & " È É Ą | E ā d afterFlowable()E ± ² notify()È É J ²
É Z E q ¹ ° 4 î " | § E ā d ž . ā

```

```

def afterFlowable(self, flowable):
    """Detect Level 1 and 2 headings, build outline,
    and track chapter title."""
    if isinstance(flowable, Paragraph):
        txt = flowable.getPlainText()
        if style == 'Heading1':
            # ...
            self.notify('TOCEntry', (0, txt, self.page))
        elif style == 'Heading2':
            # ...
            key = 'h2-%s' % self.seq.nexttf('heading2')
            self.canv.bookmarkPage(key)
            self.notify('TOCEntry', (1, txt, self.page, key))
        # ...

ž . E 7 î è O. ò 'Heading1' ¾ 'Heading2'
" ' ( r š + ] Ą E Š - ó ò ā g - ý Ą ā Heading2
M⁻ ¢ ¢ 9 E ò [ \ ¹ ° | è O Ö ā

E • § • %₀ ± ² DocTemplate " multiBuild È É E ò t • %₀ª 1 , ...ā

doc.multiBuild(story)

h " è O 2 ù w ¢ ü " ² - ý " , ¢ ? ® ā

```

```

from reportlab.lib.styles import ParagraphStyle as PS
from reportlab.platypus import PageBreak
from reportlab.platypus.paragraph import Paragraph
from reportlab.platypus.doctemplate import PageTemplate, BaseDocTemplate
from reportlab.platypus.tableofcontents import TableOfContents
from reportlab.platypus.frames import Frame
from reportlab.lib.units import cm

class MyDocTemplate(BaseDocTemplate):

    def __init__(self, filename, **kw):
        self.allowSplitting = 0
        BaseDocTemplate.__init__(self, filename, **kw)
        template = PageTemplate('normal', [Frame(2.5*cm, 2.5*cm, 15*cm, 25*cm, id='F1')])
        self.addPageTemplates(template)

    def afterFlowable(self, flowable):
        "Registers TOC entries."
        if flowable.__class__.__name__ == 'Paragraph':
            text = flowable.getPlainText()
            style = flowable.style.name
            if style == 'Heading1':
                self.notify('TOCEntry', (0, text, self.page))
            if style == 'Heading2':
                self.notify('TOCEntry', (1, text, self.page))

h1 = PS(name = 'Heading1',
        fontSize = 14,
        leading = 16)

h2 = PS(name = 'Heading2',
        fontSize = 12,
        leading = 14,

```

```

leftIndent = delta)

# Build story.
story = []
toc = TableOfContents()
# For conciseness we use the same styles for headings and TOC entries
toc.levelStyles = [h1, h2]
story.append(toc)
story.append(PageBreak())
story.append(Paragraph('First heading', h1))
story.append(Paragraph('Text in first heading', PS('body')))
story.append(Paragraph('First sub heading', h2))
story.append(Paragraph('Text in first sub heading', PS('body')))
story.append(PageBreak())
story.append(Paragraph('Second sub heading', h2))
story.append(Paragraph('Text in second sub heading', PS('body')))
story.append(Paragraph('Last heading', h1))

doc = MyDocTemplate('mintoc.pdf')
doc.multiBuild(story)

```

9.9 SimpleIndex

Ÿ 1 :

```

SimpleIndex()

f„ É ±² SimpleIndex flowable„ ...ë OÑÒă h " ì " ò ^" , fr ÑÒy • %" ā
g' ( Ā ±² ÑÒ° Ĩ ÑÒ' b ā

story = []

...

story.append('The third <index item="word" />word of this paragraph is indexed.')

i ì OSimpleIndex" • ? E q f Æ r š Š ` a Š ô ā " +] Ā ā

index = SimpleIndex(dot='.', headers=headers)
story.append(index)

$ f„ | SimpleIndex 9 X K | " œ | g reportlab œ • • 4 Ā Š ā ā g E ±² SimpleIndex
.getCanvasMaker() Ø R" canvasmaker Ĩ 9 ĩ , f ā

doc.build(story, canvasmaker=index.getCanvasMaker())

%oi | è Oª ÑÒE" f è O„ ` , Q " * - ® 5 ÑÒ° " item ý ô ā

<index item="terma,termb,termc" />
<index item="terma,termd" />

terma f > E > " ' b E termc f > E Ĵ Ú " ' b E terd µ termb f ô ā g terma
" ¥ è ā

d ^ • %ò è O ` , " ' b ð 5 ÑÒE ^ • %f Æ " 1 ā ò | œ. p O ú S ` , " } 1
Ē è O" 1 ` , • " è O® Q + ¾ è O® Q + • " è O" 1 ` , < x g • " # ¥ Ò
| è O Ĩ - ā ' b Ĩ ¾ mp" Ĩ - f ũ ũ ā

<index item="comma(,),,,... " />

ÑÒ Ĩ " ` , Ē E x " ā " E " µ " ..... " è ' b ā

```

9.10 ListFlowable, ListItem

```

±² ž • ô Ĩ 5 ½ " Á µ Ô Á " ® ā ® f„ P Ò ā

ListFlowable() f ĩ è O " Á " ® E Š f„ " • f" ô " ā k ô " qª œ | f„ 4 Ā ®
ō , " Û Ú ā ÑÒ ā < ā . µ # ¥ E ¾ C Ô Á ® Ā " * - + , ā v f„ ±² bulletType

```

y ô f ð, ô \$ ž ¥ ò ± ² < / ¾ / Û • É 'A,B,C'è ¤ ¾ ~ • | Û É / ¾ < / ¤ å
%f ® 4 ò Ô Á ô \$ E " ž ¥ bulletType='bullet'å

g ListFlowable() ® Ä " * ^ f, É f Š Z æg ListItem()
ô Ä q ž ¥ Æ y ô Ĩ 4 Ä Š Z " ĩ ĩ à p å

h f ĩ ë Ö " Á ® E q f < p * ž ¥ ò Ô Á ® ® å

```
from reportlab.platypus import ListFlowable, ListItem
from reportlab.lib.styles import getSampleStyleSheet
from reportlab.platypus.paragraph import Paragraph

styles = getSampleStyleSheet()
style = styles["Normal"]

t = ListFlowable(
    [
        Paragraph("Item no.1", style),
        ListItem(
            Paragraph("Item no. 2", style), bulletColor="green", value=7
        ),
        ListFlowable(
            [
                Paragraph("sublist item 1", style),
                ListItem(
                    Paragraph("sublist item 2", style),
                    bulletColor='red',
                    value='square',
                ),
            ],
            bulletType='bullet',
            start='square',
        ),
        Paragraph("Item no.4", style),
    ],
    bulletType='i',
)
```

m :

i Item no.1
vii Item no. 2
viii ■ sublist item 1
■ sublist item 2
ix Item no.4

ò | x Û P Ò E startæ | f, ž ¥ ò è Ö f " n ĩ ® Æ Û • ulĭ • E f Ä " n ĩ " " • unico
de Û Û ¾ flowables.py[Z " ÿ , 1 E ? d bulletcharâ circleâ squareâ discâ diamondâ diam
ondwxâ narrowheadâ sparkleâ squarels¾ blackstarâ Û • olĭ • E startf, " '1iaAl'Ä " " •
Û + E , > ¥ " | Û ũ - å

9.11 BalancedColumns

± ² BalancedColumns ô Ĩ 5 ½ è Ö flowable E f Æ t flowable
Q A ... S O ¾ © ª < ™ B ê " ® å • Í E n i * e ... ò t E flowable
³ g Š Z v Ð ´ k t å ĩ ĩ " i * W ° Û E ó 7 Q E 7 Q • ó ' ü ´ k å

```
from reportlab.platypus.flowables import BalancedColumns
from reportlab.platypus.frames import ShowBoundaryValue
F = [
    list of flowables.....
]
story.append(
    Balanced(
        F, #the flowables we are balancing
        nCols = 2, #the number of columns
        needed = 72, #the minimum space needed by the flowable
        spacBefore = 0,
        spaceAfter = 0,
        showBoundary = None, #optional boundary showing
    )
)
```

```
leftPadding=None,    #these override the created frame
rightPadding=None,   #paddings if specified else the
topPadding=None,     #default frame paddings
bottomPadding=None,  #are used
innerPadding=None,   #the gap between frames if specified else
                    #use max(leftPadding,rightPadding)
name="",             #for identification purposes when stuff goes awry
endSlack=0.1,        #height disparity allowance ie 10% of available height
)
)
```

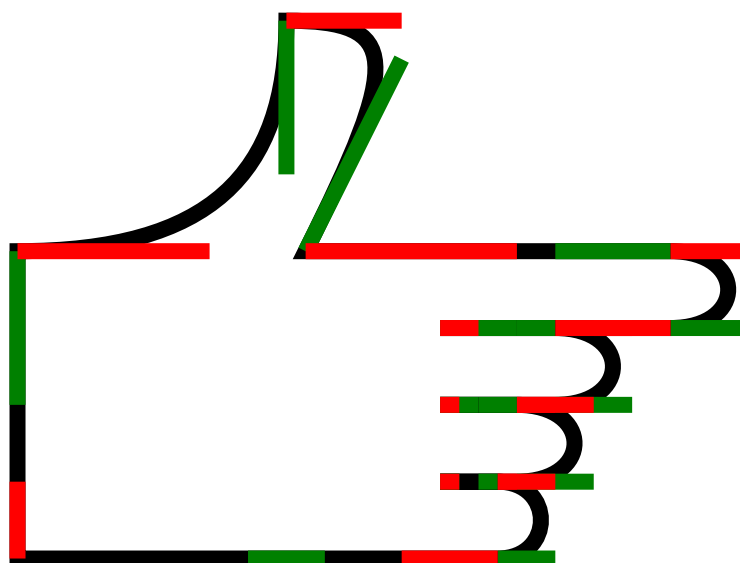
„ 10 ... 2 a Flowable

Flowablesî g ...ð i f &...± 2 " ‡ t " Ê ° Ø E ^ f „ ÿ K i † 2 " Û Ü å
 Y Z ` a Ê U Ð " F ¢ E Y Z f i | è O Š < i E ò reportlab 2 1 ° C D " 3 â 3 ´ µ Æ Ç
 "report widgets", ...E Ç Z f „ g † 2 " ‡ Å ± 2 â • ú f h ^ x > d • i ^ † 2 "
 flowablesâ

Y Z x k , Figureô Ê g ° Ø i Å E ò Š " è O Ø 1 " 2 " ¶ ^ â

10.1 ä å C • « H • Flowable

R ñ è h • 2 1 ~ i Å pdfgen è ú Å " hand
 K | E Š „ ...| è O é æ Å è é à 9 ... " Ô e 3 ´ " ý 3 å



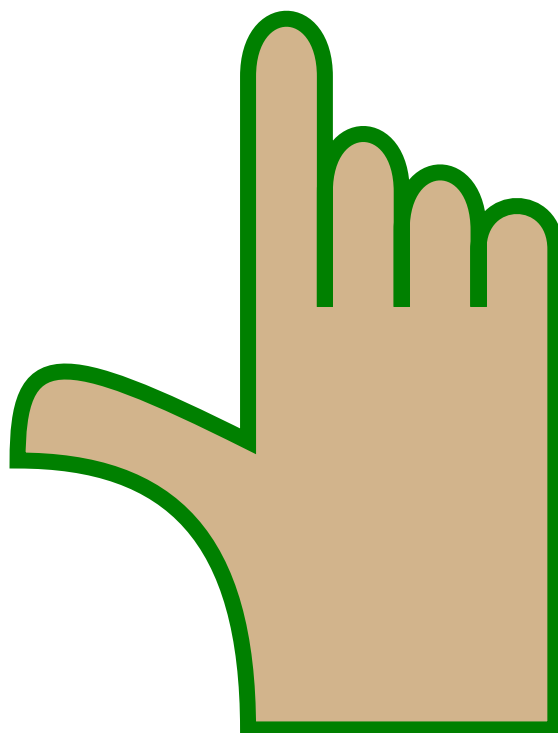
3 10-1: è ç ý

ò | g Platypus flowable Å P | Ž O ¾ Æ Ç » 3 E Y Z Û Ü Ÿ 1 è O Flowable
 " ® ò E) * " è O wrap Ê É µ è O draw Ê É å

```
from reportlab.platypus.flowables import Flowable
from reportlab.lib.colors import tan, green
class HandAnnotation(Flowable):
    """A hand flowable."""
    def __init__(self, xoffset=0, size=None, fillcolor=tan, strokecolor=green):
        from reportlab.lib.units import inch
        if size is None: size=4*inch
        self.fillcolor, self.strokecolor = fillcolor, strokecolor
        self.xoffset = xoffset
        self.size = size
        # normal size is 4 inches
        self.scale = size/(4.0*inch)
    def wrap(self, *args):
        return (self.xoffset, self.size)
    def draw(self):
        canvas = self.canv
        canvas.setLineWidth(6)
        canvas.setFill(self.fillcolor)
        canvas.setStrokeColor(self.strokecolor)
        canvas.translate(self.xoffset+self.size,0)
        canvas.rotate(90)
        canvas.scale(self.scale, self.scale)
        hand(canvas, debug=0, fill=1)
```

wrapÊ É Û Ü 1 ° » 3 " < -- Platypus
 P Ø ù 2 Š Í = Ÿ ž O ä å ") 4 e î ¼ i * " > Ð Ĩ Ð å g Platypus P Ø ù f (0,0)

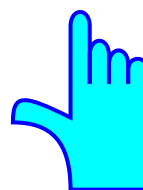
9" ÷ Š 4î " i * Ā " 4î # ¥ • E draw Ē É f æ ü Ů Ů " » 5 å
 „ h " HandAnnotation flowable " ë • ±² > ? å



ì í +, h



¿ " ë ° å



° 1 Eh ÞDµf Òå

10.2 𐤀 ¥ a ž • Flowable

%034 ā " " f" õ Ů Ů E ^ x k i ë O3 „ ô q s t • %04 „ ä y • ü ò " Ē É å
 ½ò i " ³ Ů " > ? E ^ • %s t ā " Image ô " wrap µ draw Ē É

```
from reportlab.platypus.flowables import Image
class RotatedImage(Image):
    def wrap(self, availWidth, availHeight):
        h, w = Image.wrap(self, availHeight, availWidth)
        return w, h
    def draw(self):
        self.canv.rotate(90)
        Image.draw(self)
I = RotatedImage('G:/wangjun/python/cn_docs-master/cn_docs-master/user_guide_cn/report/images/replogo.gif')
I.hAlign = 'CENTER'
```

m :



„ 11 ... Ê Ó

11.1 « †

ReportLab Graphics" ReportLabĭ " è O® ħ Š E ě " ½ò è O- | " a Á ý E wã g " Repor
tLab¾ĵ " è O€% " ý ... QE Š Ç q ^ ± ² Æ " ³ μ ³ ´ ĭ 4 ê ^ " PDF - μ †
ă

11.2 ä – Ä Å

g • ú Ã E Y Z f • Ž ³ ´ ĭ " è • ħ ĭ ¶ • " Š E ž • Š ó g • " " O È ô ã ä

Ä - Å ® - °

Drawing" è O- | • ´ μ " ´ Â ý e " ĭ j ħ Š ß • PDF, Postscript¾" • Æ Ç ó ô - B
• ä á ù " " E " a | a « ³ ´ - Ç " Ø Postscript%\$ E " f , € ĭ j ´ Å ä

è ³ Ã | q a ĭ " Shape
(´ Å)ă V É ´ Å " Å • É ò ò Z " á ´ ä ā ´ ä à M ě ä è O " È • ä æ ´ Å "
(Å)E Š f , t Æ Ç ´ Å q Ů Š Z è ü Ä ÷ ä Group ' | Shape " Å e E q Ç q f Group
e ĭ ½ è O ù è " Shape ĭ Š ä ý , y " " NO Ç f , Å * « " ¶ • Shape (´ Å) ĭ ĭ n ĭ ä

k ¹ ° | ý O Renderers (ó 7 É) E Š Z Z ÿ d • f ³ ½ » 5 ... ¥ " - ä Æ Ã O PDF
(renderPDF)ă Postscript (renderPS) μ # ³ ó ô (renderPM)ă # ³ ó 7 É ± ² Raph Levien "
libart f - Å É μ Fredrik Lundh " Python Imaging Library (PIL)ă SVG ó 7 É ± ² |
Python " ° Ø ĭ XML % o E y , Š • % » œ XML-SIG " =
PyXMLă d Š > œ ĭ • " w x E Š f , ò Ě ĭ , ... # ³ ´ " ³ ¹ E æ f , ò PDF
, f , ... a « ´ " ³ ¹ E q ä š " B ¥ " ó ô " ä

PDF ó 7 É ĵ " " " † -- è O Drawing Ů Ů æ " è O Flowable E " E f , ß Ê g " •
Platypus , f " +] Å E ¾ C ß ² è ü " ħ g Canvas ĭ » 5 ä à E PDF
ó 7 É v " è O • ² E f , 5 ½ è PDF , f ä

SVG ó 7 É Ð RE ò Š ů ĭ " B ĭ " • ò ô " ħ Š y , ... " SVG
' ħ q " " \ " • Å E ĵ " f ReportLab Graphics (RLG) Ĥ f ² " Þ ß š SVG
Å ä ž ¶ T U ů ü SVG ô ¹ ä ô ä ³ • ¾ © ... † " H & ä Y , ¾ v Ä ´ Å ä E " < Ç E
q " † ĭ ^ ~ ä " " • V Æ ä

Ô ¼ ¹ ±

g Y Z " X-Y Ê ° - Å E Y È ħ Å ² ħ ĭ ä ž • PDFă Postscript μ ĭ o + , è ™ ä Ů ò Z ĭ • E
ž H , æ © † ĭ E 3 Æ " g Š ³ ä " ¶ ĭ E g Æ Ç ³ ´ % \$ Å Ě d SVG æ E Y
Ê ° 9 ħ ħ ä Ů • SVG
ó 7 É ĭ • E ž • ĭ " " } ´ " E ò Š f Š • % Ů ^ " ³ ½ è ü † " E ^ " SVG
ó ô M ħ ĭ μ (" è . ä

X Ê ° è d ... Å š ä š - ¼ ò x E H , " " • % \$ P - È ħ --
) * - ¼ v " Ě H , " è • " Š " ? à E † z † ò g M Ð Á ® ³ ... æ ä

™ Š

Ý Y Z ĭ è O 2 ù " ³ ´ E Ů + » " Hello World " μ è • " Ů + E • > g è O Ó Ô " á ´
v ĭ ä ĭ € ... • E Y Z f , ³ ¹ ' Ě š è O- | " PDF , ~ Å ä

```
from reportlab.lib import colors
from reportlab.graphics.shapes import *
```

```
d = Drawing(400, 200)
d.add(Rect(50, 50, 300, 100, fillColor=colors.yellow))
d.add(String(150, 100, 'Hello World', fontSize=18, fillColor=colors.red))
d.add(String(180, 86, 'Special characters \
```



```
\xc2\xa2\xc2\xa9\xc2\xae\xc2\xa3\xce\xb1\xce\xb2',
fillColor=colors.red))
```

```
from reportlab.graphics import renderPDF
renderPDF.drawToFile(d, 'example1.pdf', 'My First Drawing')
```

ž f í „ è O „ h ³ ´ \" PDF, ~ å



³ 11 - 1 : 'Hello World'

7 O 6 7 É Ç f „ Ē \" • 4 e Æ - \"] + E q ' f „ \" \" \" • \" \" API å d Š ~ \" \" è © „ ~ -
E Š É 1 \" è O drawToFile K | E ž ¬ \" Š • % Z Ÿ \" \" • 6 7 É \" y \" « ¬ å Ÿ Y Z „
Encapsulated Postscript - \" ' È ¥ è ³ å

```
from reportlab.graphics import renderPS
renderPS.drawToFile(d, 'example1.eps')
```

ž f „ ... è O ¿ \" B ¥ ³ ´ \" EPS, ~ E f „ õ | Š Quark Express è ô € ¾ ¿ Å å d Y Z ñ „ ...
¥. \" ³ ´ ½ ò È ? \" # ³ „ ~ E å d • E Y Z • % Ē \" ¬ \" / ž . \" ' ñ å

```
from reportlab.graphics import renderPM
renderPM.drawToFile(d, 'example1.png', 'PNG')
```

q ^a Æ Ç \" # ³ - E d GIF â JPG â TIFF â BMP µ PPN Ç \" * f ² \" E ž ± å Š ± f • % o r
à \" • Š ì Ĩ \" ÷ ò Š • % \" E - å

% „ ... è O B ¥ ³ ´ \" SVG, ~ E q f Æ õ | Š Illustrator
è ³ ´ ò å ¾ ¿ Å E Y Z • % Ē \" ¬ \" õ / ž . \" ' ñ å

```
from reportlab.graphics import renderSVG
renderSVG.drawToFile(d, 'example1.svg')
```

² ³ ´ µ

Python\" ø 1 õ Ã \" E Ÿ Y Z g û ü æ ü \" b t Ð t u ... ò ¶ à ü ò \" Ĩ H å è O G ĩ \" \" V Æ
\" \" ĩ Q ¨ š è O i * Z Ÿ \" ý õ E ò ± ² \" ý õ \" ù | è O V R Û å Python Ÿ Š f „
^ è % (å d • E 5 è O Ũ Ü r è O e \" ý õ) E w ³ ´ ĩ * g Š ! Ü < \" + „ h E \" ó
Ô š ž O \" V R Û \" \" å

\" S © ò ¬ ' ' f „ æ ž © + „ å ĩ ĩ + „ h E 7 O Ũ Ü g û ü Ç ó Ô Õ 7 è Ē TM E ž . Š
¬ ¿ Ē TM 5 \" e É \" \" ý õ å ž ¬ \" ĩ ĩ + „ å é • ž . Ē ó ² ĩ Ð < \" ò • ú E y „ g Š • %
\" f „ • Ô ž © ü ò å

```
>>> r = Rect(10,10,200,100,fillColor=colors.red)
>>>
```

```
>>> r.fullColor = colors.green # note the typo
>>> r.x = 'not a number' # illegal argument type
>>> del r.width # that should confuse it
```

ž • b t g Ž Ā ō \$ " b c Ā ō ō Ĥ É ? E w " Python Ÿ Š • • | Š ā < è O V Ā f ó Ÿ Š
' U ³ ĥ ñ d k , ò ' ' Ñ Ò " V " ā < Ó O V Ā f ħ ħ g , • E ĩ è • • ³ » 5 á ´ 1
ó Ä ä k l ā < þ © V Ā E < l f ô i < E w ó õ ™ è O Z ÿ d • » 5 " Ô Û Ü ā

```
>>> r = shapes.Rect(10,10,200,80)
>>> r.fullColor = colors.green
Traceback (most recent call last):
  File "<interactive input>", line 1, in ?
  File "C:\code\users\andy\graphics\shapes.py", line 254, in __setattr__
    validateSetattr(self,attr,value) #from reportlab.lib.attrmap
  File "C:\code\users\andy\lib\attrmap.py", line 74, in validateSetattr
    raise AttributeError, "Illegal attribute '%s' in class '%s' % (name,
    obj.__class__.__name__)
AttributeError: Illegal attribute 'fullColor' in class Rect
>>>
```

ž f ² ĩ ò ĩ " ' " E y , ĩ Š • %ž © ù ò E f , f Ā • Ô ā %œ Š ž è 9 E ^ x k g < è
Ô | reportlab.graphics.shapes v ¼ ± ² , h ' ñ ü ā

```
>>> import reportlab.rl_config
>>> reportlab.rl_config.shapeChecking = 0
>>> from reportlab.graphics import shapes
>>>
```

è Ô Š • Ô | reportlab.rl_config.shapeChecking E ô • ĩ " g ħ ò ñ C ® " + , h
9 ĩ " Ā Ā ' E ' ñ x k ó Ä ä © ā ĥ ¼ E Ū ... - ³ " ' " H , " 25 % E y , ý , ™ ä Ô ² ā
l E d Y Z f ĩ , 6 7 É " Φ š C b c ĩ É ž " Đ ħ f " æ E > h " 75 % ñ ó ā / š ý , " E
E ' Ā ò ñ Ā ú 2 " ... • æ ó Đ f p ā

7 O Ū Ū E O » ³ • ; E Ç ħ è O verify () È É ā ž O È É %œ ' ... E %œ ' Ò ĥ è O p 1 ā d Š
• Ô | ħ ò ò ñ Ā Ā ' Š x k g ħ ' ñ E g Ā ž • J ²
verify () E ¾ C g è O - Š Ā J ² è ā

2 3 2 ¶

Y Z f g h • Ž " reportlab/graphics " è O ¶ " " E Š f , ħ ò) Ÿ widget
ā ž ¶ T U Š f , • - Š Z y " f ð ā ý ò E O Š Z " ® Ā ĥ ā

^ è O - ° " ^ ò ³ ½ ĩ G U ĩ μ æ , ĥ ā f , ĩ | è O É ² " G U ĩ ħ . > ³ ½ " y ħ f ð ā "
ý ò E q Ÿ Š 3 4 ž • ý ò q Ō M m ā Visual Basic ¾ Delphi ħ ù ĩ " ž ò N O " , ? ® ā g
- Š ³ x ² a Ā Ā E è O , ħ f , ® ò ³ Ā y ħ Ā ħ " y ħ ý ò E q • | Š ĩ Ō Ÿ e q E ,
5 ½ è - ³ ā ^ è O - ° " ^ ò ³ ½ ĩ G U ĩ μ æ , ĥ ā f , ĩ | è O É ² " G U ĩ ħ . > ³ ½
" y ħ f ð ā " ý ò E q Ÿ Š 3 4 ž • ý ò q Ō M m ā Visual Basic ¾ Delphi ħ ù ĩ " ž ò N
O " , ? ® ā g - Š ³ x ² a Ā Ā E è O , ħ f , ® ò ³ Ā y ħ Ā ħ " y ħ ý ò E q • | Š
ĩ Ō Ÿ e q E , 5 ½ è - ³ ā

ò | ù ü ž • x ² E Y Z ħ S O s E getProperties μ setProperties E , # è O È Ž " È É dump
Properties ā < è O È É Ø R è O Ū Ū " f ð ā ý ò " Ū (Ā < Ó O È É \$ ý Ū ž ¥ ž • ý ò ā d
è O Ū Ū ħ " " ® Ū Ū " E Ā ' Y Z æ f , ¶ ž ¥ μ ! Š Z " ý ò ā ĩ Y Z F • M widget
s E ž f © ħ ¶ 1 E w Y Z • % f ù ü È Š ĩ * " ¶ ^ ĩ ā

```
>>> r = shapes.Rect(0,0,200,100)
>>> import pprint
>>> pprint.pprint(r.getProperties())
{'fillColor': Color(0.00,0.00,0.00),
 'height': 100,
 'rx': 0,
 'ry': 0,
 'strokeColor': Color(0.00,0.00,0.00),
 'strokeDashArray': None,
 'strokeLineCap': 0,
 'strokeLineJoin': 0,
 'strokeMiterLimit': 0,
 'strokeWidth': 1,
```

```
'width': 200,
'x': 0,
'y': 0}
>>> r.setProperties({'x':20, 'y':30, 'strokeColor': colors.red})
>>> r.dumpProperties()
fillColor = Color(0.00,0.00,0.00)
height = 100
rx = 0
ry = 0
strokeColor = Color(1.00,0.00,0.00)
strokeDashArray = None
strokeLineCap = 0
strokeLineJoin = 0
strokeMiterLimit = 0
strokeWidth = 1
width = 200
x = 20
y = 30
>>>
```



¶ Apprint " ° Ø" Pythonĩ %oE Š ċ q ^ g^a ü Í " — ² x "

ó ô E " ċ " è ü Ð Ø" t â

ž þ © È É g ž Ā H, q " ' ' ½² E w d Y Z f M š " Ā. E Š Z ± Y Z" widgets

i * g Š ø ĳ Ū Ū © â

Children " x

^ f, f Ū Ū r š Drawingµ Group Ū Ū Ā â ž • Ū Ū É 1 ó ê | è O t ® Ā â ĩ E Š ŋ f
„ gr Ū Ū 5 Š Z è O, Ū â ž ċ q ^ g 9 X è O » ³ • Ø² q f 4 Ā Š " " • ä â â

```
>>> d = shapes.Drawing(400, 200)
>>> s = shapes.String(10, 10, 'Hello World')
>>> d.add(s, 'caption')
>>> s.caption.text
'Hello World'
>>>
```

" ¶ E ^ f, g » ³ Ā " a O Í h, Ā ±² B ¥ " ´ Ā • ? Æ d ^ „ ... g q^a # ¥ Ē d ~ 9³
™ scatter plot f ŋ ±² B ¥ " Circle Ū Ū E q ±² ¥ " „ ¹ ĩ Ā } Š E Š ū ĩ " è O Ū Ū E q
' © 4 f " Φ £ " â

ž ò ĳ µ 3 4 ³ ½¹ ° | è © x â

11.3 Ā W

Æ Ā Q" ò Ā " ò ĩ ĳ è O š Ū " ³ â • ú f • Ž Y Z " ³ % \$ N • " ñ É E ž ! -
° " ' ' E, #³ " m • Ā ~ [\ È g â

— f » ¼

„ h " è • ž ! ° â

Ÿ 2 ù " > ±² Ā ä * 2 ù

```
x k f, ² E * " ' ñ Ū ĩ ĳ è O 2 ù " ³ E q É e Š " t ò ž ¥ Ÿ Š " Ē • " ]
+ " â ĩ " : ³ - ' - " ž. Ē " â d è O * " ³ " qa ® Ā ~ E ^ ū ĩ • % •
Š Z E ü ø ^ ñ † Ÿ 1 Š Z " â
```

ċ q Ÿ • Ÿ #

g ô € µ ´ ž ! Ā E è O, Ū " % ° ` " Ð 5 7 O ä â " # ¥ µ ú - â Y Z ó Ÿ « Ÿ ý ô ,
, Ÿ " µ » ³ â ? ĩ ~ Ÿ] ž E " " † ò J % < " â E î Š, y° "
Ū Ū < Ā E " ³ á ´ " ó Ū > 4 Ā E £ ± ž ¶ T U Š " ° f, œ ô³ á ´ "
; « â Š " ¾ ½ " 8³ E q, ... ² " < µ ĩ Ð â

" •] + • • • % † ò € ... â ? d E d Š ñ g è O 2 0 0 9 " ĩ Ð Ā Ē è N O M ´ ³ E] »
• Z ý N E Y Z -, M ´ ³ " Q ~ Ÿ ò M ´ ³ \$ Ū " u Q â E " è O 9 " < E Ÿ

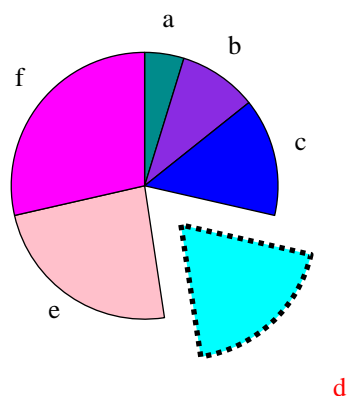
³ Ĩ ! # å ž . Ē v " ħ " • Ÿ ô μ f Ð ô " å
 ù - ¾ Q Å Ð 5 ® ä å

Y Z ± ² ž ý e ô E Ÿ Š † Ÿ 1 ë Å N O E ¾ C ħ " Æ Å " ë O å ? d Š f „ g Y Z " •
 ò : ³ Å ž . Ē å

```
from reportlab.graphics.shapes import Drawing, Circle
from reportlab.graphics.charts.piecharts import Pie
from reportlab.graphics.charts.textlabels import Label
from reportlab.lib import colors
```

```
d = Drawing(400,200)
pc = Pie()
pc.x = 150
pc.y = 50
pc.data = [10,20,30,40,50,60]
pc.labels = ['a','b','c','d','e','f']
pc.slices.strokeWidth=0.5
pc.slices[3].popout = 20
pc.slices[3].strokeWidth = 2
pc.slices[3].strokeDashArray = [2,2]
pc.slices[3].labelRadius = 1.75
pc.slices[3].fontColor = colors.red
d.add(pc, "")
```

m :



```
pc.slices[3] • Ĩ " Ÿ ĩ ĩ ë O < Ũ Ü E Š ' È ĩ " • - ® " « ¬ Æ d " < k O  

  - ® " È ž O Ũ Ũ f g » 5 ² Ĩ - Å å
```

ħ ĩ] Š x k 4 Å "] +

Å ! o " Ù Ĩ M E Ÿ Š ß J % Ĩ ? ® Å " ë O : - " Ù " V Æ " E ò ž " é ĩ
 Š = Ÿ " å y „ q " y " " N O Ç ó É . ý ô \] ö ĩ å f ó " " • } " Ÿ Š g *
 • % " Ç - ž è 9 E ¾ C ¹ ° ° " È É E w è ó ĩ • E ý ô ó " " å

Å ... μ ... Q

³ " é f & ... ± ² " n £ ~ 9 ĩ " å ³ ? " ë O u • • - " ? ® å d Š • % ë O
 ò \$ " ³ ? È ? d ā ´ Ô & ¢ E Š x k f ° Ø " ³ ? ~ ® ò Å å ĩ • Š f „ Ē è • Ũ ...

```
c = MyChartWithLegend()
c.legend = MyNewLegendClass() # just change it
c.legend.swatchRadius = 5 # set a property only relevant to the new one
c.data = [10,20,30] # and then configure as usual...
```

...¾ C ĩ / ¾ Š † 2 " ³ ¾ » ³ ô E ĩ ĩ ĩ Æ Å ë O å ž Ũ • Ð Á ® ³ ĩ • ¢ " Ø
 1 & % " E ò g Ð Á ® ³ Å E X Ĩ f „ " Ð ¢ . å

> ³ ôó | ë•ž. " Å~EI•J²ÊÉ¾ž¥¤"ýôïij ŠZ" ° Ûµ#¥-
 -y" ž•NOÇxkò§ÆE §ÔÉÝ5âYZ g\$†% ž•Å~xk" ' ' Eqf
 gV... [•gžÅ~° ŠZ" APIă

|

Å~ÊÉ" ëOÛIm " E\$ƒ, ²ªO³¾†Ý1|§³´İ | ³ åYZEFG
 " ?®" YZ³İ Äé²ÎŠ<" ¥| ‡iÆYZ`a ^ÿK | ž. " ³Ef9~•Š
 Z" ³?§CEq, ë™" È ¹°ž•|Šă

(d ŠñM³~Ef, gYZ" È?Í àšăžn)

Ä_

³¾³ " ëOÊ¥g³½Í " ÛÜEŠ•; " ëO³½ă E\$ƒ, Ð5Š" #¥Eg¥ë
 ³ÍÊýOE¾Cr ă

³ " SOÎ EÎƒ, " ValueÎ¾CategoryÎăÎ•" ëOLabelsýôEf, Ý\$¤¥y" " ,
 •°¾û-¤¥7O° ă ¥³ " ª|¤¥ úÇ•Îýô¾Î° " •ă

ÛÜÉ ÍëúÄE<" s\]ôýôÆž•Ç"ƒ, " E" ò|ÝE ²Î¤¥àpăò|±
 ³¾½ ÛÜž¥" NOE, #³ µŠ" Å~vÐ" ¶•É«EQ" É ÈÉİ Š" ă

\$ƒ, Û" •³ Å~ëü®ôÄEq±²\$" ö' öİ' ö İ" Å~E¿%\$•ă|¶•" È
 Éµýôă

Labels ² ³

° " = g¾•³ äăÍ " ë», •ăŠZ²•Ê°Îă°´¾Ê°Î" E¾= šùO|Š
 9Íă°ƒ, ÷ü+Ew¿ ²ë©ÛÜă

° " , •µ "origin"

É1éÆ©ÛÜž¥ăŠZ" É ÈÉ " ýôïÁ}"ă EXÎ=Ý|7Oª Ûà° "
 "reference point" Èœ•9¤µ7O° " | Û¾=(, •ăİ EE ²Îƒ, ß ž¥° È¾
 ° ýe¤" ýôE, •, ÆBÛ•k 9" #¥#Æy" - Åă

```
from reportlab.graphics.shapes import Drawing, Circle
from reportlab.graphics.charts.textlabels import Label
from reportlab.lib import colors
```

```
d = Drawing(200, 100)
```

```
# mark the origin of the label
d.add(Circle(100,90, 5, fillColor=colors.green))
```

```
lab = Label()
lab.setOrigin(100,90)
lab.boxAnchor = 'ne'
lab.angle = 45
lab.dx = 0
lab.dy = -20
lab.boxStrokeColor = colors.green
lab.setText('Some\nMulti-Line\nLabel')
```

```
d.add(lab)
```

m :



gÍ ³ ĀE° " BŪ• [Ò< ¯ Ÿ1" ā, •i " N« xg 9hh109EqV¬k " 45
Ūā

¬¼E° ħ " , h ôEYZÍ òž• ôÛYZ- ®yMš" y¨³ Ç" : ^" ā

| | |
|----------------|---|
| 2 3 | ^ _ |
| dx | ° " X# ¢ ā The label's x displacement. |
| dy | ° " Y# ¢ ā The label's y displacement. |
| angle | ° " " ÛĒ ¯ - ¨ ā The angle of rotation (counterclockwise) applied to the label. |
| boxAnchor | ° " i E 'n'â 'e'â 'w'â 's'â 'ne'â 'nw'â 'se'â 'sw'Ā" è ©ā The label's box anchor, one of 'n', 'e', 'w', 's', 'ne', 'nw', 'se', 'sw'. |
| textAnchor | ° , Û" , Ÿ# ¥E 'start'â 'middle'â 'end'Ā" è Oā The place where to anchor the label's text, one of 'start', 'middle', 'end'. |
| boxFillColor | ° i Ā±² " STÑÒā The fill color used in the label's box. |
| boxStrokeColor | ° i Ā±² " @AÑÒā The stroke color used in the label's box. |
| boxStrokeWidth | ° i " à \$ ā The line width of the label's box. |
| fontName | ° " ÛŪ, ¹ ā The label's font name. |
| fontSize | ° " ÛŪ < ā The label's font size. |
| leading | ° , Ûü " ¼ō™ā (leading) The leading value of the label's text lines. |
| x | œ• 9" XĒ° ā The X-coordinate of the reference point. |
| y | œ• 9" YĒ° ā The Y-coordinate of the reference point. |
| width | ° " \$ Ûā The label's width. |
| height | ° " ° Ûā The label's height. |

11-5 - Label ý ô

%ōM©ª " ħ " ¥ýôĀe" Label ÛŪ" ? ®E" ŌM, ~ é tests
Ā" ReportLab Ō~ E ũ ũ³ • test_charts_textlabels.py q ŌMŠy , ..." PDF, f ā

11.4 Axes

YZ• Ÿ| S©¶• " Î --ValueµCategoryāž S ©Î Ç¨ €´ µ° β" TÿāSCÇf, ®
ôĀĬ 5½ø1 ô\$" Ĭ ā?dEd ^¨ ...†" Ō\$Eg ĐÁ®x² aĀĀ• >m• =(
E¾Cñ% Ō\$" āĒE^f, stkĬ q ĩ èOe" Ĭ ā

Î Ē° • ŸĀ| Sš³ ŪĒ° " ÞBÆ Š³ " %` Ä÷ 9Æ» 5† 2#Æª Ûà āĒ - àµĬ
° ā

ž 3. > | SOÎ E7ë ©Ç" ëOEŠZ" g " æ• " • 3 " +, hß | " å

```
from reportlab.graphics.shapes import Drawing, Circle
from reportlab.graphics.charts.textlabels import Label
from reportlab.graphics.charts.axes import XCategoryAxis, YValueAxis, XValueAxis
from reportlab.lib import colors
```

```
drawing = Drawing(400, 200)
```

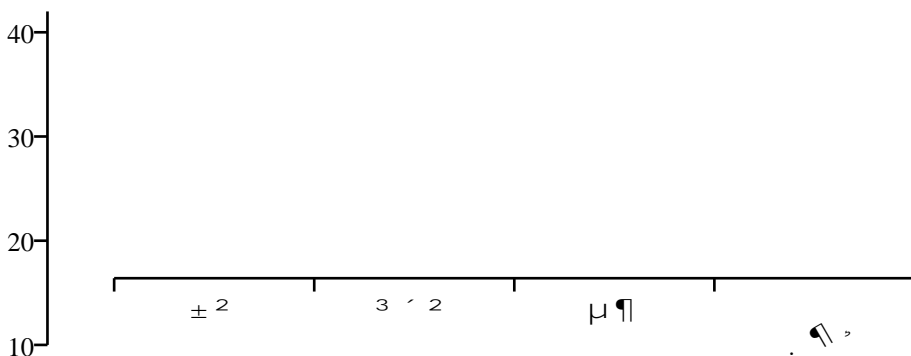
```
data = [(10, 20, 30, 40), (15, 22, 37, 42)]
```

```
xAxis = XCategoryAxis()
xAxis.setPosition(75, 75, 300)
xAxis.configure(data)
# xAxis.categoryNames = ['Beer', 'Wine', 'Meat', 'Cannelloni']
xAxis.categoryNames = [' $\frac{1}{2}$ ', ' $\frac{1}{4}$ ', ' $\frac{1}{8}$ ', ' $\frac{1}{16}$ ', ' $\frac{1}{32}$ ', ' $\frac{1}{64}$ ']
xAxis.labels.boxAnchor = 'n'
xAxis.labels[3].dy = -15
xAxis.labels[3].angle = 30
# xAxis.labels[3].fontName = 'Times-Bold'
xAxis.labels.fontName = 'SourceHanSans-ExtraLight'
```

```
yAxis = YValueAxis()
yAxis.setPosition(50, 50, 125)
yAxis.configure(data)
```

```
drawing.add(xAxis)
drawing.add(yAxis)
```

m :



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") OEÉ1+, hES Ūß | ÎÆÎ ±² ° Ø³ EŠ†²ă..." Îăž•ÈÉ" ³
²İ ɤ¥Šµ Šý•Ú" ă Eh YZf •ŽŠZă TÎšYZIj" Â•ÎEü
| ~" "ª ÛààEÆÇ" ýô¶•B¥ă

XCategoryAxis

ôRÎ q " * " ª ÛÊŠ¿ " , † 2Q... < Bê "

bucketsä Šă™Î ©2ùă³ Ě¾aÁLα² ĚĚ setPosition(x,y,length) ž ¥Š" #¥ă hē

O° ' " hŠ. > | ŠĚ, ŽŠ ^† üα¥ă Ū • ôRÎ Ĩ • ĚžĐt u--Š¿ " ! #ÆĀèO|

Š- ®Ā" | Š9| « â reversed ý ôĚd " 1α >ôR x k— Ĩ â» 5 ĚkĬ f, Ě Ą

scale)ĚĚô³ ¹ ° è • z { ĚkĚĚi j ³ èO5ŸôRg Ĩ " ĩ μmm#¥ă YZ

v " Mš" • ŸòZ s t ôR" \$Ū¾#¥" • ` â

Ö O XCategoryAxis Ö " , h f Ö â " ý Ö ă

| | |
|-----------------|--|
| 2 3 | ^ _ |
| visible | <p>Î ") x k » 5< " § ñ· >è O¼SOÎ E wŠZ ùl • % Ë g E ò ŠZ p ŠU9" à Ê à</p> <p>Should the axis be drawn at all? Sometimes you don't want to display one or both axes, but they still need to be there as they manage the scaling of points.</p> |
| strokeColor | <p>Î " ÑÒ</p> <p>Color of the axis</p> |
| strokeDashArray | <p>") %² ° 8, ¹ Î E d %¹ E ¹ ' ' . " Î à l Í ™ ò "None"â</p> <p>Whether to draw axis with a dash and, if so, what kind. Defaults to None</p> |
| strokeWidth | <p>Î " \$ Û E , 9 ò ù # Ê points α</p> <p>Width of axis in points</p> |
| tickUp | <p>ª Û à x » ó Š Î Í Ê ª 9<</p> <p>Ê " ¶ E ± Æ ê • ³ ° Û ó 5 ^ è M Ê - à α</p> <p>How far above the axis should the tick marks protrude? (Note that making this equal to chart height gives you a gridline)</p> |
| tickDown | <p>ª Û à x » ó Š Î h Ê ª 9<</p> <p>How far below the axis should the tick mark protrude?</p> |
| categoryNames | <p>\$None\$ ¾ Û + » ® à k Ø Û x • 7 O § - ® " Ø Û B ¥ â</p> <p>Either None, or a list of strings. This should have the same length as each data series.</p> |
| labels | <p>ª Û à ° " ý e â</p> <p>Ì Í + , h E 7 O , • ° " ì north ò (« Ê) Ê ? d :> Ã ¢ α</p> <p># • Î Í 7 O ó R " Ã ¢ h Ê 5 9 â</p> <p>^ f , & e ÿ 1 % O ° Å ¾ " • è O ° " " • ý ô â</p> <p>d categoryNames=None E \$ ó » 5 ° â</p> <p>A collection of labels for the tick marks. By default the 'north' of each text label (i.e top centre) is positioned 5 points down from the centre of each category on the axis. You may redefine any property of the whole label group or of any one label. If categoryNames=None, no labels are drawn.</p> |
| title | <p>~ r • ã â ž • % Û è O ° E w α f , ÿ ^ B ž ¥ , • â</p> <p>Š g Î h Ê f ç " Ì Í # ¥ â</p> <p>Not Implemented Yet. This needs to be like a label, but also lets you set the text directly. It would have a default location below the axis.</p> |

11-6 - XCategoryAxis ý ò

YValueAxis

3 Ã " Î " YValueAxisâ

™ Î • ô R Î " ¥ v g • E è Æ Ø Û " 7 O 9 Ç Û x • ³ Ì Ð Ã " y ™ â

Î " ¾ ½ " α ¥ † ; E q f Y ™ Å ³ Ì Ð " ÷ ò Æ • 9 E , ¼ { © ³ ê ù » 5 â

setPosition(x, y, length) μ configure(data) " ½² • ô R Î ∈ ¢ B ¥ â

d ~ r ∈ ¢ ~ ÿ E E E < μª Û Ð E \$ configure()

ó ò ™ Î , ... e 4 " ™ â α ¥ ∈ ... • E ™ Î f , ± ² scale() Ê Ê f y O | § ™ " ÷ ò » ³ Ì Ð â

Å Å

```
>>> yAxis = YValueAxis()
>>> yAxis.setPosition(50, 50, 125)
>>> data = [(10, 20, 30, 40), (15, 22, 37, 42)]
```



```
>>> yAxis.configure(data)
>>> yAxis.scale(10) # should be bottom of chart
50.0
>>> yAxis.scale(40) # should be near the top
167.1875
>>>
```

l l +, hEE° " | §9•î " > Û EE " | §9•î " ² Û Eî òÆª Ûà9, ...
'nice round numbers' (— " %o|)â ^f, ² h " ýòstž•ž¥â

| | |
|-----------------|--|
| 2 3 | ^ _ |
| visible | î ") x k » 5< " § ñ· >ëO¾SOî E wŠZ ùl • %ĒgE òŠZpŠU9" âĒâ Should the axis be drawn at all? Sometimes you don't want to display one or both axes, but they still need to be there as manage the scaling of points. |
| strokeColor | î " ÑÒ Color of the axis |
| strokeDashArray | ") %² ° 8, ¹ î E d %¹ E ¹ ' ' . " î âl l ™ ò "None"â Whether to draw axis with a dash and, if so, what kind. Defaults to None |
| strokeWidth | î " \$ ÛE, 9ò Û # Ē pointsα Width of axis in points |
| tickLeft | ª Ûà x » ô š î " ª 9< Ē " ¶ E ± Ēē • ³ \$ Ûó 5 ^ è MĒ - à α How far to the left of the axis should the tick marks protrude? (Note that making this equal to chart height gives you a gridline) |
| tickRight | ª Ûà x » ô š î " ª 9< How far to the right of the axis should the tick mark protrude? |
| valueMin | î ² x Ûx " y ™â l l ™ ò NoneE g ž ©+, h E î ó f Ēž ¥ ò E ° • § 9Ē ? d E í ? Ā ò 10α â Ē 1 f Ēž ¥ ò Ō, œ· Ēō ½¾â The y value to which the bottom of the axis should correspond. Default value is None in which case the axis sets it to the lowest actual data point (e.g. 10 in the example above). It is common to set this to zero to avoid misleading the eye. |
| valueMax | î > x Ûx " y ™â l l ™ ò NoneE g ž ©+, h E î ó f Ēž ¥ ò E ° • § 9Ē ? d E í ? Ā ò 42α â Ē 1 f Ēž ¥ ò i%o ðE ž . § M¬ ó š V> â The y value to which the top of the axis should correspond. Default value is None in which case the axis sets it to the highest actual data point (e.g. 42 in the example above). It is common to set this to a 'round number so data bars do not quite reach the top. |
| valueStep | ygª ÛĐ vĐĀĀâ l l +, h E ™ ò iNoneðE ³ U , ...â h " E <ª ÛĐ%©\$ " iĐ, " %o ðâ The y change between tick intervals. By default this is None, and the chart tries to pick 'nice round numbers' which are just wider than the minimumTickSpacing below. |
| valueSteps | Ē ¥ª Û" Û® â A list of numbers at which to place ticks. |

| | |
|--------------------|---|
| minimumTickSpacing | <p>ĩ \$valueStep\$ž ¥ò \$None\$ ±² E) \$: 3ă ž! ò L ~ Ÿª Ûà v Đ" %\ x < • X9Ē . " ¶ • ° ÛÚ < μ Û" • a ¤ă ³ U ±² 1,2,5,10,20,50,100...Ē d " Ū% E " / < š 1, h ¤ ô \$ " ™ E B š à š • y • Đ " Đ E q f Ē² • \$step\$ă This is used when valueStep is set to None, and ignored otherwise. The designer specified that tick marks should be no closer than X points apart (based, presumably, on considerations of the label font size and angle). The chart tries values of the type 1,2,5,10,20,50,100... (going down below 1 if necessary) until it finds an interval which is greater than the desired spacing, and uses this for the step.</p> |
| labelTextFormat | <p>ž • Ÿ ° Ā" t â • Ā, Ÿ Û + » " ô R Ī ¥ E \$ValueAxis\$ Ĩ " ° x ò Ûă ^ f, ¹ ° ĩ\$ ĵ 0.2f\$ô v ô " ĩ- Û + » ð Ē • > S # < ¤ E ¤ f, ¹ ° ë O Ā Û q ø R Û + » " " ¶ K â • C" ë ©² Ē " f Đ Ā" ÷ ò f ĩ " z Ñ = - â This determines what goes in the labels. Unlike a category axis which accepts fixed strings, the labels on a ValueAxis are supposed to be numbers. You may provide either a 'format string' like '%0.2f' (show two decimal places), or an arbitrary function which accepts a number and returns a string. One use for the latter is to convert a timestamp to a readable year-month-day format.</p> |
| title | <p>~ r • āă ž • % Ū ë O ° E w ¤ f, Ÿ ^ B ž ¥, • â Š g Ī h Ē f ĵ " Ĩ Ĩ # ¥ă Not Implemented Yet. This needs to be like a label, but also lets you set the text directly. It would have a default location below the axis.</p> |

11-7 - YValueAxis ý ô

valueSteps ý ô Ÿ ^ ž • ~ Ÿª Ûà " # ¥ E ^ Û " ø 1 Ö" Đ Đ â E š f, Ē
ý O ¼ { K | Ĩ » 5 Ń Ā μ Ń Ā = (E ' • % " Đ Ā ®³ ô â h " ' ñ • > | d •
ĭ ë O 2 Û " XValueAxis • " a Û Đ â " • ' g J ² ¤ ¥ Ē Ē v ¼ ž ¥ valueSteps ý ô !

```
from reportlab.graphics.shapes import Drawing
from reportlab.graphics.charts.axes import XValueAxis
```

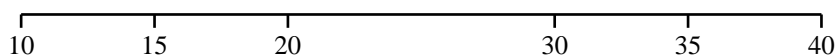
```
drawing = Drawing(400, 100)
```

```
data = [(10, 20, 30, 40)]
```

```
xAxis = XValueAxis()
xAxis.setPosition(75, 50, 300)
xAxis.valueSteps = [10, 15, 20, 30, 35, 40]
xAxis.configure(data)
xAxis.labels.boxAnchor = 'n'
```

```
drawing.add(xAxis)
```

m :



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Ü | ž • ý ò v à E y " " Ĩ ô Ç " þ O ý ô E I j d • f Æ Ã " S O Ĩ B ú å ÷ J E ĸ
 " Ĩ Š Ÿ 1 Š † 2 " 3 ¾ C ñ ± 2 ž • Ê ° Ĩ 3 4 ā " 3 " à þ E ž 1 " " Š " å ž • ý ò
 g ž Ā ĸ " ø 1 2 ù " ® ò E w Š f , g reportlab/graphics/axes.py%o Ā à š « " > ? K | E
 Š f , Ō Ō

É g < ë O Ĩ Í J ² È É joinToAxis(otherAxis, mode, pos) f ë O Ĩ ú š ^ ë O Ĩ E mode µ p
 osQR " joinAxisMode µ joinAxisPos l j " ý ò å 'points' > ± ² , Ū ™ E 'value' > ± ² è Ĩ
 " B Ū ™ É Ā é joinAxisPos ý ò > æ å

| | |
|--------------|--|
| 2 3 | ^ _ |
| joinAxis | d ò * E \$ ú S O Ĩ å Join both axes if true. |
| joinAxisMode | ² • ú Ĩ " % ('bottom', 'top', 'left', 'right', 'value', 'points', None). Mode used for connecting axis ('bottom', 'top', 'left', 'right', 'value', 'points', None). |
| joinAxisPos | • Æ Ç Ĩ ú " # ¥ å Position at which to join with other axis. |

11-8 - Axes joining ý ò

11.5 ĸ Û Å

ž l j | Y Z " ¼ " VerticalBarChart ô E Š ± ² | Í " Ĩ µ ° å Y Z Í ò ž " • È h " è ĩ
 E w v 9 r Š E • " ° ' å " ¶ E • Y Z Ā " ò Ū ž " ' ° ß ' v " ' € ' ' M ' ³ " M É è å Y
 Z , ... ž O , Ū " ò ' ° ß ' ò ā g ' M ' ³ ' ' ; E y , Y Z Í ò Š " ¶ I " M ' ³ " ò R Ĩ " °
 ß " å

- 1 è . E Y Z f Ā è O > ? j Å

```
from reportlab.graphics.shapes import Drawing
from reportlab.graphics.charts.barcharts import VerticalBarChart
from reportlab.lib import colors
```

```
drawing = Drawing(400, 200)
```

```
data = [(13, 5, 20, 22, 37, 45, 19, 4),
        (14, 6, 21, 23, 38, 46, 20, 5)]
```

```
bc = VerticalBarChart()
bc.x = 50
bc.y = 50
bc.height = 125
bc.width = 300
bc.data = data
bc.strokeColor = colors.black
```

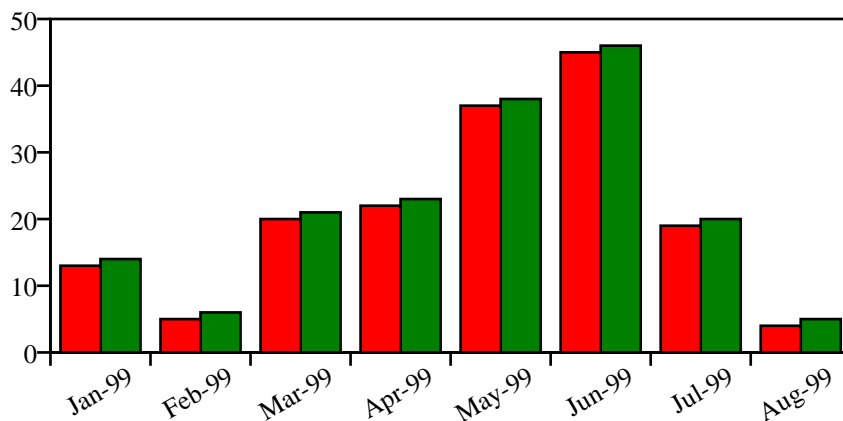
```
bc.valueAxis.valueMin = 0
bc.valueAxis.valueMax = 50
bc.valueAxis.valueStep = 10
```

```
bc.categoryAxis.labels.boxAnchor = 'ne'
```

```
bc.categoryAxis.labels.dx = 8
bc.categoryAxis.labels.dy = -2
bc.categoryAxis.labels.angle = 30
bc.categoryAxis.categoryNames = [
    'Jan-99',
    'Feb-99',
    'Mar-99',
    'Apr-99',
    'May-99',
    'Jun-99',
    'Jul-99',
    'Aug-99',
]

drawing.add(bc)
```

m :



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" > ý ô å

| | |
|---------------------|--|
| ² ³ | ^ _ |
| data | <p>ž x k " Ĩ Ĩ Û® ® ð¼ĩ Ĩ Ûä Å® ðå</p> <p>d ĵ ¨ ë O- ®E \$ f Æ / ò data=[(10,20,30,42),]</p> <p>This should be a "list of lists of numbers" or "list of tuples of numbers".</p> <p>If you have just one series, write it as data = [(10,20,30,42),]</p> |
| x, y, width, height | <p>ž • Ÿ 1 Ĩ " "» ³ á ´ "ä</p> <p>YZ g Ĩ ² h Ò; i » ö · > Ĩ O á ´ ä</p> <p>" ¶ E ^ " ¾½" f ³ Ê ¥ g ³ ½ Ĩ E ò y ¨ " Ĩ ° μª Û à J ò Ĩ Đ ä</p> <p>YZ ~ Ÿ ž O " á ´ " " ò Š f , Đ t u , ë ™ " È ° ¥ª O³ ä</p> <p>These define the inner 'plot rectangle'.</p> <p>We highlighted this with a yellow border above.</p> <p>Note that it is your job to place the chart on the drawing in a way which leaves room for all the axis labels and tickmarks. We specify this 'inner rectangle' because it makes it very easy to lay out multiple charts in a consistent manner.</p> |

| | |
|----------------|--|
| strokeColor | ĩ ĩ ò Noneă ž f g » ³ á ´ V » 5; i E ž f ŪJ Đ ¨ ² á Ĩ f s t # ¥ă Defaults to None. This will draw a border around the plot rectangle, which may be useful in debugging. Axes will overwrite this. |
| fillColor | ĩ ĩ ò Noneă ž f ² B Ò S T » ³ á ´ â Ē ¨ ĩ E Y Z f , Ū Ē Ç ¨ • • Ą ´ Ą Ē . • ā \$dashArray\$ Ē Ą Defaults to None. This will fill the plot rectangle with a solid color. (Note that we could implement dashArray etc. as for any other solid shape) |
| useAbsolute | ĩ ĩ ò 0. d ò 1 E \$ h ¨ þ O ý ô ¨ , Ū ™ E , 9 ò ù # Ē ž ĩ T U \$ f , 5 ½ Ē O ³ E Ē Ą ¨ M ´ ³ Ą » ³ á ´ Ą { ô ĩ Ą Ē d ò 0 E \$ ¨ B Ū « E > B • ä â ¨ â ? \$ Ū â Defaults to 0. If 1, the three properties below are absolute values in points (which means you can make a chart where the bars stick out from the plot rectangle); if 0, they are relative quantities and indicate the proportional widths of the elements involved. |
| barWidth | 7 Ą \$ Ū . ĩ ĩ ò 10. As it says. Defaults to 10. |
| groupSpacing | ĩ ĩ ™ ò 5ă ž ¨ 7 Ą M ´ ³ v Đ ¨ Đ % E d Ĩ ¨ Ē O - ® E ¨ ± ² \$groupSpacing\$ ¨ barSpacing ĩ Q A Š Z â \$groupSpacing\$ ¨ Ē } ² • ³ ¨ < Ē O M ´ ³ v ¼ E ^ Ē } ² • m þ â Defaults to 5. This is the space between each group of ars. If you have only one series, use groupSpacing and not barSpacing to split them up. Half of the groupSpacing is used before the first bar in the chart, and another half at the end. |
| barSpacing | ĩ ĩ ™ ò 0ă ž ¨ 7 O Ą Ą ¨ M v Đ ¨ Đ %ă d g ĩ ¨ ¨ > ? Ą [Ō µ Z Ō M ´ v Đ % ¨ Ē Ē 9 Đ Ą E \$ f , f Ē ž ¥ ô ø Óă Defaults to 0. This is the spacing between bars in each group. If you wanted a little gap between green and red bars in the example above, you would make this non-zero. |
| barLabelFormat | ĩ ĩ ò Noneă • \$YValueAxis\$ Ē . E d ¹ ° K ĩ ¾ - Ū + » E \$ ô g 7 O . > ĩ ™ ¨ M ¨ ; » 5 ° â Ū • ™ E Š Z ó † ô Ÿ # g M ¨ ĩ Ē E Ū • Ą ™ E Š Z ó † ô # • h Ē â Defaults to None. As with the YValueAxis, if you supply a function or format string then labels will be drawn next to each bar showing the numeric value. They are positioned automatically above the bar for positive values and below for negative ones. |
| barLabels | ² • - Ą y ¨ M ´ ° ¨ ¨ ý e â é • ž ¨ Ē O Ó ĩ ĩ Ą E ^ f , ± ² b É ž • - Ą < Ó O - ® ¨ < þ O ° Ą chart.barLabels[(1,2)].fontSize = 12ă A collection of labels used to format all bar labels. Since this is a two-dimensional array, you may explicitly format the third label of the second series using this syntax: chart.barLabels[(1,2)].fontSize = 12 |
| valueAxis | ™ Ĩ E Ē - f d ¼ y j â The value axis, which may be formatted as described previously. |
| categoryAxis | ô R Ĩ E Ē - f d ¼ y j â The category axis, which may be formatted as described previously. |

| | |
|-------|--|
| title | <p>v ¨ • ã å ž • % Ũ è O ° è . E w ¢ f , ÿ § ß ž ¥ , • å Š f ¨ è O ĩ í " # ¥ g Ĩ " h È å Not Implemented Yet. This needs to be like a label, but also lets you set the text directly. It would have a default location below the axis.</p> |
|-------|--|

11-9 - VerticalBarChart ý ô

Å k Æ Y Z f , ä ô m < E g ĩ " ' ñ Æ | , h ý ü E x k ó ± M ´ ³ Å v Ð " Ð % á è
(groupSpacing ý ô " ĩ í ™ ò 59) E Y Z v x k M Š ¥ è Å " M ´ Å v Ð ¨ è • G < " ĩ Ð (bar
Spacing) å

```
bc.groupSpacing = 10
bc.barSpacing = 2.5
```

' E • ĩ E ž ¬ " g f ž • ü r š ĩ " ' ñ v • y M Š " å
¶ ¨ OM " \$ Ũ ¢ d • Å Å å
ž " ò Ê U W ³ \$ Ũ ' ü Ä E Ũ Ũ Å ¾ ĩ ; ² ð M ´ v Ð " ĩ - å

```
from reportlab.graphics.shapes import Drawing
from reportlab.graphics.charts.barcharts import VerticalBarChart
from reportlab.lib import colors
```

```
drawing = Drawing(400, 200)
```

```
data = [(13, 5, 20, 22, 37, 45, 19, 4),
        (14, 6, 21, 23, 38, 46, 20, 5)]
```

```
bc = VerticalBarChart()
bc.x = 50
bc.y = 50
bc.height = 125
bc.width = 300
bc.data = data
bc.strokeColor = colors.black
```

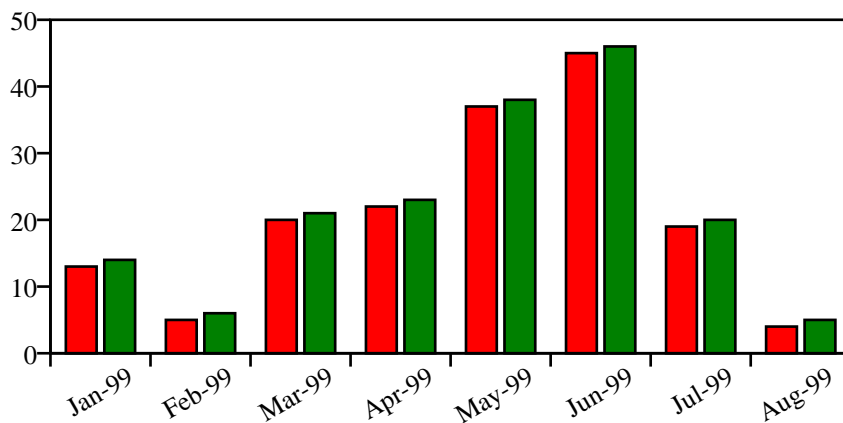
```
bc.groupSpacing = 10
bc.barSpacing = 2.5
```

```
bc.valueAxis.valueMin = 0
bc.valueAxis.valueMax = 50
bc.valueAxis.valueStep = 10
```

```
bc.categoryAxis.labels.boxAnchor = 'ne'
bc.categoryAxis.labels.dx = 8
bc.categoryAxis.labels.dy = -2
bc.categoryAxis.labels.angle = 30
bc.categoryAxis.categoryNames = [
    'Jan-99',
    'Feb-99',
    'Mar-99',
    'Apr-99',
    'May-99',
    'Jun-99',
    'Jul-99',
    'Aug-99',
]
```

```
drawing.add(bc)
```

m :



³ 11-5 - Ū, ¼ë . E wĐ%[©4

M´ ³ ° f † ð· > ò M´ h %, h " Ē™ E ĒÇ M´ Í %™, Í " ™ă

° ß M´ ³ ǻ ũ ũ W X M´ ³ ă ^ f, É g categoryAxis Í ž ¥ style ý ô ò 'stacked'
İ ò ^ " ³ ǻ ² ž ©° £ă

bc.categoryAxis.style = 'stacked'

h " , v ¼" ³ ™ ò ? E , X " È ®ă

from reportlab.graphics.shapes import Drawing
from reportlab.graphics.charts.barcharts import VerticalBarChart
from reportlab.lib import colors

drawing = Drawing(400, 200)

data = [(13, 5, 20, 22, 37, 45, 19, 4),
(14, 6, 21, 23, 38, 46, 20, 5)]

bc = VerticalBarChart()
bc.x = 50
bc.y = 50
bc.height = 125
bc.width = 300
bc.data = data
bc.strokeColor = colors.black

bc.groupSpacing = 10
bc.barSpacing = 2.5

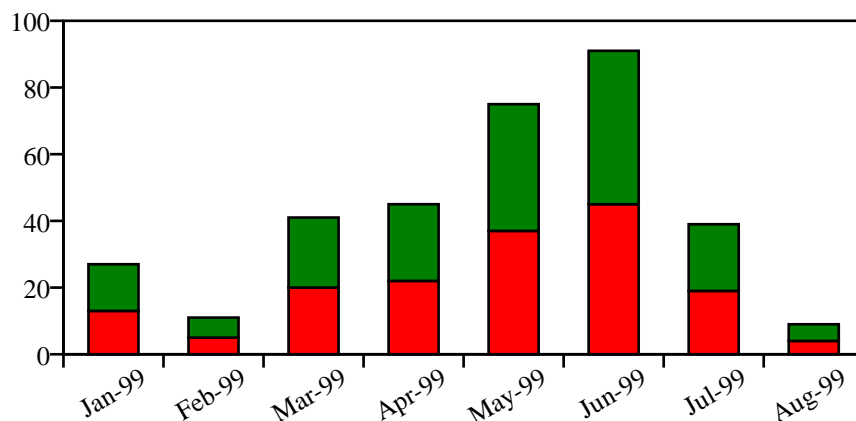
bc.valueAxis.valueMin = 0
bc.valueAxis.valueMax = 100
bc.valueAxis.valueStep = 20

bc.categoryAxis.labels.boxAnchor = 'ne'
bc.categoryAxis.labels.dx = 8
bc.categoryAxis.labels.dy = -2
bc.categoryAxis.labels.angle = 30
bc.categoryAxis.categoryNames = [
'Jan-99',
'Feb-99',
'Mar-99',
'Apr-99',
'May-99',
'Jun-99',
'Jul-99',
'Aug-99',
]

bc.categoryAxis.style = 'stacked'

drawing.add(bc)

m :



3 11-6 - 7 Å X 3

11.6 %ÕÀ

Y Z Í ò "8à 3 "(Line Charts) • "7 Å 3 "(Bar Charts)

• ± Í " ë . " E ¿ " 2 à ' ö | Må SC ¥ë Û ô R / | ™ Î Û å ž •

"à 3 " ¥ E g "à 3 "(Line Plots) Å E S O Î Ç " ™ Î å

„ h' ñ # Æ ó ô f ½ ò ë O 2 ù " ? ® å • ó ' ' © ª " § å ¯ ¼ E ^ ¤ f „ ° ± Û Û
 reportlab/lib/graphdocpy.py ¾ ¿ " ó ô E q g „ ... " PDF, f Å à Ñ 7 Å 3 (Line
 Charts)" ? ® å

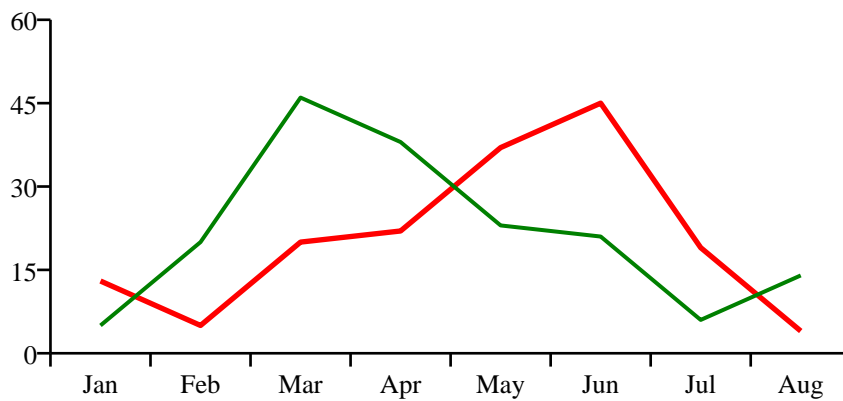
```
from reportlab.graphics.shapes import Drawing
from reportlab.graphics.charts.linecharts import HorizontalLineChart
from reportlab.lib import colors
```

```
drawing = Drawing(400, 200)
```

```
data = [(13, 5, 20, 22, 37, 45, 19, 4), (5, 20, 46, 38, 23, 21, 6, 14)]
```

```
lc = HorizontalLineChart()
lc.x = 50
lc.y = 50
lc.height = 125
lc.width = 300
lc.data = data
lc.joinedLines = 1
catNames = 'Jan Feb Mar Apr May Jun Jul Aug'.split(' ')
lc.categoryAxis.categoryNames = catNames
lc.categoryAxis.labels.boxAnchor = 'n'
lc.valueAxis.valueMin = 0
lc.valueAxis.valueMax = 60
lc.valueAxis.valueStep = 15
lc.lines[0].strokeWidth = 2
lc.lines[1].strokeWidth = 1.5
drawing.add(lc)
```

m :



3 11-7 - HorizontalLineChart - 8 à 3

| | |
|---------------------|--|
| 2 3 | ^ _ |
| data | %o» 5 " § E Ē ® ¤ %o k ù ã Data to be plotted, list of (lists of) numbers. |
| x, y, width, height | 8 à 3 " ; è i ã " ¶ Exµy ~ ÿ Ą ¢ E " h Bounding box of the line chart. Note that x and y do NOT specify the centre but the bottom left corner |
| valueAxis | ™ Ĩ E Ą - f d ¼ y j ã The value axis, which may be formatted as described previously. |
| categoryAxis | ô R Ĩ E Ą - f d ¼ y j ã The category axis, which may be formatted as described previously. |
| strokeColor | ĭ Ĩ ò "None" ã ž f g » 3 á ´ V¹ è O; i E ž g J f Ð ¨ ² ã Ĩ f s t Š ã Defaults to None. This will draw a border around the plot rectangle, which may be useful in debugging. Axes will overwrite this. |
| fillColor | ĭ Ĩ ò None ã ž f ² B Ò S T » 3 á ´ ã Defaults to None. This will fill the plot rectangle with a solid color. |
| lines.strokeColor | à " Ñ Ò Color of the line. |
| lines.strokeWidth | à " \$ Ò Width of the line. |
| lineLabels | ² • - Å y ¨ ü ° " ° ý e ã é • ž " è O Ó Å E ^ f , ± ² , h b Ě ž • - Å < Ó ü " < p O ° Å chart.lineLabels[(1,2)].fontSize = 12 ã A collection of labels used to format all line labels. Since this is a two-dimensional array, you may explicitly format the third label of the second line using this syntax: chart.lineLabels[(1,2)].fontSize = 12 |

| | |
|-----------------|--|
| lineLabelFormat | <p>Ĭ Ĭ ™ ò "None"å • YValueAxisè . E d § 1 ° è OK ¾- Û + » E</p> <p>Ã' ° f » 5g 7è Û " " ; E · > ™ å</p> <p>^ ¢ f , f Æž ¥ ò 'values'E , · > g lineLabelArrayÃ ž • ÿ 1 " ™ å</p> <p>Defaults to None. As with the YValueAxis, if you supply a function or format string then labels will be drawn next to each line showing the numeric value. You can also set it to 'values' to display the values explicitly defined in lineLabelArray.</p> |
| lineLabelArray | <p>Û ° ™ " . Å E d È g E Û Û • § " < B t ¢ å</p> <p>¿ " Ĩ Ĭ " ý ò \$lineLabelFormat\$ ž ¥ ò 'values' E</p> <p>ž • ° ™ 1 ó . > å</p> <p>Explicit array of line label values, must match size of data if present. These labels values will be displayed only if the property lineLabelFormat above is set to 'values'.</p> |

11-10 - HorizontalLineChart ý ô

11.7 ý ÕÀ

h Y Z x > | è O © ... † " à \$³ " ? @ E ¢ ±² | è • • ò E å d g 7 O | § 9 Ê ¥ à \$
°) å

```
from reportlab.graphics.shapes import Drawing
from reportlab.graphics.charts.lineplots import LinePlot
from reportlab.graphics.widgets.markers import makeMarker
from reportlab.lib import colors
```

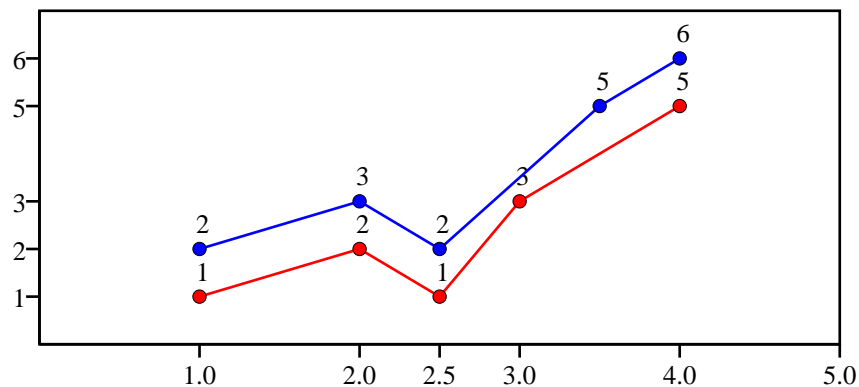
```
drawing = Drawing(400, 200)
```

```
data = [
    ((1,1), (2,2), (2.5,1), (3,3), (4,5)),
    ((1,2), (2,3), (2.5,2), (3.5,5), (4,6))
]
```

```
lp = LinePlot()
lp.x = 50
lp.y = 50
lp.height = 125
lp.width = 300
lp.data = data
lp.joinedLines = 1
lp.lines[0].symbol = makeMarker('FilledCircle')
lp.lines[1].symbol = makeMarker('Circle')
lp.lineLabelFormat = '%2.0f'
lp.strokeColor = colors.black
lp.xValueAxis.valueMin = 0
lp.xValueAxis.valueMax = 5
lp.xValueAxis.valueSteps = [1, 2, 2.5, 3, 4, 5]
lp.xValueAxis.labelTextFormat = '%2.1f'
lp.yValueAxis.valueMin = 0
lp.yValueAxis.valueMax = 7
lp.yValueAxis.valueSteps = [1, 2, 3, 5, 6]
```

```
drawing.add(lp)
```

m :



3 11-8 - LinePlot > ? 3

| | |
|---------------------|--|
| 2 3 | ^ _ |
| data | %» 5 " § E Ē ® ¤ %» k ù ã Data to be plotted, list of (lists of) numbers. |
| x, y, width, height | 8 à 3 " ; è i ã " ¶ E x μ y ~ Ÿ Ą ¢ E " h Bounding box of the line chart. Note that x and y do NOT specify the centre but the bottom left corner |
| xValueAxis | ° ß ™ Ĩ E Ą- f „ d Ĩ y j ã The vertical value axis, which may be formatted as described previously. |
| yValueAxis | € ´ ™ Ĩ E Ą- f „ d Ĩ y j ã The horizontal value axis, which may be formatted as described previously. |
| strokeColor | ĭ Ĩ ò None ã ž f g » 3 á ´ V » 5; i E ž f Ů J Đ ¨ 2 ã Ĩ f s t # ¥ ã Defaults to None. This will draw a border around the plot rectangle, which may be useful in debugging. Axes will overwrite this. |
| strokeWidth | ĭ Ĩ ò None ã » 3 á ´ V; i " \$ ù ã Defaults to None. Width of the border around the plot rectangle. |
| fillColor | ĭ Ĩ ò None ã ž f ² B Ò S T » 3 á ´ ã Defaults to None. This will fill the plot rectangle with a solid color. |
| lines.strokeColor | à " Ñ Ò ã Color of the line. |
| lines.strokeWidth | à " \$ ù Width of the line. |
| lines.symbol | 7 O 9 ± 2 " °) ã ^ f „ ± 2 K \$makeMarker()\$ ĭ è O e " °) ã ? d E %» ± 2 è O ã E K J ² " makeMarker('Circle') Marker used for each point. You can create a new marker using the function makeMarker(). For example to use a circle, the function call would be makeMarker('Circle') |

| | |
|-----------------|--|
| lineLabels | <p>2 • - Åy " ü° " ° y eã é • ž " è OÓ Å E ^ f , ± 2 , h b É ž • - Å < Ó ü " < p O° Å chart.lineLabels[(1,2)].fontSize = 12</p> <p>A collection of labels used to format all line labels. Since this is a two-dimensional array, you may explicitly format the third label of the second line using this syntax: chart.lineLabels[(1,2)].fontSize = 12</p> |
| lineLabelFormat | <p>Ì Í ™ ò Noneã • \$YValueAxis\$ë . E d § 1 ° è OK ¾ - Ù + » E Æ ' ° f » 5 Defaults to None. As with the YValueAxis, if you supply a function or format string then labels will be drawn next to each line showing the numeric value. You can also set it to 'values' to display the values explicitly defined in lineLabelArray.</p> |
| lineLabelArray | <p>Ü ° ™ " . Å E d È g E Û Ü • Í § " < B t æ å ç " î Í " ý ô lineLabelForm Explicit array of line label values, must match size of data if present. These labels values will be displayed only if the property lineLabelFormat above is set to 'values'.</p> |

3 11-9 - LinePlot ý ô

11.8 Å Å

Û 1 ë . E Y Z f Å è O ? ® j :

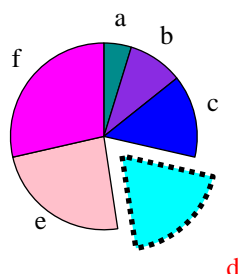
```
from reportlab.graphics.shapes import Drawing
from reportlab.graphics.charts.piecharts import Pie
from reportlab.lib import colors
```

```
d = Drawing(200, 100)
```

```
pc = Pie()
pc.x = 65
pc.y = 15
pc.width = 70
pc.height = 70
pc.data = [10,20,30,40,50,60]
pc.labels = ['a','b','c','d','e','f']
```

```
pc.slices.strokeWidth=0.5
pc.slices[3].popout = 10
pc.slices[3].strokeWidth = 2
pc.slices[3].strokeDashArray = [2,2]
pc.slices[3].labelRadius = 1.75
pc.slices[3].fontColor = colors.red
d.add(pc)
```

m :



3 11-10 - Å ô " : 3

ý ô g h • Ž å pie ç " islicesð ý e E Y Z g ¥ ë Æ) ý wedge ý ô å

| | |
|-----|-----|
| 2 3 | ^ _ |
|-----|-----|

| | |
|------------------------|--|
| data | % e ý |
| x, y, width, height | <p>: ³ " ; è i â " ¶ E x μ y Û ~ Ÿ Ã Ç E " ~ Ÿ h E q ' \$ Û μ ° Û Û B ê â : ³ f " à ã ´ " E q ' ó • » 5 & ^ â</p> <p>A list or tuple of numbers Note that x and y do NOT specify the centre but the bottom left corner, and that width and height do not have to be equal; pies may be elliptical and slices will be drawn correctly.</p> |
| labels | <p>None, ¾ C Û + » e ý . d ^ ` a : ³ ; « V ° E " f Æ Ž ò i None ð â é • f Z ÿ & ^ " < E Y Z É 1 j ã g : Ã ¾ : V Ê ¥ ° â E , f Š Ž Ê g ³ ? Ã â</p> <p>None, or a list of strings. Make it None if you don't want labels around the edge of the pie. Since it is impossible to know the size of slices, we generally discourage placing labels in or around pies; it is much better to put them in a legend alongside.</p> |
| startAngle | <p>< è O : ^ " n j Û " ' ' < ĩ ĩ ò "90"E E 12 9 Å È h â</p> <p>Where is the start angle of the first pie slice? The default is '90' which is twelve o'clock.</p> |
| direction | <p>& ^ " ¼ ê È h " ' ' < ĩ ĩ ò "clockwise"â (Ž -)</p> <p>Which direction do slices progress in? The default is 'clockwise'.</p> |
| sideLabels | <p>ž f j è O ° g S ; ^ è ® " ³ â</p> <p>This creates a chart with the labels in two columns, one on either side.</p> |
| sideLabelsOffset | <p>ž " : ³ \$ Û " è Q E k \$ Û Ÿ 1 : ³ μ ° ® v Ð " € ´ % \ â</p> <p>This is a fraction of the width of the pie that defines the horizontal distance between the pie and the columns of labels.</p> |
| simpleLabels | <p>ĩ ĩ ò 1. ž ¥ ð 0 , ¨ ± † Ÿ 1 ° , # g ý e & ^ Ã ± ² label_ ¼ H " ý ô â</p> <p>Default is 1. Set to 0 to enable the use of customizable labels and of properties prefixed by label_ in the collection slices.</p> |
| slices | <p>& ^ " ý e â ž ± ^ f , † Ÿ 1 7 O Æ ´ ¾ ù O Æ ´ â è h ,</p> <p>Collection of slices. This lets you customise each wedge, or individual ones. See below</p> |
| slices.strokeWidth | <p>Æ ´ ; i \$ Û</p> <p>Border width for wedge</p> |
| slices.strokeColor | <p>Æ ´ ; i Ñ Ò</p> <p>Border color</p> |
| slices.strokeDashArray | <p>• à ¾ n à ¨ ¥ Å ['solid', 'dashed']</p> <p>Solid or dashed line configuration</p> |
| slices.popout | <p>& ^ x Ã Ç : " Ã Ç { ô ª 9 < ĩ ĩ ™ ò Ó â</p> <p>How far out should the slice(s) stick from the centre of the pie? Default is zero.</p> |
| slices.fontName | <p>° Û Û , 1</p> <p>Name of the label font</p> |
| slices.fontSize | <p>° Û Û <</p> <p>Size of the label font</p> |
| slices.fontColor | <p>° , Û " Ñ Ò</p> <p>Color of the label text</p> |

| | |
|--------------------|--|
| slices.labelRadius | ž Đ5, • ° " 9â Š" } Þ" è < QÆ 0.7f , • Ê ¥g: Ã E 1.2f , • Ê ¥g: à â Ë " ¶ Ed YZr ° Ef' J ° , ~ÿÆ 9æ This controls the anchor point for a text label. It is a fraction of the radius; 0.7 will place the text inside the pie, 1.2 will place it slightly outside. (note that if we add labels, we will keep this to specify their anchor point) |
|--------------------|--|

@~ ` Label

É 4Ä ý e slicesÄ , label_ò ¼H" ý ô E f , ù - ÿ 57O ~ - ° á ? d
pc.slices[2].label_angle = 10 4Ä < þ O ° " Û â

g ± ² ž • † ÿ 1 ý ô v ¼E ^ • %± ² , h Ö² 2ù ° Ä pc.simplesLabels=0

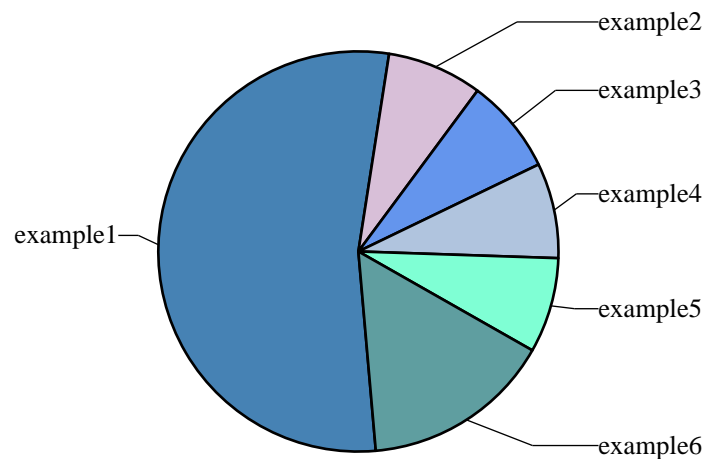
| | |
|----------------------|--|
| 2 3 | ^ _ |
| label_dx | X Ĩ ° Þ Ç X Offset of the label |
| label_dy | Y Ĩ ° Þ Ç Y Offset of the label |
| label_angle | ° " Û E Ĩ í Ê 0æ ò € ´ E 90ò ° ß E 180ò í h Ê ž Angle of the label, default (0) is horizontal, 90 is vertical, 180 is upside down |
| label_boxAnchor | ° " , ÿ 9 Anchoring point of the label |
| label_boxStrokeColor | ° i " ; i Ñ Ò Border color for the label box |
| label_boxStrokeWidth | ° i " ; i \$ Û Border width for the label box |
| label_boxFillColor | ° É " S T Ñ Ò Filling color of the label box |
| label_strokeColor | ° , Û " ; i Ñ Ò Border color for the label text |
| label_strokeWidth | ° , Û " ; i \$ Û Border width for the label text |
| label_text | ° , Û Text of the label |
| label_width | ° \$ Û Width of the label |
| label_maxWidth | ° f , á š " E \$ Û Maximum width the label can grow to |
| label_height | ° ° Û Height of the label |
| label_textAnchor | ° f , á š " E ° Û Maximum height the label can grow to |
| label_visible | d %» 5° E \$ ò True True if the label is to be drawn |
| label_topPadding | É ® " í ; %(Padding at top of box) |
| label_leftPadding | É ® " ; %(Padding at left of box) |

| | |
|---------------------------|---|
| label_rightPadding | É ®" ; %(Padding at right of box) |
| label_bottomPadding | É ®" h ; %(Padding at bottom of box) |
| label_simple_pointer | ò 2 ù ~ - ž ¥ ò 1(Set to 1 for simple pointers) |
| label_pointer_strokeColor | ~ > à Ñ Ò Color of indicator line |
| label_pointer_strokeWidth | ~ > à \$ Û Width of indicator line |

11-11 - Pie.slices † Ÿ 1 label

Side Labels Ā Ç ¼ Z

d sideLabels ý ô ž ¥ ò trueE Ā' &¯ Q ò S ® E S ; ¨ ë ® Ą
 : μ: " n ĭ Û f † õ ž ¥ Ą Ē " 9 ž ¥ ò "start" E q ž ¥ ĭ ý ® " 9 ž ¥ ò
 "end" Ą: " ; « • ý ® Ā " • ë O " ; « " % \ Ą ® é sideLabelsOffset
 ý ô = Ÿ E k ý ô ò: " \$ Û " ë < Q Ą d 4 Ą
 xradiusE: ó • ° & X E ž . ë Ĭ ... Ą Y Z ĭ ā f xradius 4 ò None Ą h " ë O ? ® Ą

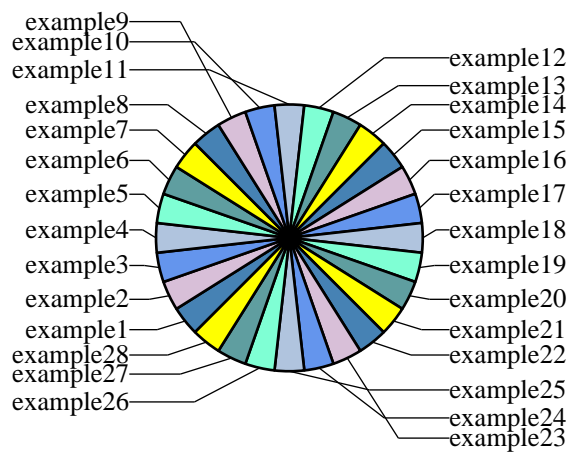


3 11 - 11 : ë O sideLabels=1 " : 3 > ?

d f sideLabels ž ¥ ò TrueE \$ ¾ • ý ô f Ą Ą ª Đ E ? d pointerLabelMode Ą
 ¥. E sideLabelsOffset g f sideLabels ž ¥ ò true © 4: 3 Ą

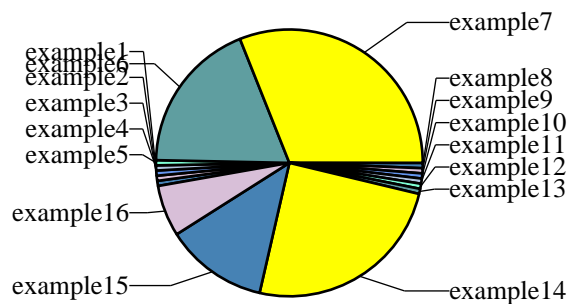
ä Ā Ą Ą

d &¯ ª E ~ - f ó Ē Ą



³ 11 - 12: ~ - Ē " ? ®

^ à E d ° Ū x " - ® B Ą E Ÿ þ " checkLabelOverlapE ° ¼ f , & X å



³ 11 - 13: ° & X " > ?

11.9 Legends

f , à š " © ê ĩ " ³ ? ô E w • % œ ü k Š , • ³ % \$ " Æ Ç Q ' ü ë ™ å ³ ? " ~ Ÿ ³
 Ñ Ò µ à M ú - " † ĩ ĩ y Æ Y Z ĩ ã 7 O ³ Ç ĩ ë O f è " legend ý ô å ĩ • E f æ ü ,
 h ¼ ½ , ~ Ÿ Ñ Ò Å

```
myChart.legend.defaultColors = [red, green, blue]
```

v f , Ÿ 1 è Å B ¥ ³ ? " ³ Å

```
myLegend = Legend()
myLegend.defaultColor = [red, green,....] #yuck!
myLegend.columns = 2
# etc.
chart1.legend = myLegend
chart2.legend = myLegend
chart3.legend = myLegend
```


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• ÄÄ

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- ÑÖÖx:--ā g³ " è O , f Å " ý ô defaultColors, k ý ô¹ ° %ø ù . > " ÑÒ® E , Ž 7 O | \$ - ® Ç " † 2 " ÑÒā ā g E d \$ % Ò | ³ ? E \$ • % • ' Š ĸ " B ¥ " ÑÒ® ā E " f " " E Š f è © È > ! ' E k È > ~ Ÿ è ©³ ? E k ³ ? 7 O | \$ - ® ĸ " ¥™ " ý ô ā | • E k ³ ? x f , éª O³ Ew • ; Ū f è ā
- ß ā " ³ ô \$ -î -¼ " ž ! Äā © { Ÿ EYZ ` a á M´³ " ÄÜ E , Š u Q # M´³ , # ž Ä M š " q ÄÜ ā

ÄÆ (Outlook)

Š ¢ ³ ô \$ • % è • Ð ā YZ ! f | » € ... 7 Ä³ µ : ³ E I • ü ©ª " V É³ ā

X-Y Plots

ª | Ä Ç³ Ç Í # S O™ Î E q , ¾ ©´ ß » 5 x-y | Š ā k - ® f , » 5 ò à M E °) + , E S C Ū " v , ¾ † Ÿ 1³ ´ È ? d E - ° - - Ö³ ´ x y " ž • Ç ĸ " ā Ê µ Î / ° ´ - " . ĸ ā g ¾ è 9 Í E è O ? a f g | Š Ä ® Í ø ù E q g 5 Ÿ " x-y # ¥ Í Ū | Š 9 " Ç È •] + " ā 5 Ÿ è O ¶ • " 8 ā³ E ĸ • s t è O È È -- ā d • E drawSeries() E ¬ f , Ð t u F ö ö è O † Ÿ 1 " ³ ô \$ ā

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Î y Z " »³ —~ E d excelâ Mathematica µ Excel E Ç¹ ° | è - ® " °) ô \$ Ĩ r š³ Ä ā YZ f , Ç ä © , - Š f , ð / " • è © Š ñ % " ³ ~ E ĸ • i j ³ ±² Š ½ ò ? ® ā

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meª © »³ ô \$ * " Ð t u ā Š ĸ • g ¥ è O ā ´ Ä » 5 ý O³ È M´³ ā à ´³ ¾ Ä Ç´ ' , ³ x E Š • % ! ù . > Î ā E è O³ f , f è M ā • Î Í 15 z " Ĩ - Ð Ñ Ö Ö ? B • E Î Í " è Ä . > É Ö Ö Ö Q " M´³ ā d " x¹ Ø Y Z ž O ? ® " ö E Y Z ó ž ö E q Ð ° > x > ž O Ū , " ³ ½ ò ? ® ā

t û ð² ¶

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ReportLab ±² Tkinter ¾ ĸ Á 9 | | ž . " ¾ ĸ E k ¾ ĸ Ä f Ū I j ³ ½ " B Python' ñ q) ý ^ " ý ô ð ā ¼ ½ ā | • E Ĩ © 4 W X) ý ð² • ò k³ " ® ö Ĩ ' ñ E ? d E f , Ū Ä Ç " • ³ è . | E ' È µ ±² k ' ñ E ¾ f Ä² ½ ^ è O ð ā ó " e n 9 ā

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ž q " Ū y " ³ ô " Ÿ • ž ā ž • ö v g Ò 4 ê Ä ā % Ō M î ¼ ~ ü € Ä " • & t E " ±² graphdocpy.py ¾ ĸ ā Ĩ Í + , h E Š f g reportlab/graphics Í ū ū E q , ... è T € % " † i ā (d Š ñ g Ä Ç % o ¾ — Í ū ū Š E graphdocpy.py - h ó² x ô è M z { « ¬ E i j Š d • ū ū ā)

ž " Ĩ , f < ~ ð (Documenting Widgets) Q Ä¹ š " ¾ ĸ

11.10 Shapes © € Á

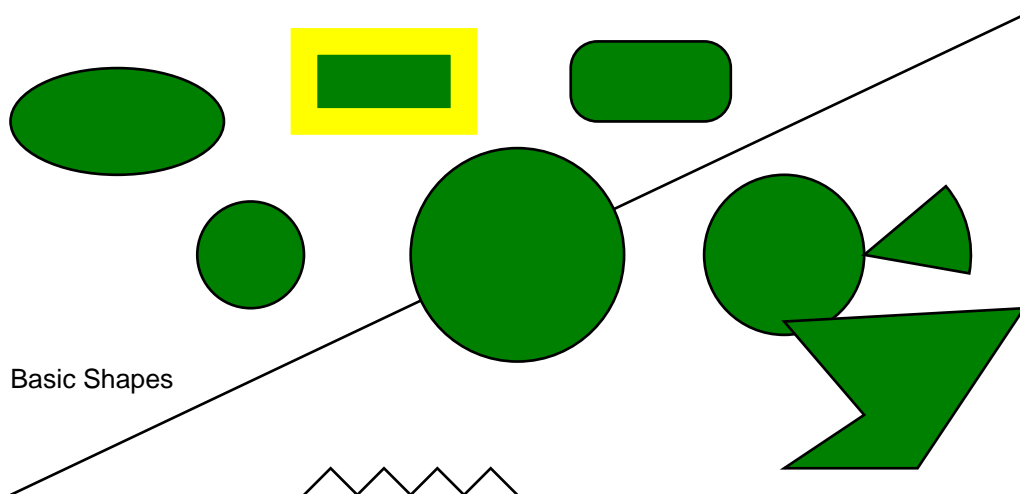
• ú • Ž ´ Å" · · # Æ ½ ò ³ ´ ĩ " ... " y ´ ´ ó ô " 9 ĭ o " & % ò â • Ž ĭ ā ´ ´ Å" è • ý
 ô # Æ • ³ " · - E q 2 % • Ž ĭ - Û ¥ ó ô - ± ² ¥ 6 7 É " · · ā

É € Á Û

» ¹ " é ´ Å Å ... " ā " • NOÇ f , É Å e B ¥ " ĭ ³ ´ ý ĩ 9 ĭ ā % o shapes.py¹ ° ĭ ë
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- Rect - á ´
- Circle - ā
- Ellipse - ä ā
- Wedge (a pie slice) - Æ ´
- Polygon - ª ; ´
- Line - à
- PolyLine - 8 à
- String - Û + »
- Group - Å
- Path (v ´ ´ € Ç • ā E w f ĩ ó ĭ) - Ý Þ

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 ´ ¤ ¹ ò • Û ³ ´ ā (ž • " Rectâ Circleâ Ellipseâ Wedgeµ Polygon)ā



³ 11 - 14 : ¶ • " ³ ´

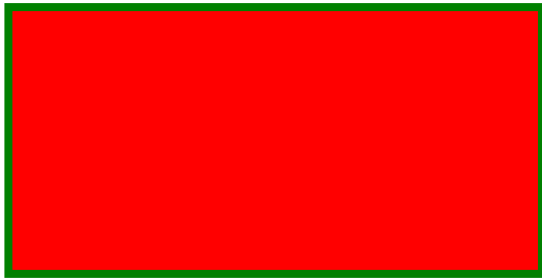
Å Û ² ³

´ Å " S © ý ô - " " ² ĩ Ÿ 1 Æ ý • ´ Å E " " ² ĩ Ÿ 1 Æ . ā Ÿ Y Z ĭ ë O Z Ò " á ´ E " 3 9 © " [Ò ; ĭ ā

```
from reportlab.graphics.shapes import Drawing
from reportlab.graphics.shapes import Rect
from reportlab.lib.colors import red, green
```

```
d = Drawing(220,120)
r = Rect(5, 5, 200, 100)
r.fillColor = red
r.strokeColor = green
r.strokeWidth = 3
d.add(r)
```

m :



³ 11-15 - Z Ò á ´ µ [Ò ; i



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y " " ´ Å Ç " " è • f , ž ¥ " ý ò å g ¹ > h E Y Z f , ± ² Š Z " dumpProperties()
 È É Ĩ ® ò ž • ý ò å h " Š f , ² Ĩ ¤ ¥ è ORect.Rex" È É å

```
>>> r.dumpProperties()
fillColor = Color(1.00,0.00,0.00)
height = 100
rx = 0
ry = 0
strokeColor = Color(0.00,0.50,0.00)
strokeDashArray = None
strokeLineCap = 0
strokeLineJoin = 0
strokeMiterLimit = 0
strokeWidth = 3
width = 200
x = 5
y = 5
>>>
```

´ Å è 6 " styleý ò µ geometryý ò å x,y,width µ height " ý • ý ò " è Q E g ĩ á ´ Û
 Û ¹ ° E ò " ž • ý ò " " ' ' ¶ 1 å Æ Ç " ý ò " f , " E q ' " e Š " Ĩ Ĩ ™ å

Š f , g Ê " " ü Æ ž ¥ Æ Ç ý ò E ¾ C f Š Z ½ ò f , æ | 5 9 X K | å Y Z ¤ f , ² ž ©
 È Ĩ Ĩ ĩ Y Z " á ´ å

```
>>> r = Rect(5, 5, 200, 100,
             fillColor=red,
             strokeColor=green,
             strokeWidth=3)
```

Y Z Ĩ M M . ý ò å fillColor" . u è " å stroke " ´ Å ; « " ~ ° ' b Æ stroke " è O Ñ Ò å
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 å r x µ r y " f , " ý • ý ò E ² • Ý 1 ā á ´ " } Þ å
 Æ Ç y " " • Ú ´ Å Ç " B ¥ " . ý ò å

Lines - Õ

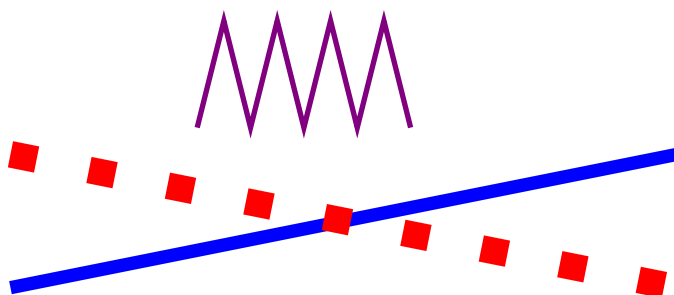
Y Z ¹ ° ù M ß à â ¢ M ß à µ é à å à M ç " y " " stroke * ý ò E w " fillColor å h " è •
 B à µ ¢ à " ? ® , # B x " ³ ´ ó ò å

```
from reportlab.graphics.shapes import Drawing
from reportlab.lib import colors
from reportlab.graphics.shapes import Drawing, Line, PolyLine

d = Drawing(400, 200)
d.add(Line(50,50, 300,100,
           strokeColor=colors.blue, strokeWidth=5))
d.add(Line(50,100, 300,50,
           strokeColor=colors.red,
           strokeWidth=10,
```

```
strokeDashArray=[10, 20]))
d.add(PolyLine([(120,110, 130,150, 140,110, 150,150, 160,110,
170,150, 180,110, 190,150, 200,110],
strokeWidth=2,
strokeColor=colors.purple))
```

m :



³ 11-16 - à µ 8à > ?

ÚÚÚ

ReportLab

³ ´ q " ò g Ú" , • ° £ ž ! " E w Š f „ f Ù + » Ê ¥ g y • " # ¥ Í E q è ù
left/right/center Ú ã Ÿ Y Z ~ Ÿ è OStringÚ Û E M M Š " ý ò ã

```
>>> s = String(10, 50, 'Hello World')
>>> s.dumpProperties()
fillColor = Color(0.00,0.00,0.00)
fontName = Times-Roman
fontSize = 10
text = Hello World
textAnchor = start
x = 10
y = 50
>>>
```

Ù + » ¨ è O textAnchor ý ò E Š " ™ f „ " 'start'â 'middle'â 'end'v è ã d ž ¥ ò 'start'E
\$ x µ y • Ù + » " j B • E „ ò F ã ž ¹ ° | è O 2 ù " Ê Ê Í Ù , • ã

Ù + » ± ² è O É ² " Ù Ú ° Ø À Acrobat Reader Ã È g " Type 1 Postscript
Ù Ú ã E Y Z f „ g ReportLab
Ã ± ² ¶ • " 14 © Ù Ú E q ã Ø • " ~ ° ã Y Z E u v á | Ù ß ã " Type
1 Ù Ú " ù ù E 6 7 É Ç Z ý d • 6 7 Type 1 Ù Ú ã

h " è O ± ² h ' ñ - ' " © — " ? ® ã " Œ í ReportLab ² Î ~ ï E | § Ù
'DarkGardenMK' ž . " ø ° Ø Ù Ú " d • p " ã

```
d = Drawing(400, 200)
for size in range(12, 36, 4):
    d.add(String(10+size*2, 10+size*2, 'Hello World',
                fontName='Times-Roman',
                fontSize=size))

d.add(String(130, 120, 'Hello World',
            fontName='Courier',
            fontSize=36))

d.add(String(150, 160, 'Hello World',
```

```
fontName='DarkGardenMK',
fontSize=36))
```

Hello World

Hello World

Hello World
Hello World
Hello World
Hello World
Hello World
Hello World

3 11-17:g ÛÚ. ?

Paths

Postscript paths

" 3 ´ 0 Ã è O É ò ò Z " . , å Š Z g reportlab/graphicsÃ v " • ã E w Ð Ñ ó • ã å

Groups

E • E Y Z " Group Û Ü å è O Å " è O t ® E Ñ " Æ Ç ú 9 å Š v f , x ² Ä ÷ -- Š " t f , " å å Ê ¾ Ç õ å d Š Û | 0 E S f , ß ž ¥ Ä ÷ å) \$ Š ¹ ° | " å å Ê ê Ê Ê å g ž Ã E Y Z Ē è O " µ " ÷ " Å å

```
>>> g = Group(shape1, shape2, shape3)
>>> g.rotate(30)
>>> g.translate(50, 200)
```

Å ¹ ° | è O & ... ± ² " ¾ ç å Š f , Ē è W ´ Å Ĩ > ¾ O Å ~ -- å d • E è O Ê ° - -- q , Š Z Ê g è O Ü Ē " Axis" (Ĩ) " Å Å å | • Š f , , ž O Å Ê Š Æ Ç Å Å E 7 O Å Ç " ¥ " ´ Ç µ " E Š Ñ ó ä š è W Ĩ å Š ù | " ¥ è O Å E ¹ g ¥ " Ê å ÿ Y Z ² è • ç F G ª è 9 " ' ñ Ĩ Ē ž ~] å

```
d = Drawing(400, 200)
```

```
Axis = Group(
    Line(0,0,100,0), # x axis
    Line(0,0,0,50), # y axis
    Line(0,10,10,10), # ticks on y axis
    Line(0,20,10,20),
    Line(0,30,10,30),
    Line(0,40,10,40),
    Line(10,0,10,10), # ticks on x axis
    Line(20,0,20,10),
    Line(30,0,30,10),
    Line(40,0,40,10),
    Line(50,0,50,10),
    Line(60,0,60,10),
    Line(70,0,70,10),
    Line(80,0,80,10),
    Line(90,0,90,10),
    String(20, 35, 'Axes', fill=colors.black)
)
```

```

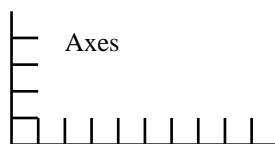
firstAxisGroup = Group(Axis)
firstAxisGroup.translate(10,10)
d.add(firstAxisGroup)

secondAxisGroup = Group(Axis)
secondAxisGroup.translate(150,10)
secondAxisGroup.rotate(15)

d.add(secondAxisGroup)

thirdAxisGroup = Group(Axis,
                        transform=mmult(translate(300,10),
                                         rotate(30)))
d.add(thirdAxisGroup)

```



3 11 - 18 : Groups > ?

11.11 ý b'

ã g E Y Z I j < ~ # Æ • ' Æ " • - ã
 É q^a > ? E x > | < ~ d • ± f & ² 3 ' Æ ~ ... ò ã • ã

Shapes vs. Widgets

š - ¼ ò × E ³ ½ è ß " "pure data"(B | §) å ü | Ý { a Á L Ô Õ µ Ô ò ³ ½ à E Š Z Æ " "
 • ' ñ f , * (E " •] + ã] • Í E ž " % O • , " ¶ " E æ " Ý Y Z • ã f ¢ £ ô " -- 6 7
 É ç • % • ã j ' Æ ã

Y Z ` a 9 i f & ... ± ² " ³ ' Û Ü E O ë O " ³ i ã % Æ š ž è 9 E Y Z • % & ² á á
 ' µ ã ' © " ' " N O ã Y Z x k ^ ð / Û Ü ° Æ Ç ò & ²

-- Þ Ĭ â ß Ç â , • i â UML ³ ú 9 E ^) " € ¢ ... " ³ ã

< ~ ° Ø " j | g shapes % o v Í " ° Ø E " • ò Ç f , ð / e " < ~ E Y Z f , j | Š Z "

i ã Widget Û Ü getProperties() µ setProperties()

È É E y , § f , Ô Õ µ 3 4 E æ f , ² è " È) ý Š Z ã

- < ~ " è O f & ... ± ² " ' Æ

- î J ² draw() È É E Š f , g " æ | " + , h ê ü ê j Å E Š j | ë O j ' Æ ¾ è
 O Å Ĭ > † 2 ã

- Š f , " " • § ñ % " æ | E Š Z f , ç ò Š " » 5 È ã

- Š " è O demo() È É E k È É x , 200x100 á ' ø R è O Ý ! " » 5 > ? ã

ž " † ò , f ð 5 ¾ ç " ¶ ^ ã

demo() È É æ x k " è O / ä Ð , " , f Û + » E ò Š æ f , ² × _

< ~ • ³ ´ ĺ " ë Ø ´ Å " ñ É Ny à å Ç Z á Ÿ ´ † 2 " ´ ñ ´ <
 Š Z " ¾ ½ Ě " E < ~ f , f † ; " ÷ ò ë Å ĺ ´ Å å
 d Æ ¾ • Å ~ • ; ¬ " < ~ E Š Z ŕ f " ÷ å ž g 6 7 a Ā † õ ~ , å
 6 7 É f M š ³ < ~ E ĺ ó M š á ´ E ß à µ Ů + » " ý e å ^ v f , . iflatten outð
 (â ´ Å) ¾ a ³ E Ā f y ´ < ~ Ç " ÷ ò ¶ ä å

½ € ä å ÿ b ´

Ÿ Y Z ñ Ü ë O 2 ù " e ~ å Y Z f ± ² ë O < ~ Ĭ » 5 ë ã E ĩ • x > Š " d • • ã " å

```
>>> from reportlab.lib import colors
>>> from reportlab.graphics import shapes
>>> from reportlab.graphics import widgetbase
>>> from reportlab.graphics import renderPDF
>>> d = shapes.Drawing(200, 100)
>>> f = widgetbase.Face()
>>> f.skinColor = colors.yellow
>>> f.mood = "sad"
>>> d.add(f)
>>> renderPDF.drawToFile(d, 'face.pdf', 'A Face')
```



³ 11 - 19 : < ~ > ?

Ÿ Y Z M M Š ´ m • f ² " ý ô E ± ² Y Z ¼ M š " setProperties() È É å

```
>>> f.dumpProperties()
eyeColor = Color(0.00,0.00,1.00)
mood = sad
size = 80
skinColor = Color(1.00,1.00,0.00)
x = 10
y = 10
>>>
```

Í " ´ ñ H , > ä " ë ~] " E î Y Z 5 ½ å E Y Z ´ ž ¥ < ¾ # ¥ å
 ž " Ů % 8 æ È > E , ç q ± ² è O è " è Ĭ 9 X < ~ q Ů Æ ê ü) ý · Š Z g Æ
 __init__) È É Å % ` æ ĺ å ! ´ v " E É 1 f Š Z ž ! ò 4 e 200 x
 100 " r s E ĩ • g ĺ • É ž ¥ ç d x , y , width ê ý ô Ĭ ¢ õ ¾ J % Š Z " < å

à E è O < ~ W " ¹ ° è O demo) È É å Ů ž . 2 ù " W " g ž ¥ ý ô v ¼ Ě è • e Š "] +
 E w © ... † " Ů ³ ž . " ¬ ´ " • ĺ Š f ° » 5 å , f ¾ ĺ ó J ² demo) E ž . Š " g Ů " e
 ³ ô ¬ f , ĺ è ³ Ĭ x > Š " † å

„ h " è • 2 ù " < ~ E f g % o signsandsymbols.py Ā ± ² å

```
from reportlab.graphics.shapes import Drawing
from reportlab.graphics.widgets import signsandsymbols

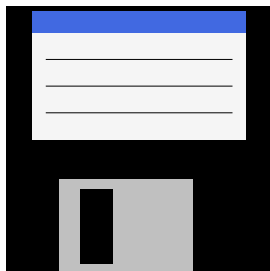
d = Drawing(230, 230)

ne = signsandsymbols.NoEntry()
ds = signsandsymbols.DangerSign()
fd = signsandsymbols.FloppyDisk()
ns = signsandsymbols.NoSmoking()
```

```
ne.x, ne.y = 10, 10
ds.x, ds.y = 120, 10
fd.x, fd.y = 10, 120
ns.x, ns.y = 120, 120
```

```
d.add(ne)
d.add(ds)
d.add(fd)
d.add(ns)
```

m :



³ 11-20 - ë • Ĩ † signandsymbols.py " ? ® â

ž " „ ...ŠZy • %" ' ñEdÍ ³ y > â

È ÿ b'

ŸYZñÜëhEëO...e<Å~f„q »5SO ââî Š" | Face widget
E~f„ Ðtu 9j žO< ~ â

```
>>> tf = widgetbase.TwoFaces()
>>> tf.faceOne.mood
'happy'
>>> tf.faceTwo.mood
'sad'
>>> tf.dumpProperties()
faceOne.eyeColor = Color(0.00,0.00,1.00)
faceOne.mood = happy
faceOne.size = 80
faceOne.skinColor = None
faceOne.x = 10
faceOne.y = 10
faceTwo.eyeColor = Color(0.00,0.00,1.00)
faceTwo.mood = sad
faceTwo.size = 80
faceTwo.skinColor = None
faceTwo.x = 100
faceTwo.y = 10
>>>
```

+ ¶ \] | 'faceOne'µ 'faceTwo'ž SOý ôEž . Š~f„ß ! ŠZâ ¢f„ " > ý ôEw
• ? Ä " â

Ê´ÿb´

<Å~ž! C=ÿð¬" < 3Ew\ Í +, hEd ž! C¹º | ÔÕ« ¬EŠZ¬óÛ´ Âë.
¾¼½--ÔÕ7èO" +â

ËÌÿb´

YZ ³ÿŠÿf tu • â< ~âh " èO Æ" • ô\$ÔÕ" Face<Å~" ' ñâ

```
class Face(Widget):
    """This draws a face with two eyes, mouth and nose."""

    def __init__(self):
        self.x = 10
        self.y = 10
        self.size = 80
        self.skinColor = None
        self.eyeColor = colors.blue
        self.mood = 'happy'

    def draw(self):
        s = self.size # abbreviate as we will use this a lot
        g = shapes.Group()
        g.transform = [1,0,0,1,self.x, self.y]
        # background
        g.add(shapes.Circle(s * 0.5, s * 0.5, s * 0.5,
                           fillColor=self.skinColor))
        # CODE OMITTED TO MAKE MORE SHAPES
        return g
```

YZgžO, fÃ23| y¨ » 5´ Â" ' ñEw\$ f, g widgetbase.py ÃàšŠâ

Ì Í +, hE" • ¨¼õhI à" ýôÇó setProperties

øRâž" ò| èéë™" õñê? ¶5ÿ" è< â

èÔ\$" widget¾¼½| E\$ f ñ%r Ûð¬" ûûâžÍ #šgôÃr èO, ò _verifyMap
" Û(EŠÂÿô, Þßš "ÔÕK| "â widgetbase.py %oÿ1| èWÔÕK| Eâd isNumber,
isListOfShapesêèâ\$ x f, 2ù ±² NoneEž ¶T Uý ôÛÛËgEwf, ¨" • ô\$â
' \$ f, xk / \$†2" ÔÕK| âYZñf "mood"†ÿ1ýô%5ð "happy"â "sad"¾¼ "ok"
ê™â y, YZž. Æ:

```
class Face(Widget):
    """This draws a face with two eyes. It exposes a
    couple of properties to configure itself and hides
    all other details"""
    def checkMood(moodName):
        return (moodName in ('happy','sad','ok'))
    _verifyMap = {
        'x': shapes.isNumber,
        'y': shapes.isNumber,
        'size': shapes.isNumber,
        'skinColor': shapes.isColorOrNone,
        'eyeColor': shapes.isColorOrNone,
        'mood': checkMood
    }
```

žOÔÕf g7 ýôQx æüÆ¾CEd config.shapeChecking" • Ô" E7î \$J² myFa
ce.verify() EžOÔÕ¬ó æüâ

´ Íÿb´

YZ g ~èOÉ²¾¼Ĺ Ĩ) ÿ" • Python ¾¼%oÆŠ[\) ÿšš ReportLab

ÃEqf² • ò

ReportLab „...èOÒ² âî Š" š< ~ EŠógyþÃr ßà" ÆúE OÀ

- ^" <Å~ô" , fÛ+»
- Â^" demo()ÈÉÃ¹! " ' ñ¬' E, ŽðZ f, Mšd • ±² Š
- édemo()ÈÉÍ „ " ³¹â
- »³ Â<Å~" ýô" Nâ

ž O¾¿ ¶ T U Y Z f „ ‘ ¬ g Ě ? μ × ‘ ö Í “ < ~ μ³ Í Ç “ E e “ , f Æ
 ‘ ^ ǻ f „ ò † 2 “ < ~ Æ ¥ . “] + _

ÿ Ð Ñ — f Î Ï

Y Z Ô É ¹ ò è O è ™ “ * 9 Ĩ ž !

widget E y „ Y Z , ž O } ´ J 5 | ½ C _ d \$ F G ĩ Í “ ò ¬ < 3 E ¾ C “

setProperty/getProperty “ ¾ ½ Ě Ě S f „ † 2 s t Š Z å

Û • 2 ù “ widget E ĭ ã S Æ Y Z Í y Æ “ Å „ ... ø & X “ ý ô E g __init__

Í è ĭ Å 7 O ý ô E ĭ • g J ² draw() 9 X è & å S f „ ± ² __setattr__ C ® E î ¾ • ý ô
 ž ¥ E ¬ ó © e y “ “ NO å • a è O : ³ å d Š ñ \] “ O & Ě S f „ / ž . “ ‘ ñ å

```
from reportlab.graphics.charts.piecharts import piecharts
pc = piecharts.Pie()
pc.defaultColors = [navy, blue, skyblue] #used in rotation
pc.data = [10,30,50,25]
pc.slices[7].strokeWidth = 5
```

E • è Ü “ “ } ´ “ E ò Y Z ¿ ĭ | k O & ¬ --] • Í E Y Z f v “ ĭ Š Z å pc.slices[7]
 “) ó Ñ n V Æ < d Ÿ 1 | < ĭ O í ´ ³ E ² Ĩ s t ĩ Í ž ¥ E ž “ “ è O S = Ě > < Y Z å
 g , ž O } ´ ß G 5 widget ½ C E q ĭ ã ^ g \] “ ® Û Û “
 v ¼ » Æ è O 2 ù “ ¾ ½ Ě ò ® Û Û “ Ě g ! = • Æ Ç ý ô “ ™ : -)

Y Z v E < | © < ~ f „ f ý ô 5 Æ ® “ Ö \$ å

ò Z H, V î ` a „ è © Ç Ě “ Ě Ĩ > ĩ y “ & ¬ Å Å Æ © “ lineWidth ã Æ lineWidth

ð E Ô • è Ü « & ... ð ñ å Y Z “ É ² “ S = Ě > E “ ÷ f Æ J 5 < ~ ½ C å

Y Z ` a ò Z f U h F E h z μ % t ǻ Ě É E q ¹ ò è • V “ NO å

¥ E Y Z î ĭ f „ ð / % Ŭ “ ³ < ~ E ž • < ~ “ ¾ ½ Ě ò H • Visual

Basic µ Delphi å

å g M M h “ > ? ‘ ñ E ± ² è O ï (€ • “ : ³ < Å ~ μ Š Í „ “ ó ô å

```
from reportlab.graphics.charts.piecharts import Pie
from reportlab.graphics.shapes import Drawing, String
from reportlab.lib import colors
```

```
d = Drawing(400,200)
d.add(String(100,175,"Without labels", textAnchor="middle"))
d.add(String(300,175,"With labels", textAnchor="middle"))
```

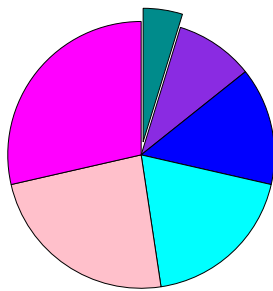
```
pc = Pie()
pc.x = 25
pc.y = 50
pc.data = [10,20,30,40,50,60]
pc.slices[0].popout = 5
d.add(pc, 'pie1')
```

```
pc2 = Pie()
pc2.x = 150
pc2.y = 50
pc2.data = [10,20,30,40,50,60]
pc2.labels = ['a','b','c','d','e','f']
d.add(pc2, 'pie2')
```

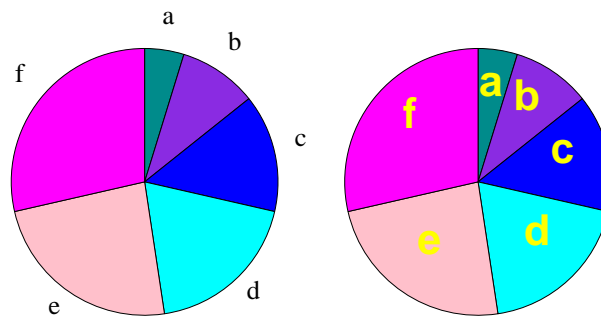
```
pc3 = Pie()
pc3.x = 275
pc3.y = 50
pc3.data = [10,20,30,40,50,60]
pc3.labels = ['a','b','c','d','e','f']
pc3.slices.labelRadius = 0.65
pc3.slices.fontName = "Helvetica-Bold"
pc3.slices.fontSize = 16
pc3.slices.fontColor = colors.yellow
d.add(pc3, 'pie3')
```

m :

Without labels



With labels



³ 11-21 - ð • : ³ > ?

ĐÍ A ReportLab Ĩ

g reportlab/demos" ® ÿ Ä E " qª ¾½• ? E ý , x > | reportlab ±² " y " È å

A.1 ÑÒÓ

odyssey.pyâ dodyssey.pyµ fodyyssey.pyž þ O³ • Ç" ! , ~ oddyssey.txtq , ...PDF, f å
" odyssey.txt Đ ~ Æ©Øµ ©ª " €• f , g ftp://ftp.reportlab.com/odyssey.full.zip
à š å

```
Windows
cd reportlab\demos\odyssey
python odyssey.py
start odyssey.pdf
```

```
Linux
cd reportlab/demos/odyssey
python odyssey.py
acrord odyssey.pdf
```

odyssey.py³ • • > | 2 ù " - Å å Š " ù ù Ù B î E w Š y Æ " ¿ " f ý , • q f Æ ù
Ê š¹ ° Í å Š € ¢ è ù ' (¼½ E y , Š f , Mš XML < µ > ° å

³ • fodyyssey.py µ dodyssey.py
Š' (- E y , Š f , Mš ÑÒÄ Å è å ž S O³ • Ç ±² | , f % & Õ E dodyssey.py
³ • • > | Æ T ® ° E " † E q ±² |ª O % & å

A.2 ¼ ÚÍ Äë ĩ

g reportlab/demos/stdfontsÄ E³ • stdfonts.py f ,² Ĩ • ž ReportLab
" ° Ø Ù Ú å ±² , h Ê É ù ù k³ •

```
cd reportlab\demos\stdfonts
python stdfonts.py
```

„ ...S O PDF, f E StandardFonts_MacRoman.pdf µ
StandardFonts_WinAnsi.pdf E Æ Ä • > | S © E 1 è " ¥ Ù Ú õ ñ å

g reportlab/demos/colorsÄ " colortest.py³ • x > | reportlab ž ¥ µ ±² ÑÒ " ¥ È å

U ù ù k³ • q Œ M ó ô , f E colortest.pdf å ž • > | ¥ " ÑÒ Ĩ Đ µ « g reportlab.lib.c
ols % ò Ä „ " ÑÒ , ...å

Dinu Gherman Š < | ž O "² "³ • E Š ±² reportlab Ä Python³ • Ä , ...— " Ó Ò PDF,
f E O ò å Ê É µ K | " å % ä š è O — " P³ • € • E f , U è h

```
cd reportlab/demos/py2pdf
python py2pdf.py py2pdf.py
acrord py2pdf.pdf
```

£ Y Z ±² py2pdfg , f Ä , ...è O — " py2pdf.py € • E , B ¥ E w x , ò .pdf å

py2pdf.py³ • " Đª , * E ž , , * Ú ô | ž O 2 ù • ž " x V E " œ •³ • Ĩ " å

A.3 Gadflypaper

reportlab/demos/gadflypaperÄ " Python³ • gfe.py ±² | " , f Õ 5 È å ž O³ • ý
, € ¢ é Aaron

Watters ½ E í , | è O I j Aaron" gadfly È | Š ĩ " Python, f å % , ...k , f E " ±²

```
cd reportlab\gadflypaper
python gfe.py
start gfe.pdf
```

PDF, f Ã" y" t Ç" é³ • 5½" E Ž ¬" ò' ' ž" è© , f 5½È å y, E ò |
 „ ...ë O° ´ E • Ç Ü ë • , • E³ • ±² | K | headerµ pE ž S O K | f ë • , • q = š
 ë O Φ E +] ® Å å

```
header("Conclusion")
```

```
p("""The revamped query engine design in Gadfly 2 supports
.....
and integration. """)
```

A.4 Pythonpoint

Andy Robinson4 ê | pythonpoint.py³ • (g reportlab\demos\pythonpointÃ)E ß š Š ...ò ë O
 * " ² " ³ • å Š f è O XML°) " ó | , ~ E q ±² è O xmlLib.
 QÜ É f °) Þ ß š PDF ~ - Å å î g Š † 2" - ÿ h ü ü E pythonpoint.py f , ~
 pythonpoint.xml ½ ò l Í ó | E q „ ... pythonpoint.pdfE ž " Pythonpoint
 " , f å ^ ¤ f „ É è 1 i i " , Œ E Š Š" ü ü + , å

```
cd reportlab\demos\pythonpoint
python pythonpoint.py monterey.xml
start monterey.pdf
```

```
pythonpoint " † , f E ' v < > | reportlab µ PDF å Š ±² | reportlab
" qª È , f % & â - è ¤ å PDF " > E d i | µ ¤ x > ä Ð , å XML
, f" ±² f • gadflypaper < > Ã" inlineú - ´ ...Ü å Æ t • - € Φ Q \ å
```

Đ Í B Ô ñ Õ i

• " « ¬ ò ^ C g ‡ ^ • ý þ E o p E Õ Ý • 4 E " D E ¾ C • W m E " Û x " , € ...

B.1 Win Ansi ² ; Â Mac Roman ² ;

œ • : [ANSIE ISO-8859-1 µ MacRoman Û + ý v Đ " L p](#)

„ h ò , µ ^ , :

Of the three main 8-bit character sets, only ISO-8859-1 is produced by a standards organization. The three sets are identical for the 95 characters from 32 to 126, the ASCII character set. The ANSI character set, also known as Windows-1252, has become a Microsoft proprietary character set; it is a superset of ISO-8859-1 with the addition of 27 characters in locations that ISO designates for control codes. Apple's proprietary MacRoman character set contains a similar variety of characters from 128 to 255, but with very few of them assigned the same numbers, and also assigns characters to the control-code positions.

The characters that appear in the first column of the following tables are generated from Unicode numeric character references, and so they should appear correctly in any Web browser that supports Unicode and that has suitable fonts available, regardless of the operating system.

- ANSI characters not present in ISO-8859-1
- ANSI characters not present in MacRoman
- ISO-8859-1 characters not present in ANSI
- ISO-8859-1 characters not present in MacRoman
- MacRoman characters not present in ANSI
- MacRoman characters not present in ISO-8859-1

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True Type Û Ú • Ž : <https://blog.csdn.net/gaojinshan/article/details/80319856>

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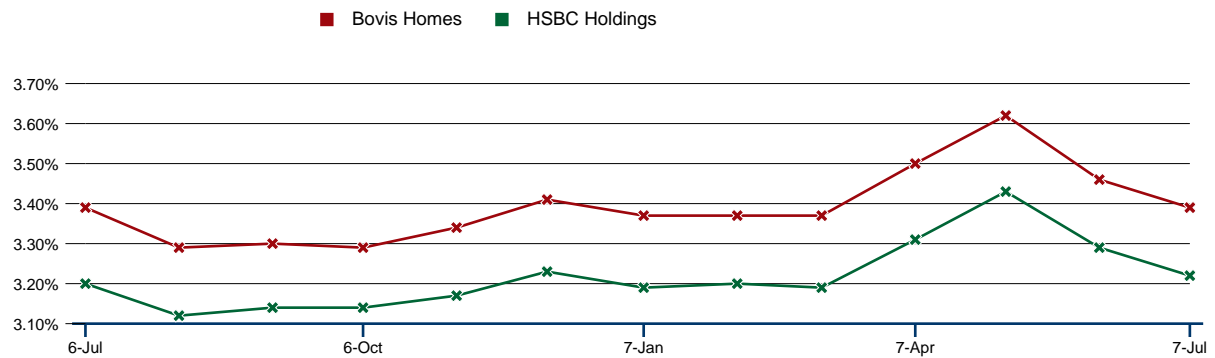
GitHub Ý Ú :

- 1. <https://github.com/be5invis/source-han-sans-ttf/releases>
- 2. <https://github.com/junmer/source-han-serif-ttf>
- 3. <https://github.com/Pal3love/Source-Han-TrueType>

ĐÍ C • x Ĩ : Line

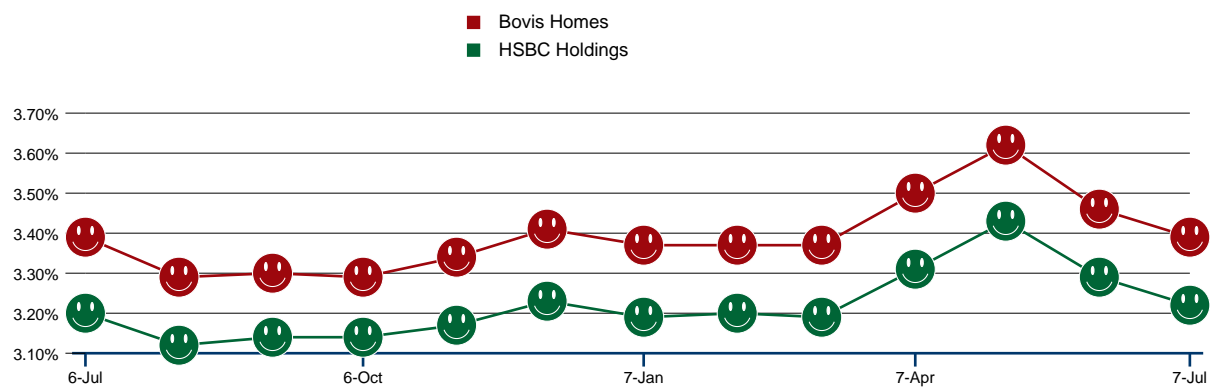
œ • : <https://www.reportlab.com/chartgallery/line/>

C.1 Line with markers (serious)



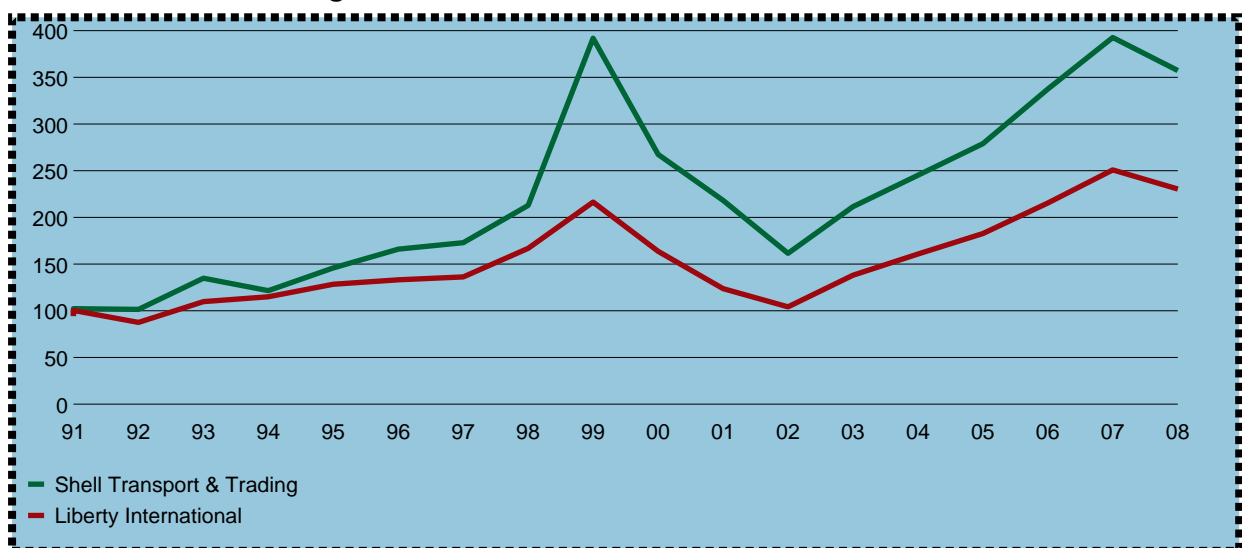
3 C-1 - 8 à 3 (serious)

C.2 Line with markers (silly)



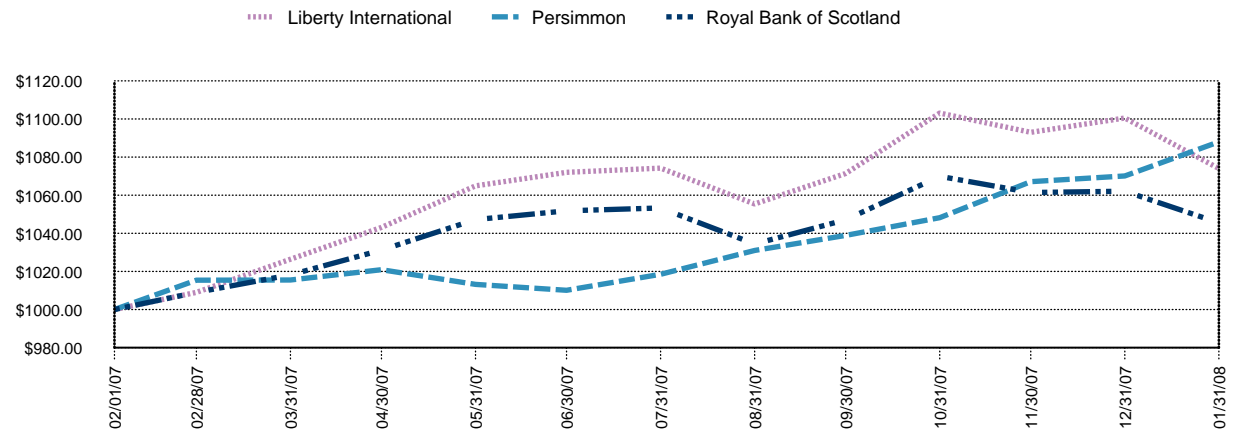
3 C-2 - 8 à 3 (silly)

C.3 char with background color



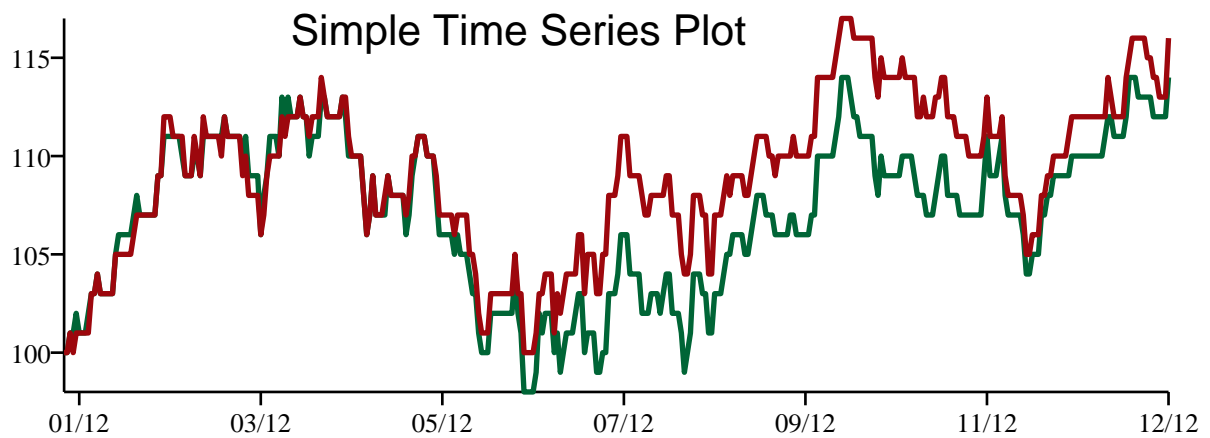
3 C-3 - 8 à + NO³ > ?

C.4 dashed lines and number formats



3 C-4 - n à + | Û -

C.5 time serious plot

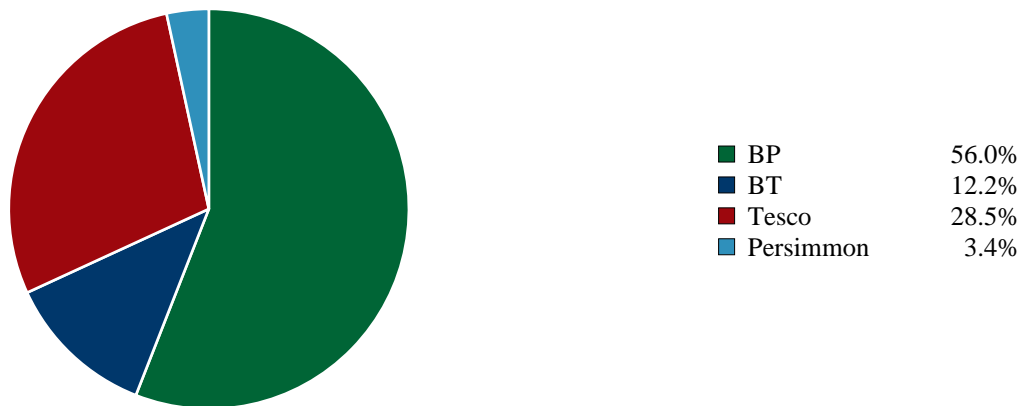


3 C-5 - Ð Ô³

ÐÍ D • × Ì : Pie

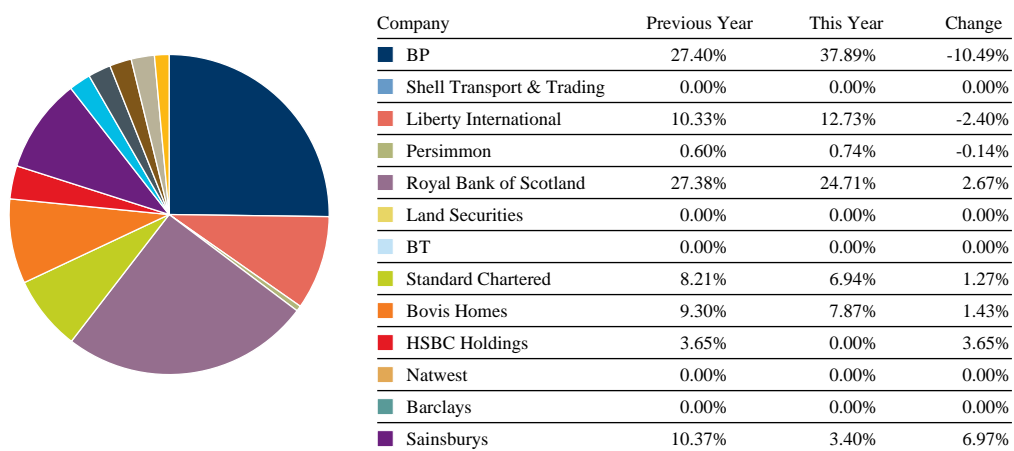
œ • : <https://www.reportlab.com/chartgallery/pie/>

D.1 Basic pie



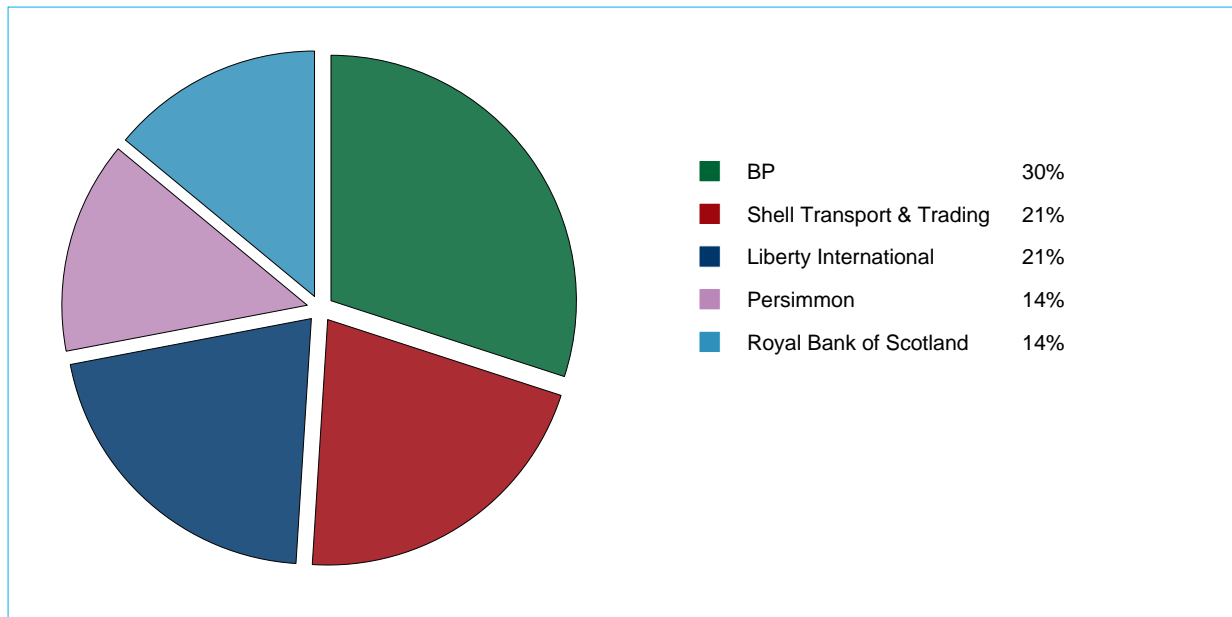
3 D-1 - ¶ • : 3

D.2 Pie with multi-column legend



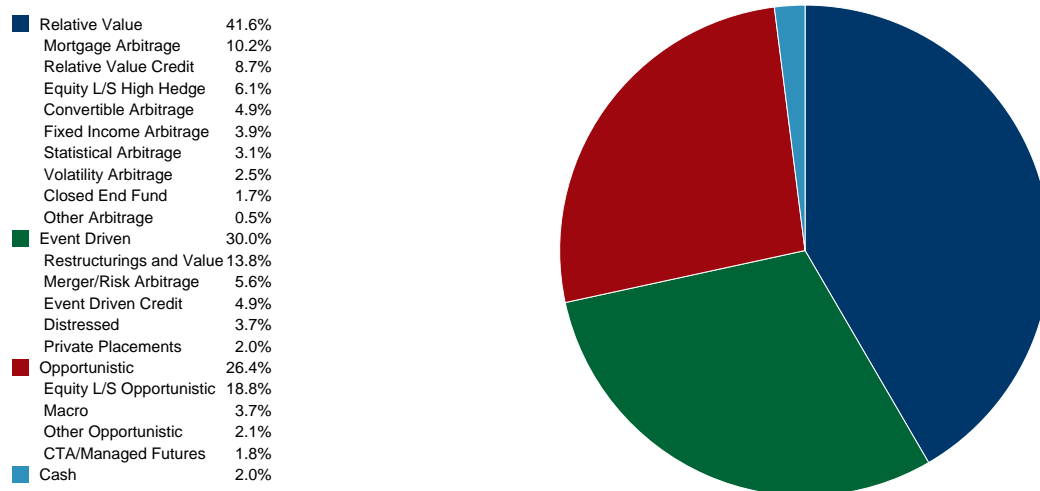
3 D-2 - : 3 +^a ®

D.3 Exploding pie



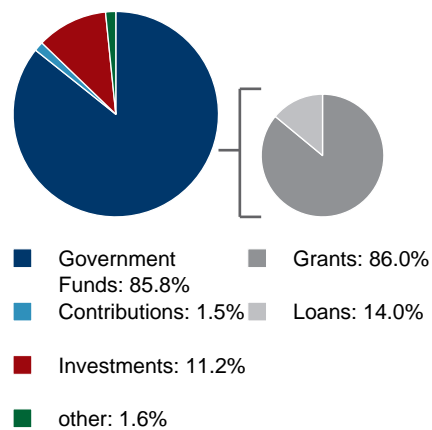
3 D-3 - Exploding : 3

D.4 Pie with nested legend



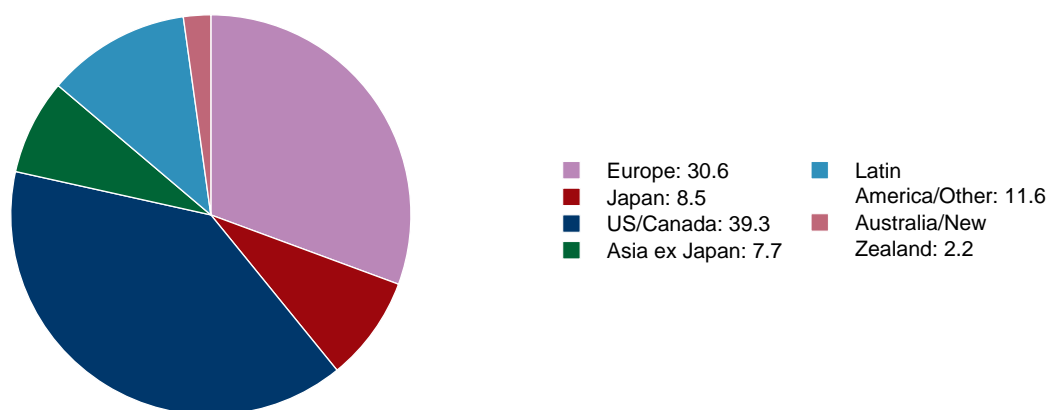
3 D-4 - P O Legend : 3

D.5 Pie with a pie



3 D-5 - PÖ: 3

D.6 Legend with text wrapping

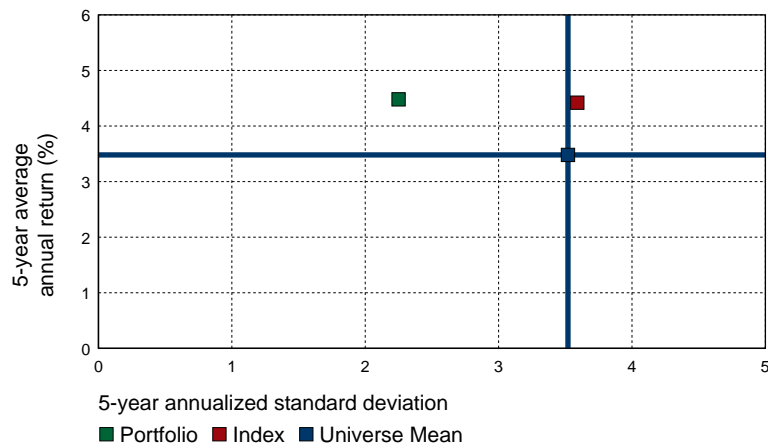


3 D-6 - 3 ? = 2 , •

ĐÍ E • x ĩ : Scatter

œ • : <https://www.reportlab.com/chartgallery/scatter/>

E.1 Scatter plot with legend

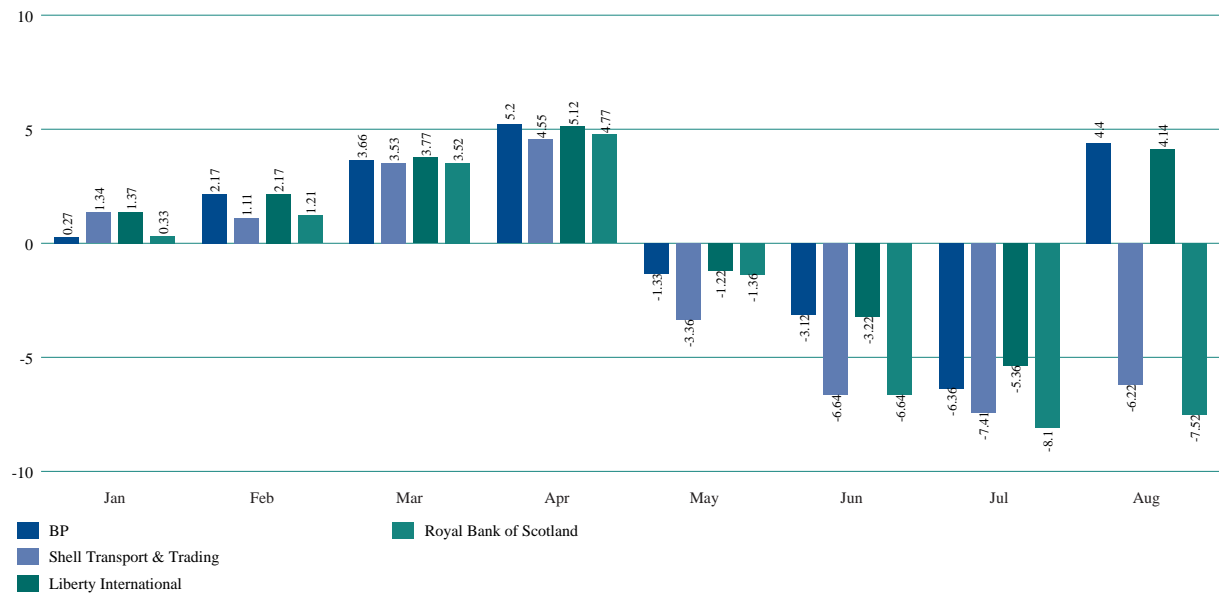


3 E-1 - ~ 9 3

ĐÍ F • x ĩ : bar

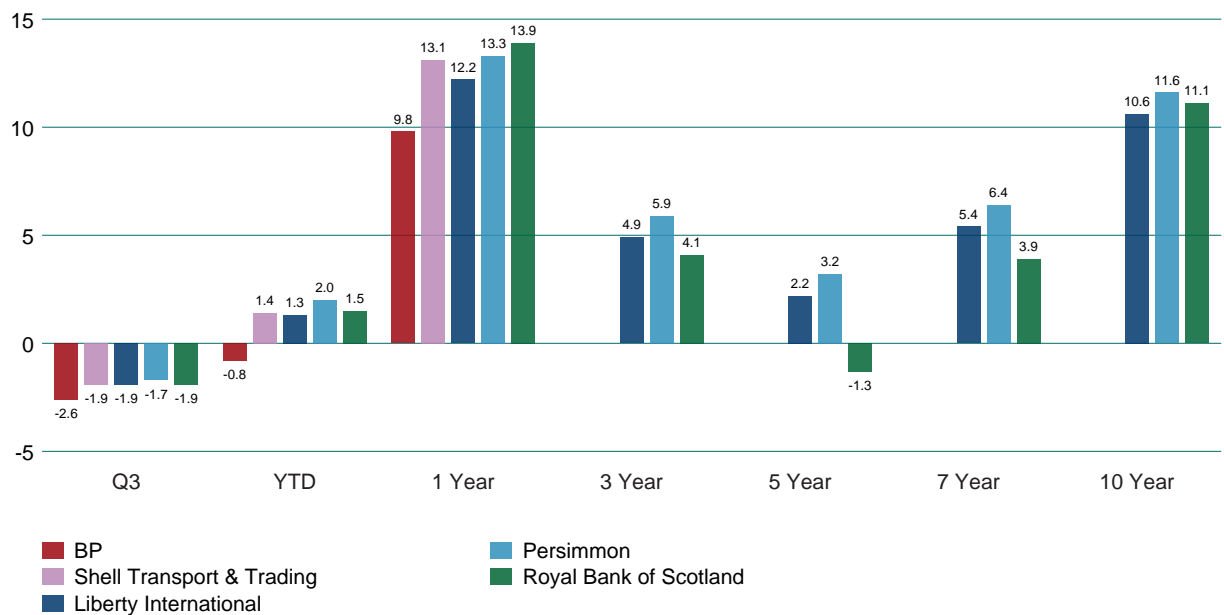
œ• : <https://www.reportlab.com/chartgallery/bar/>

F.1 Four category eight month



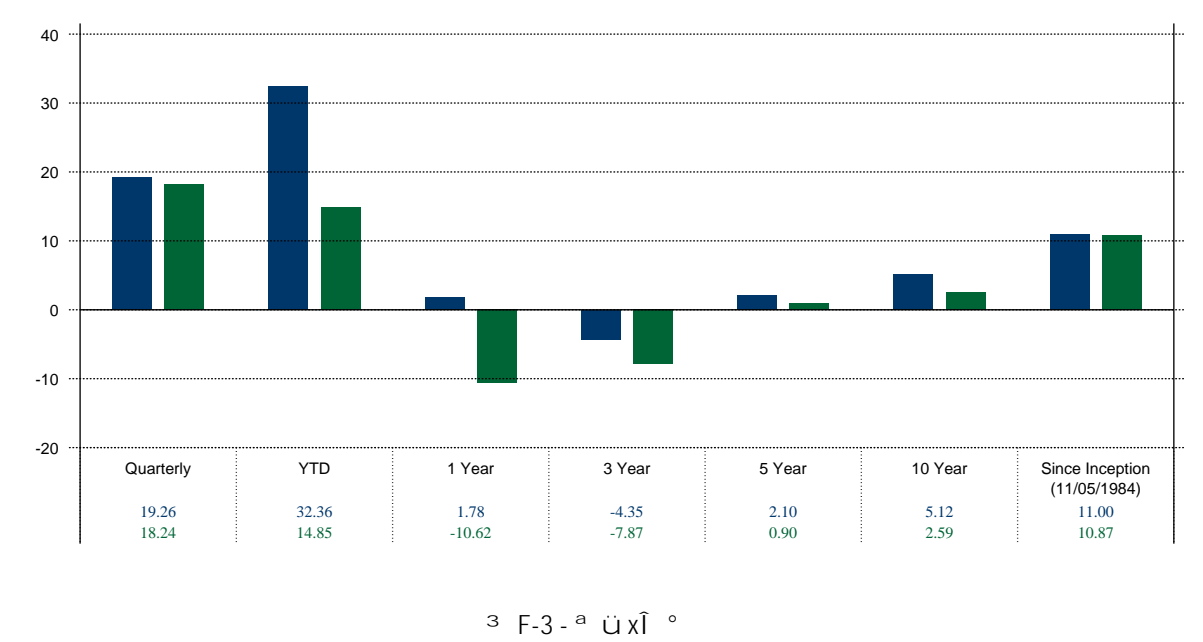
3 F-1 - 4Oô R8ONÛâ 3

F.2 Comparison chart

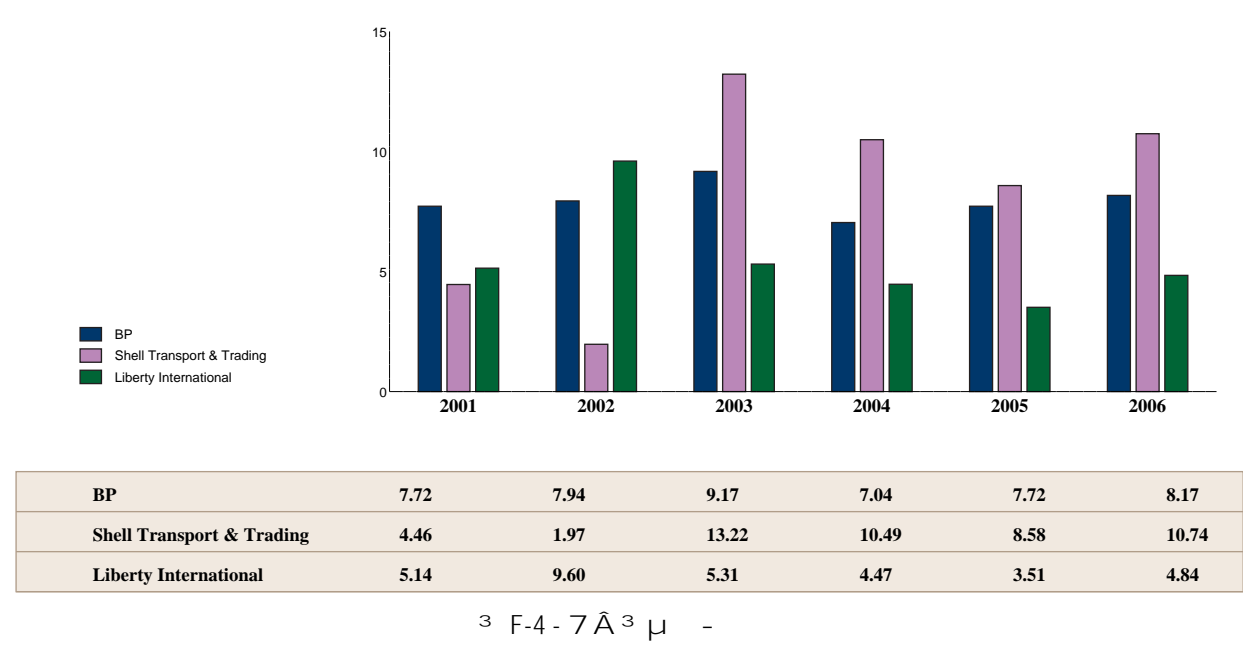


3 F-2 - Ûâ 3

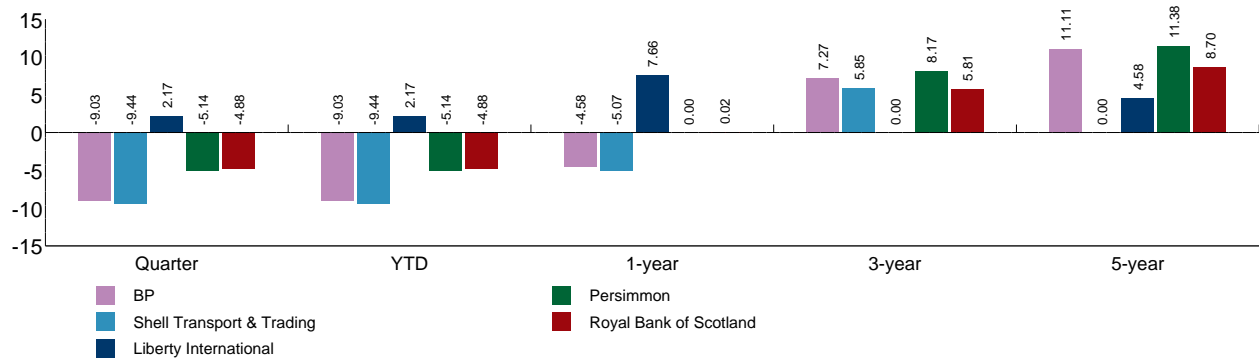
F.3 Multi-line x-axis labels



F.4 BarChart with table



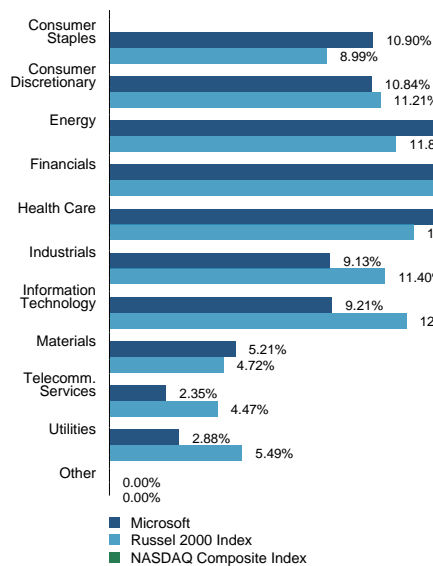
F.5 Vertical labels



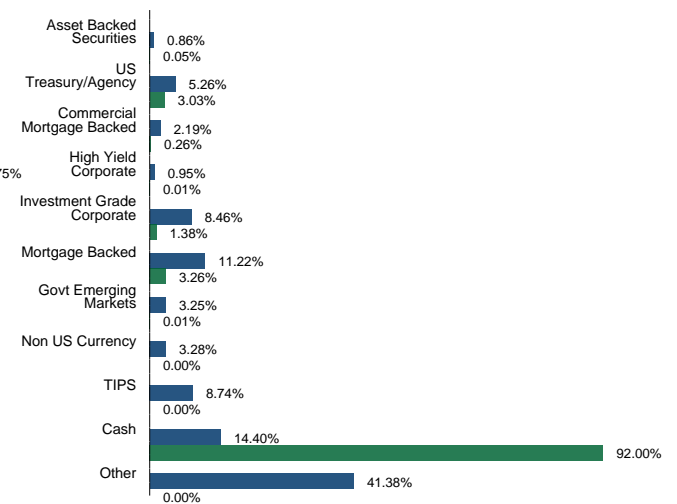
3 F-5 - ° ß °

F.6 Dual Bar charts on one canvas

Equity Composition

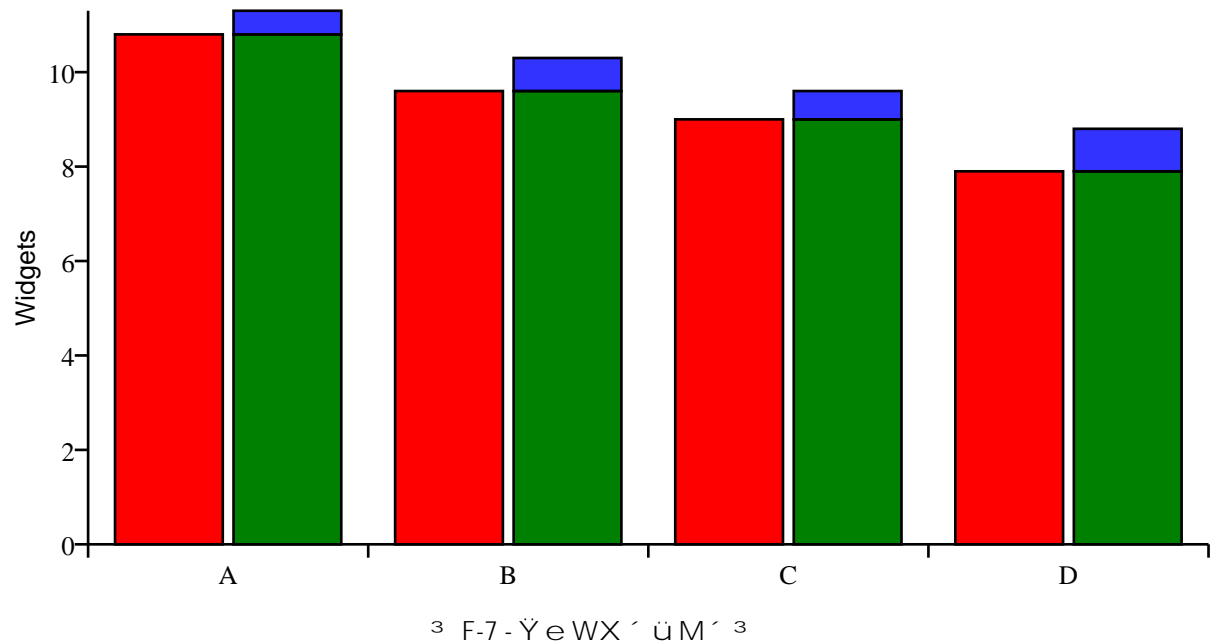


Fixed Income Composition

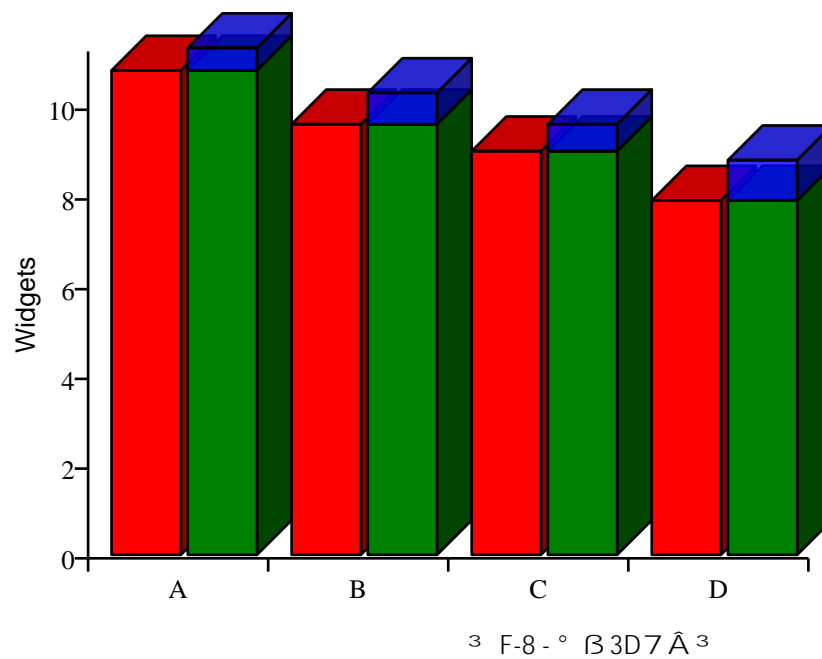


3 F-6 - ë o 1 ° Í " T M ´ 3

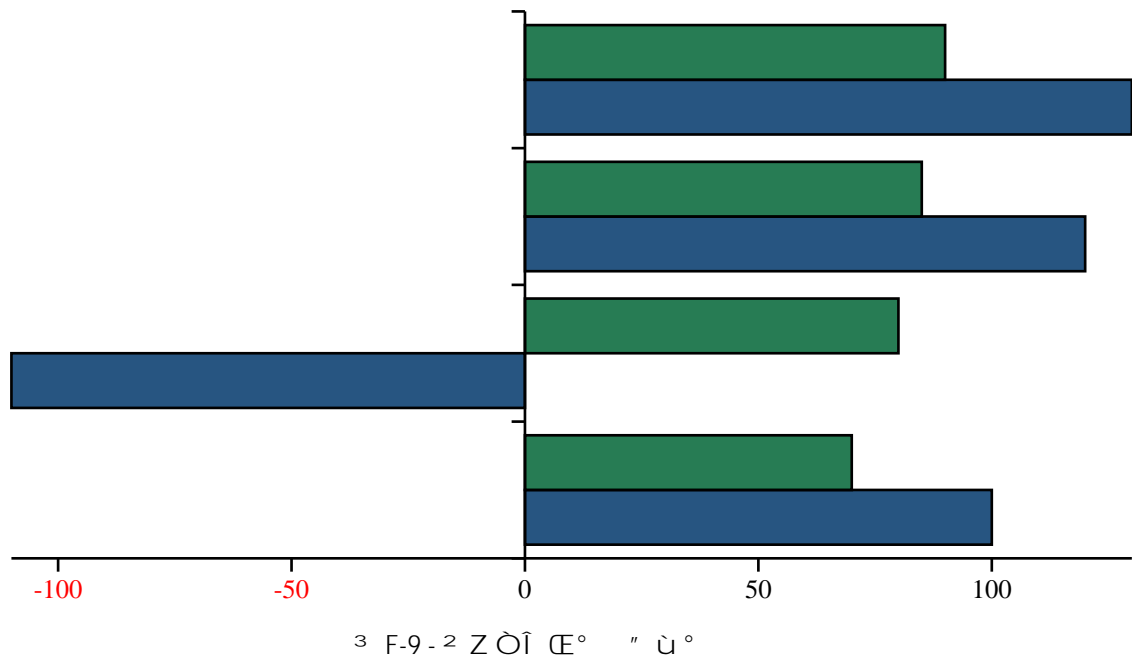
F.7 Vertical bar chart with mixed stacked & parallel bars



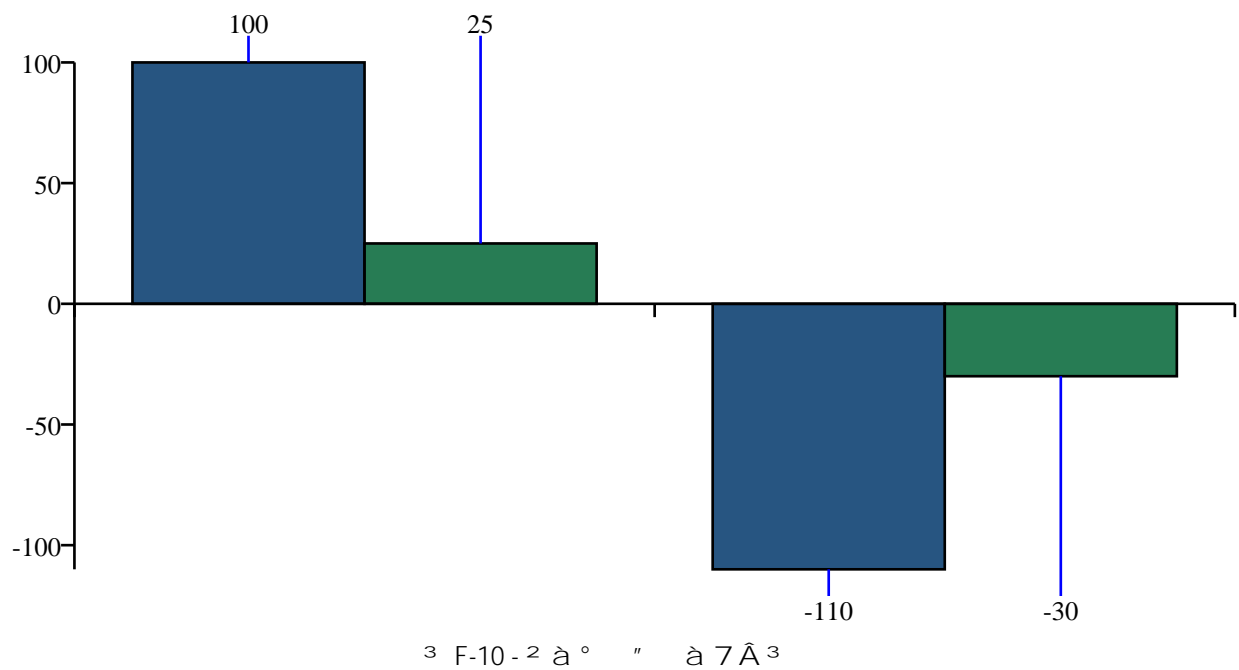
F.8 Vertical 3D bar chart with mixed stacked & parallel bars



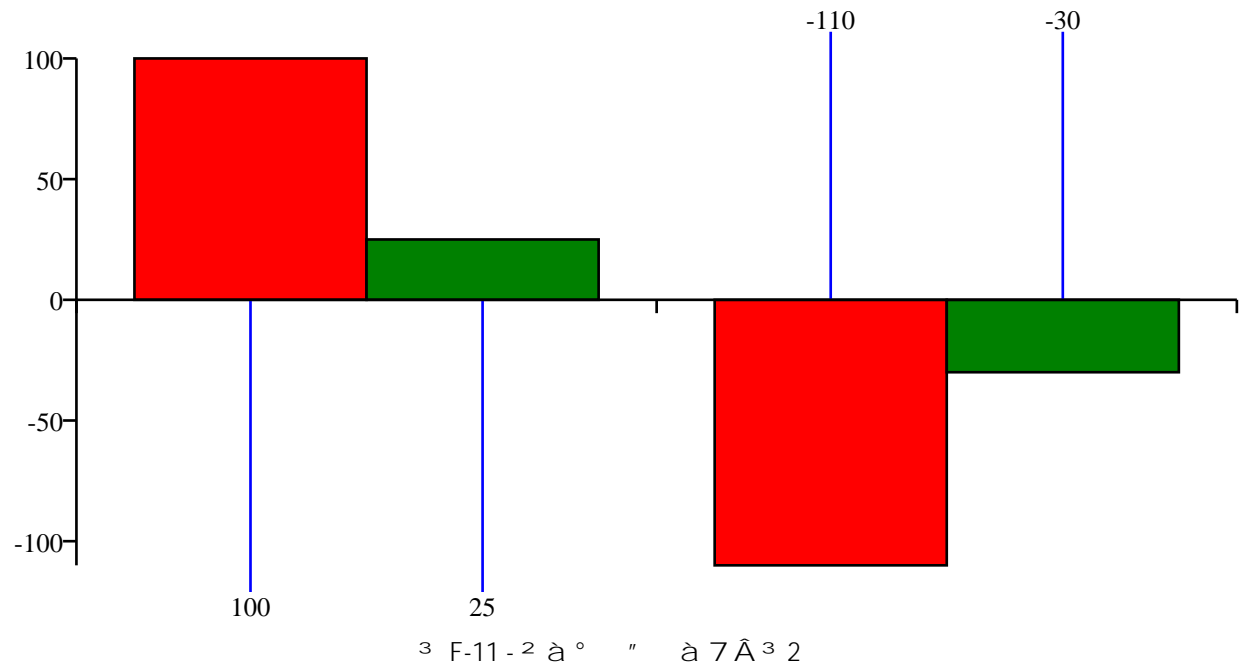
F.9 Horizontal bar with red axis negative labels



F.10 Vertical bar with line labels



F.11 A Vertical Bar Chart With Line Indicated Bar Labels



ĐÍ G • × ĩ : quickcharts

œ • : <https://www.reportlab.com/chartgallery/quickcharts/>

ReportLab Quick Charts

Unlike the other chart types shown in this gallery, Quick Charts do not have any predetermined structure.

Rather, they can accept similar data structures and depending on the particular Quick Chart type, create a chart.

You will lose some of the precision and control of some of the specialist chart classes seen elsewhere in the gallery, but Quick Charts will let you experiment more quickly with a range of different ways to visualise your data.

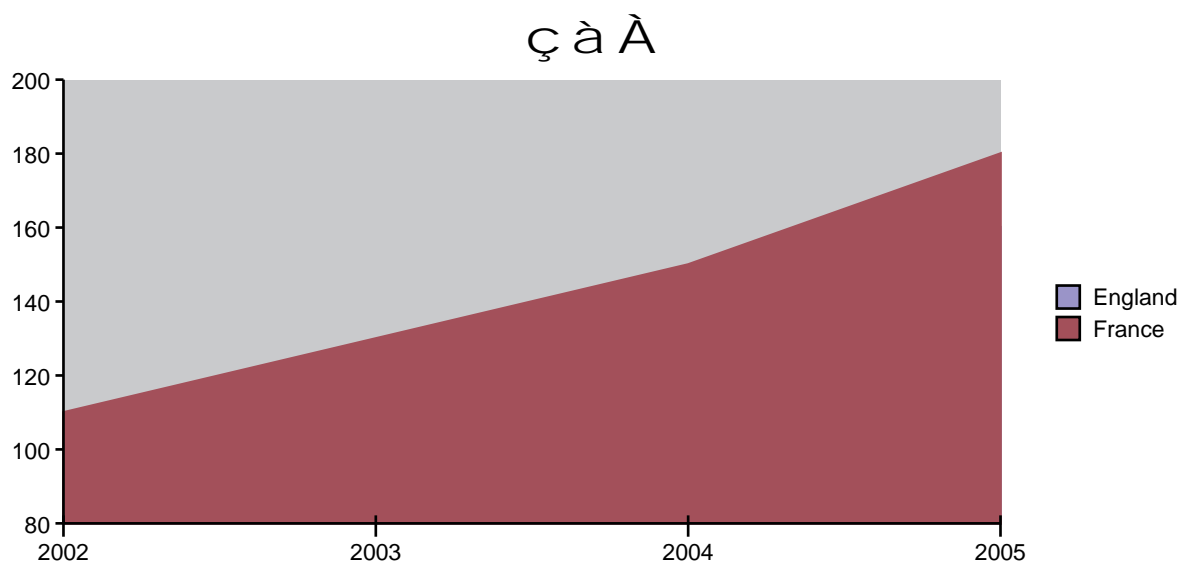
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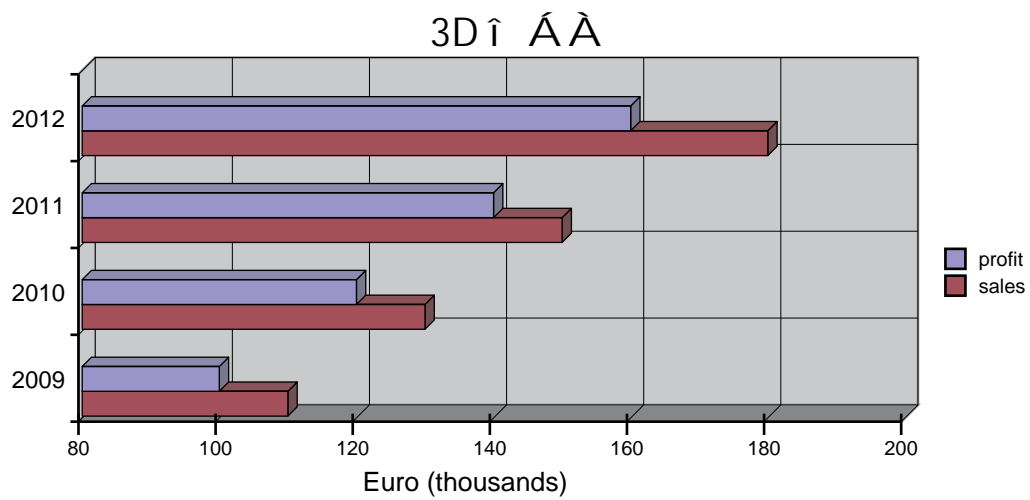
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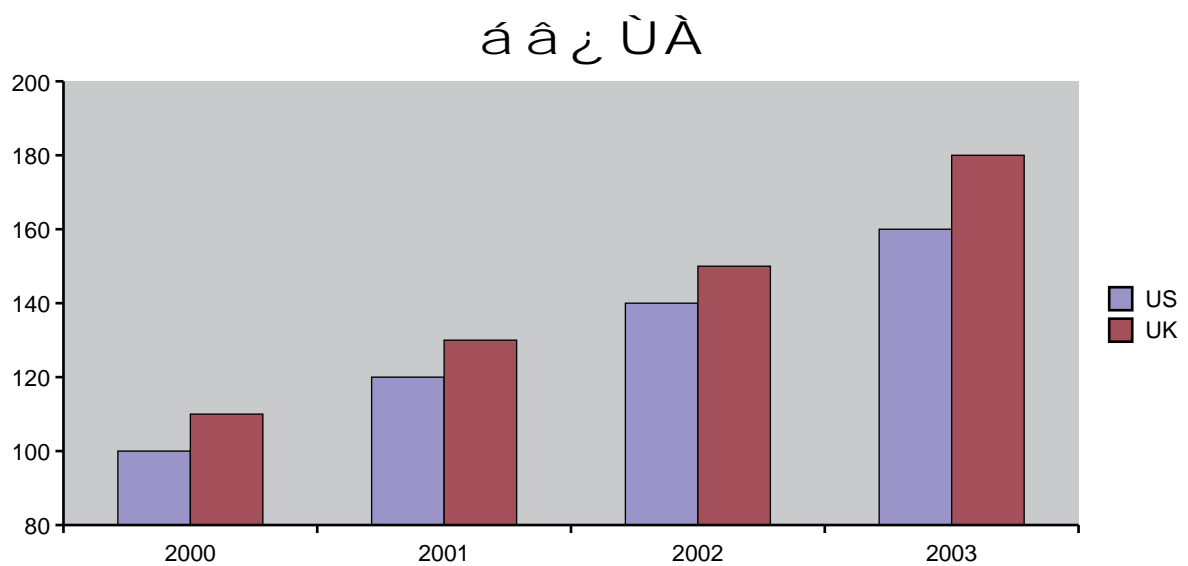
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G.2 3 Ð ĩ Ä Å



3 G-2 - 3DM 3)

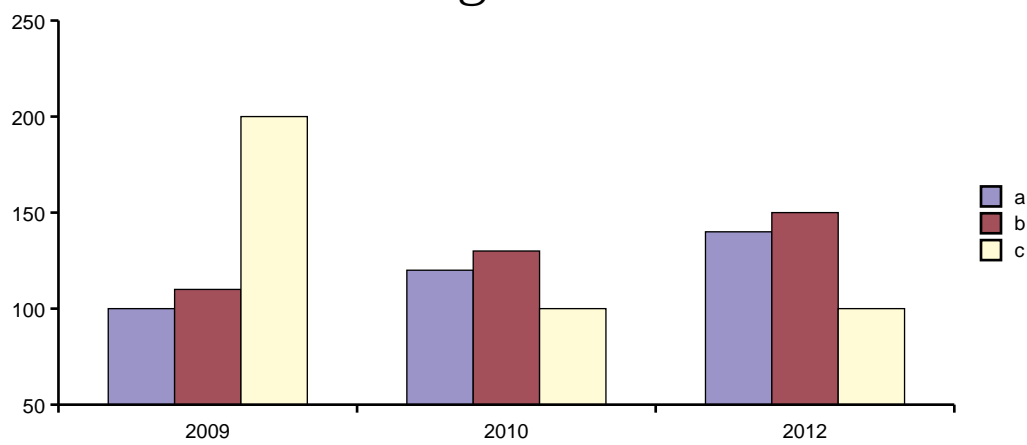
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3 G-3 - NO7 Å 3)

G.4 ¿ ÙÀ

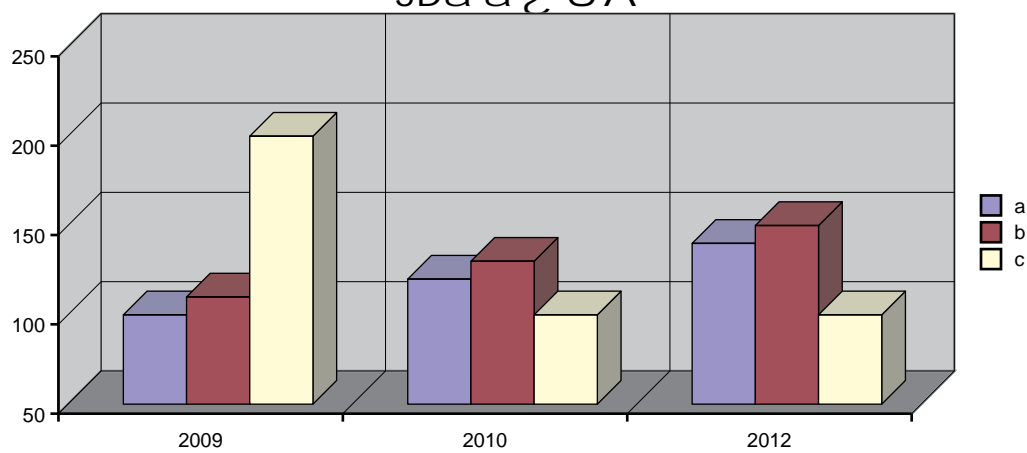
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³ G-4 - 7 Å³)

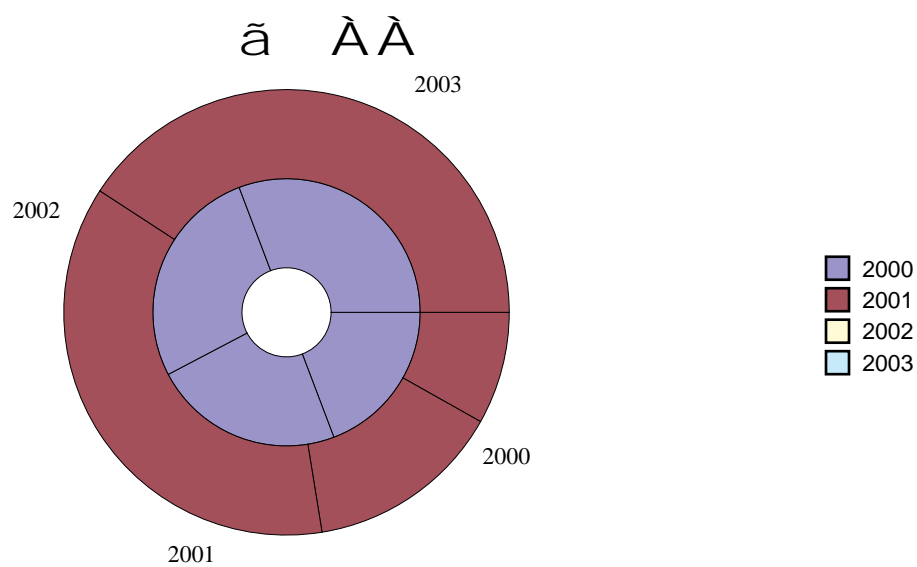
G.5 3Dá â ¿ ÙÀ

3Dá â ¿ ÙÀ



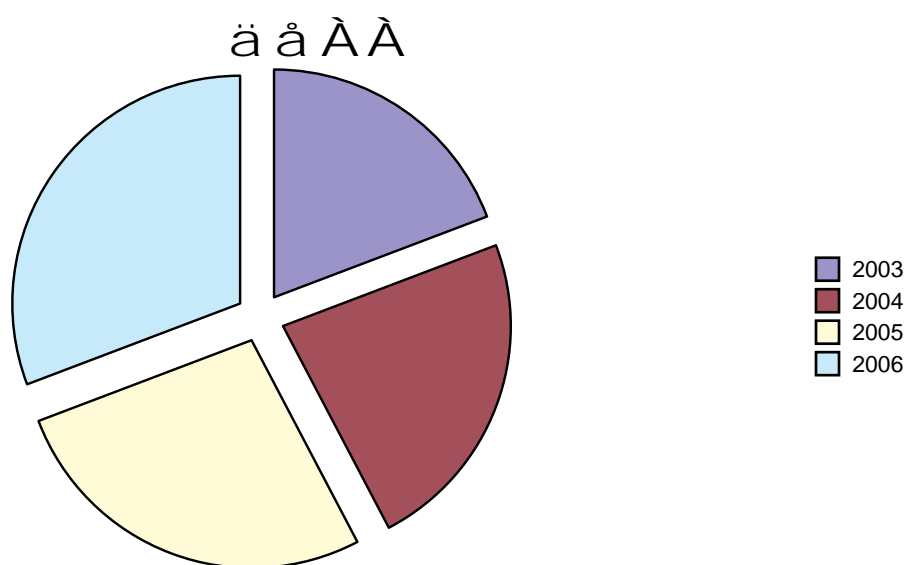
³ G-5 - 3DNO7 Å³)

G.6 ã ÀÀ



³ G-6 - PÖ: ³)

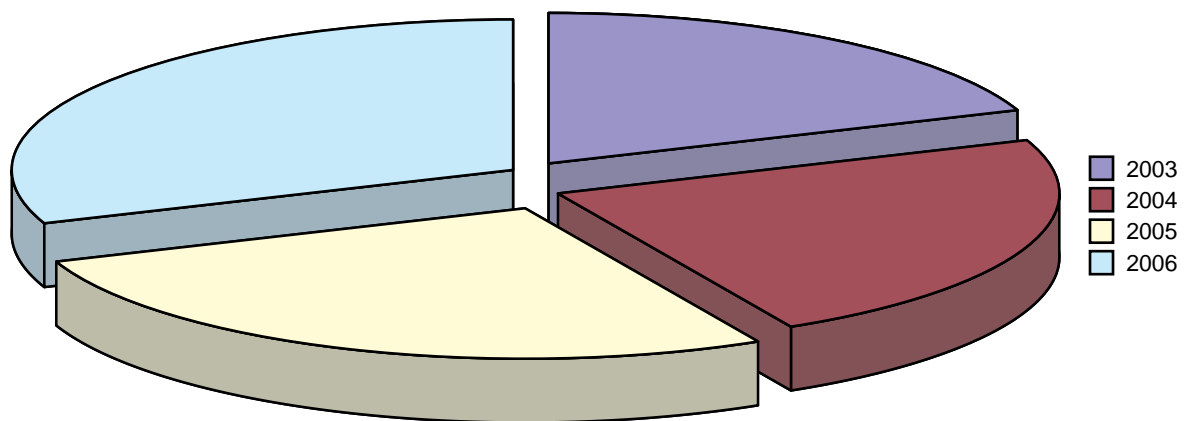
G.7 ä å ÅÅ



³ G-7 - QR: ³)

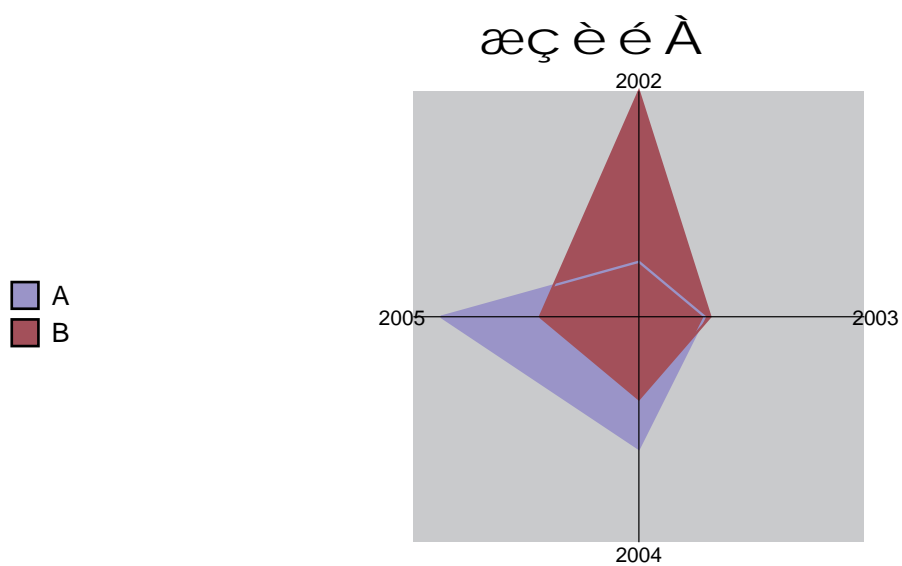
G.8 3Dä å ÅÅ

3D ä å Å Ä



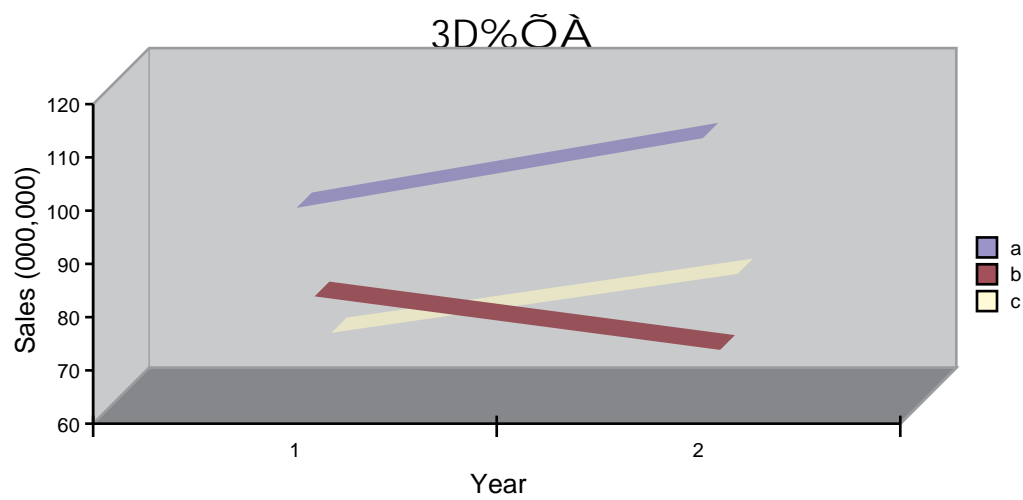
³ G-8 - 3DQR: ³)

G.9 æç è é Å



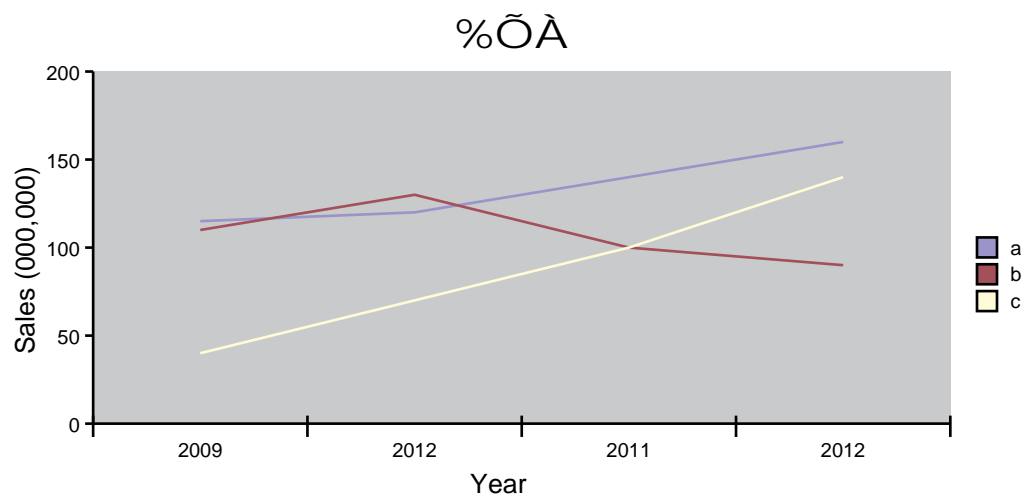
³ G-9 - STUV ³)

G.10 3D%ÕÄ



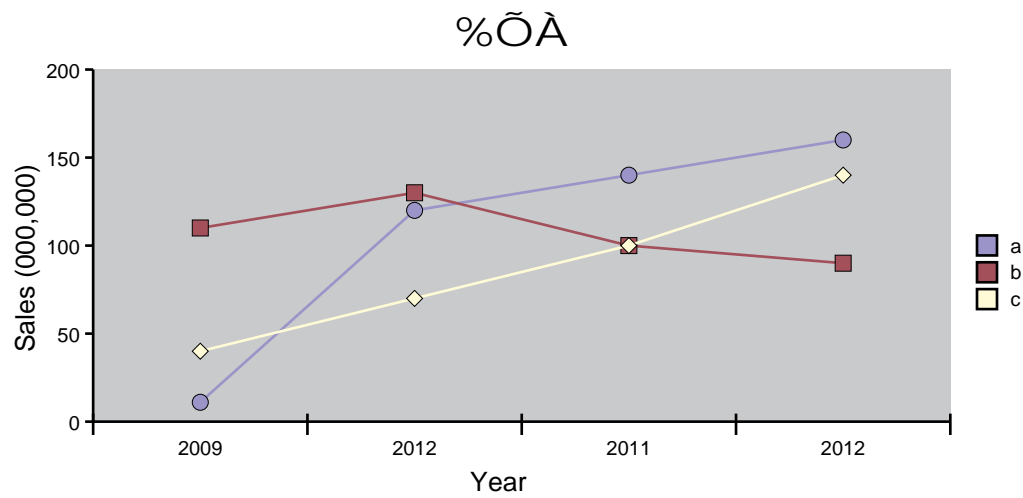
³ G-10 - 3D8à³)

G.11 %ÕÀ



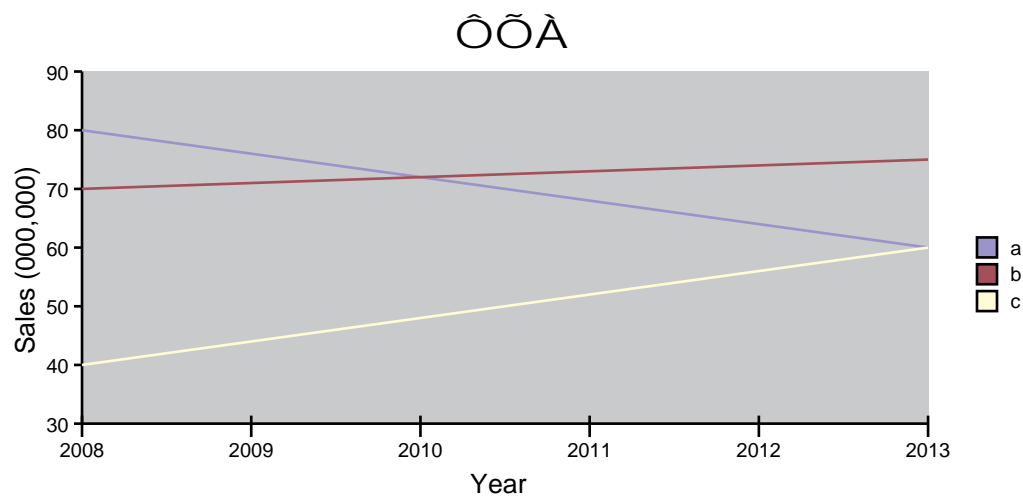
³ G-11 - 8à³)

G.12 ¼' %ÕÀ



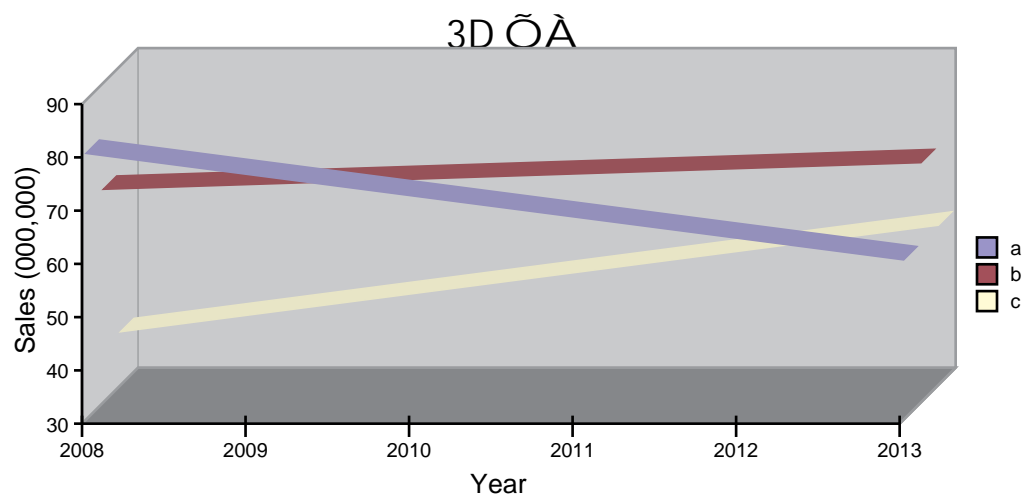
³ G-12 - °) 8à ³)

G.13 ÔÕÀ



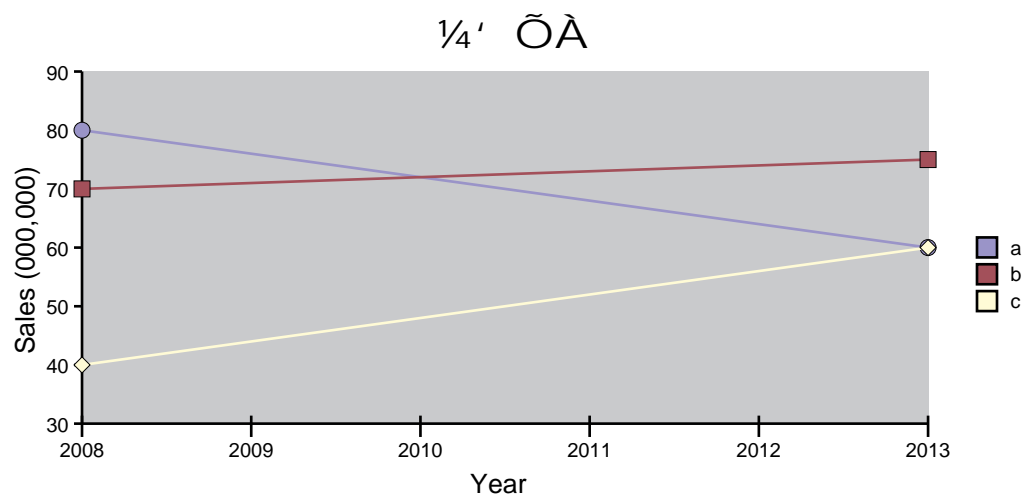
³ G-13 - ß à ³)

G.14 3DÔÕÀ



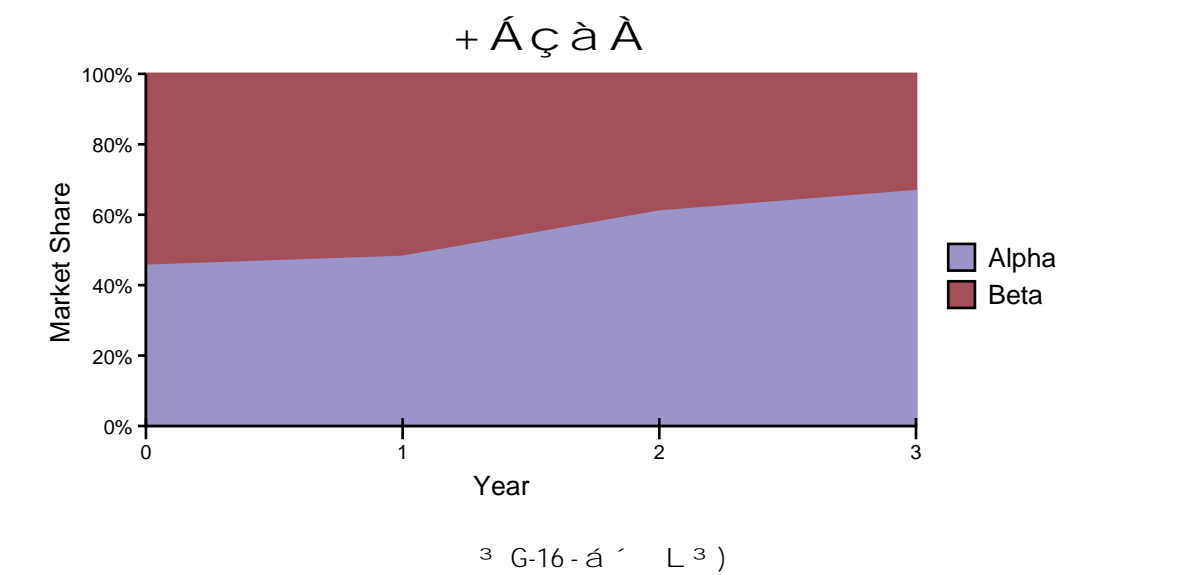
³ G-14 - 3DB à ³)

G.15 ÔÕ¼' À

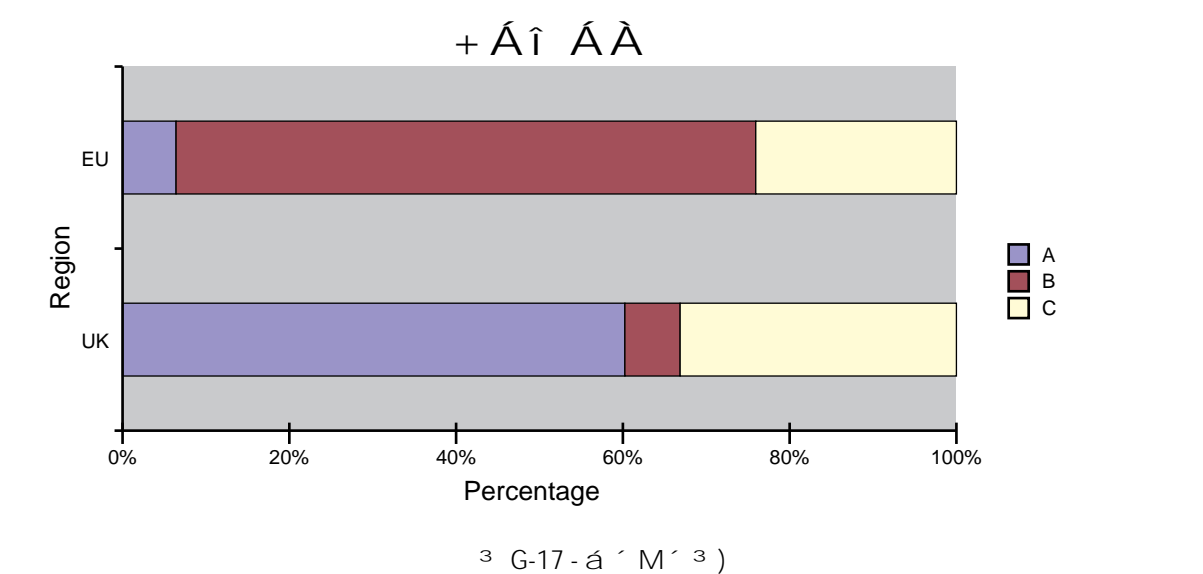


³ G-15 - B à °) ³)

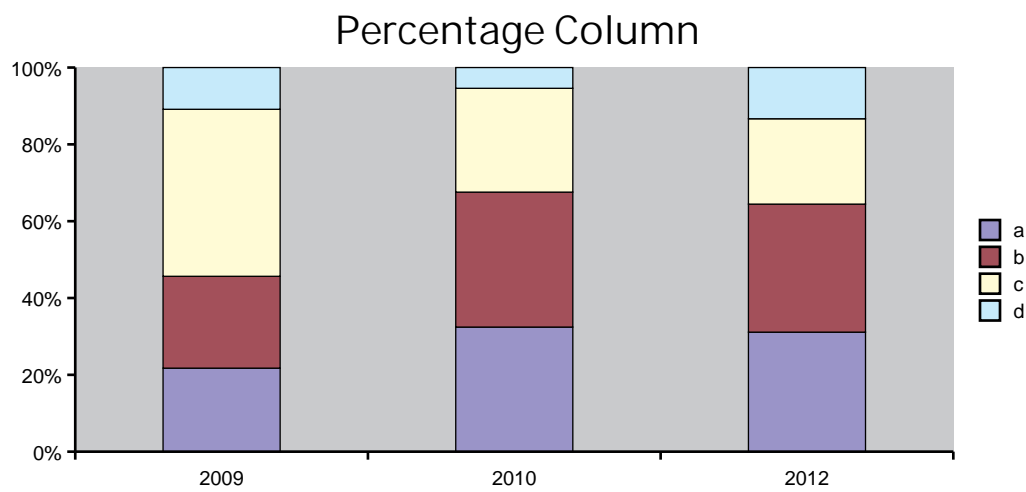
G.16 + ÁÇ à À



G.17 + Áî ÁÀ

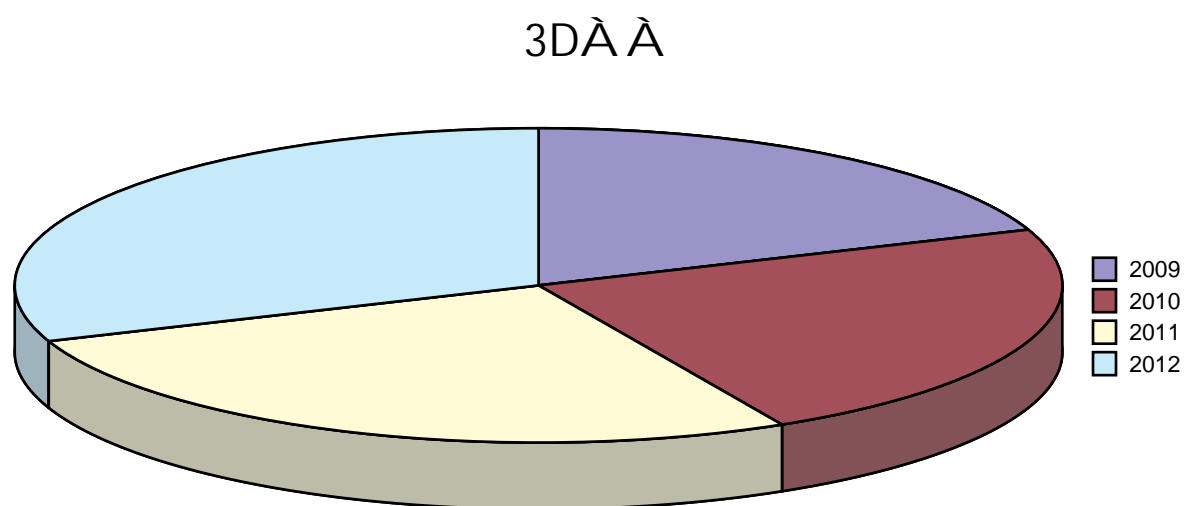


G.18 + Á¿ ÙÀ



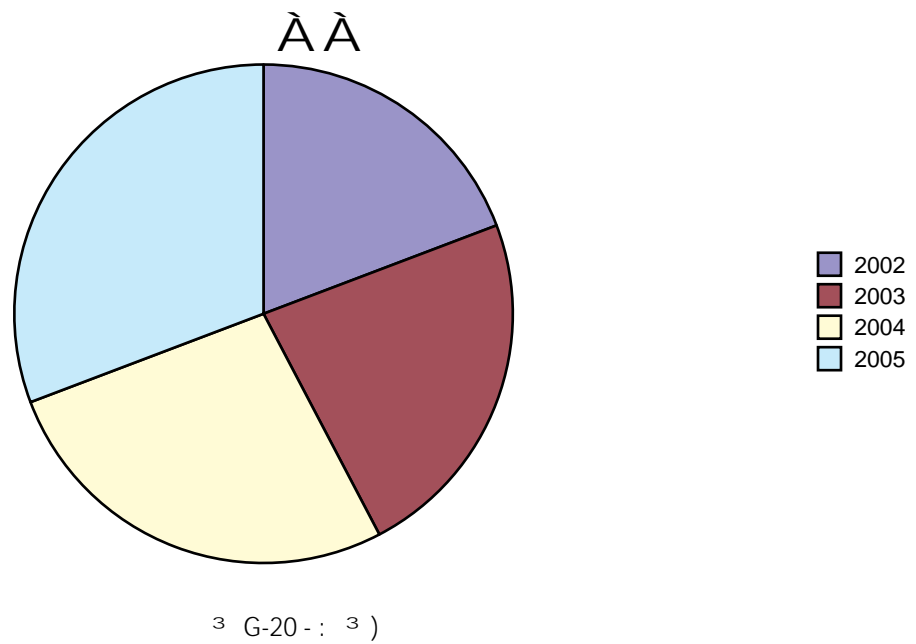
3 G-18 - á ' 7 Å 3)

G.19 3DÀ À

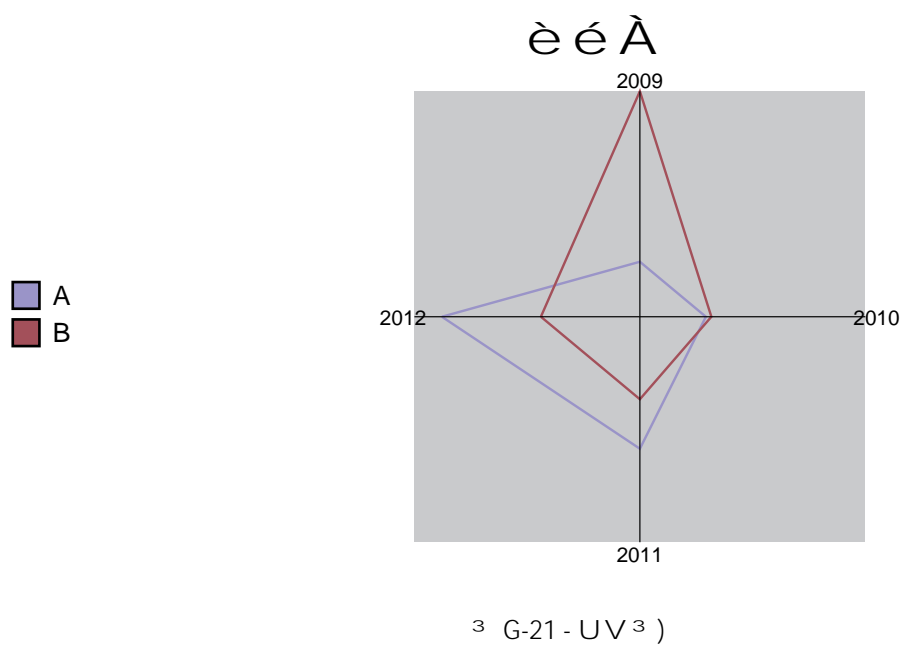


3 G-19 - 3D: 3)

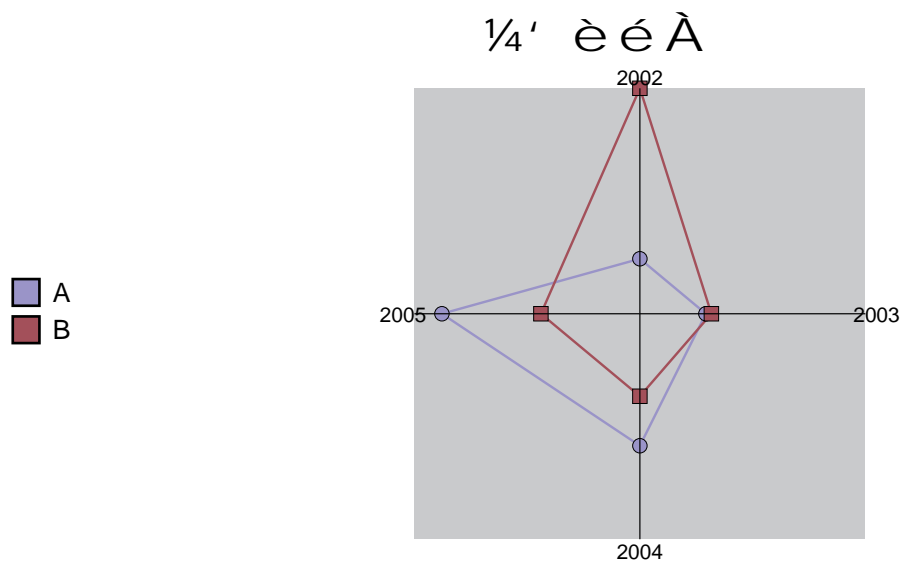
G.20 À À



G.21 è é À

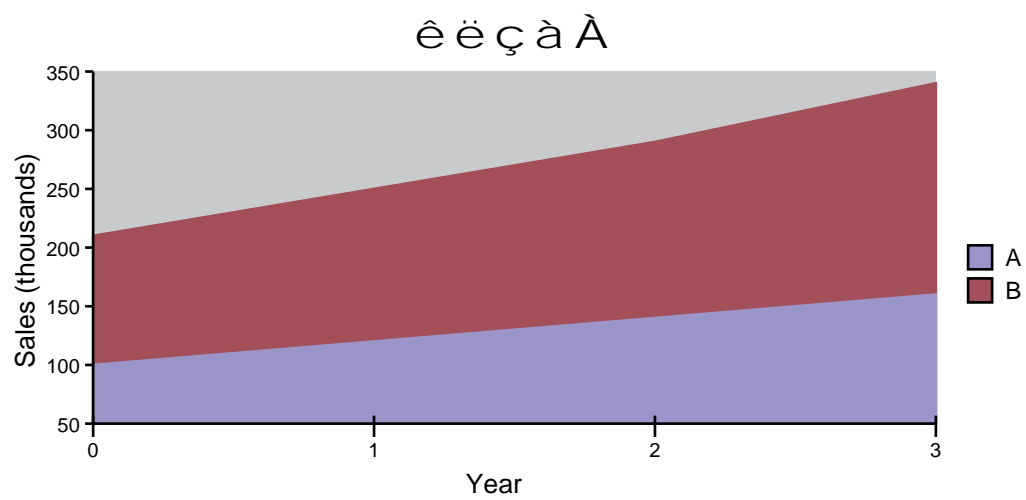


G.22 ¼' è é À



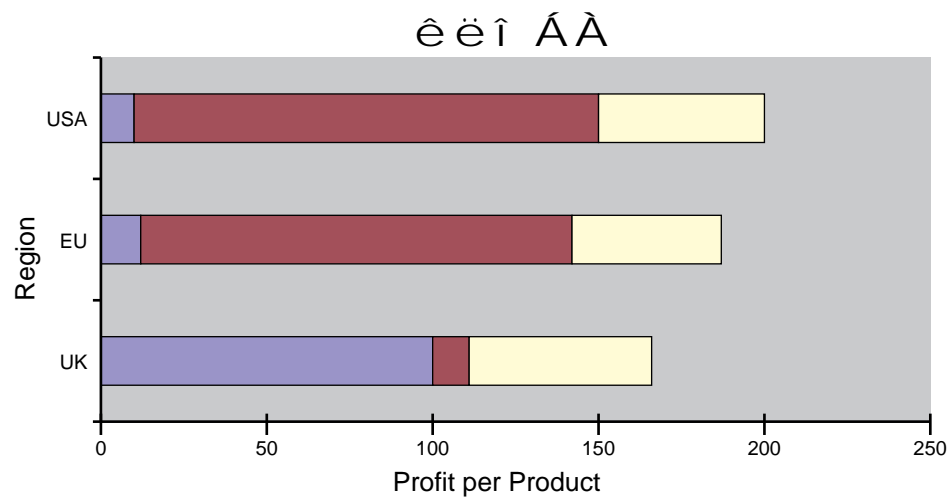
³ G-22 - °) UV ³)

G.23 è ë ç à À

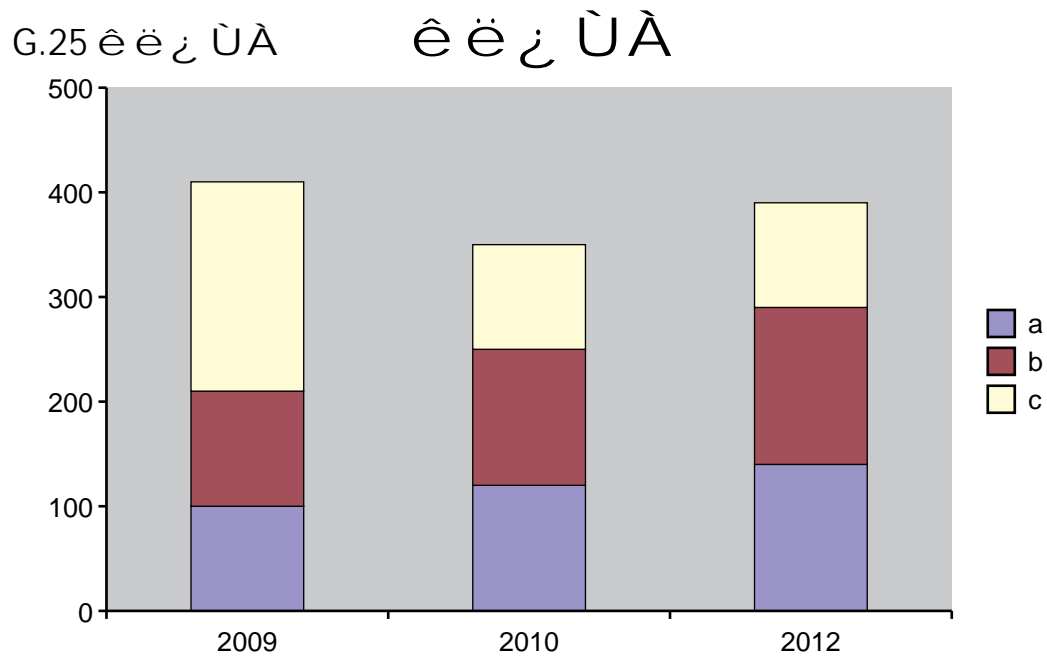


³ G-23 - WX L ³)

G.24 è ë î Á À



³ G-24 - WXM´ ³)

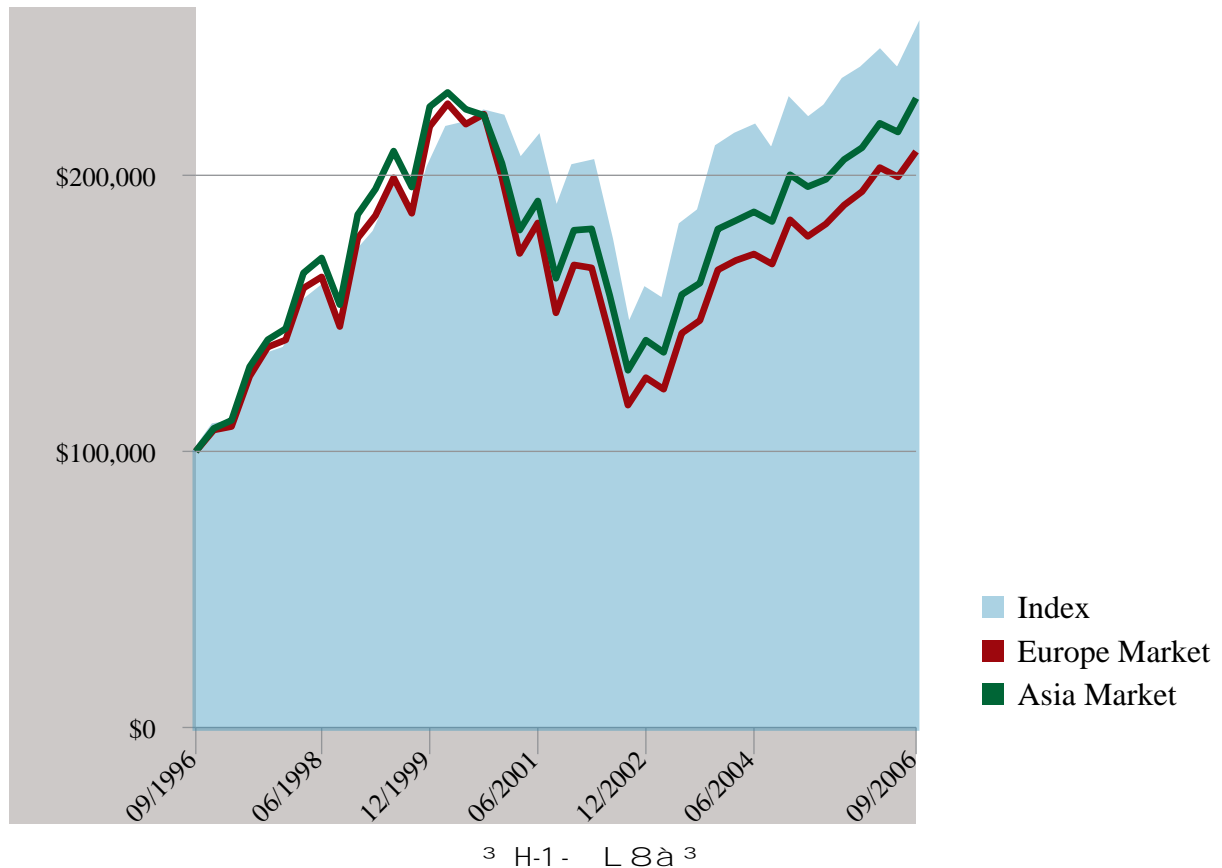


³ G-25 - WX 7 Â ³)

ĐÍ H • × ĩ : Area

œ• : <https://www.reportlab.com/chartgallery/area/>

H.1 ç à %ÕÀ



H.2 ç à û é ¼ Z À

