

E I H\ca Y : =H\ca Y D@5G<ca Y Dfc^YVWg DYcd^Y K _] 7cbHUVWg

Component Pascal

Overview

DfcZYggcf'>c\b'; ci [\žZcfa Yf'8YUb'cZ'h\Y': UW`hmicZ'÷bZcfa Uh]cb`HYV\bc`c[mž']g`
`YUX]b[`h\Y`Ub[i U[Y`XYg][b`UbX`ja d`Ya YbHUh]cb`[fci d`h\Uh`Ug`]bj Ygh][UHYX`UbX`
XYg][bYX`U`ZfUa Yk cf_`Zcf`fYgYUfV\]b[`VŁa d]`Yf`hYV\bc`c[mž`]b`dUfh]W`Ufž`VŁXY`
[YbYfUh]cb``A cfY`fYV\bhnmž`k cf_`Ug`hUf[YhYX`h\Y`ja d`Ya YbHUh]cb`cZ`U`hYfbUh]j Y`
`Ub[i U[Yg`cb`h\Y`>Uj U`J]fh U`A UV\]bY`UbX`A]WcgcZfhg`"B9H`d`UhZcfa "

.....[8YHU\]YX`dfc^YVW`\]bZcfa Uh\]cb](#)
.....[@Ub\[i U\[Y`F Ydcfh](#)
.....[7ca dcbYbhDUgW`cb`"B9H](#)
.....[7ca dcbYbhDUgW`cb`h\Y`>J A](#)
.....[7ca dcbYbhDUgW`Zcf`÷89g](#)
.....[D9': \]Y`K f\]hYf](#)
.....[8ck b`cUX`DU\[Y](#)
.....[Cb`\]bY'; D7D`VŁa d\]`Yf](#)

Research team

F YgYUfWYfg

[DfcZYggcf'>c\b'; ci \[\](#)
[5ggcWUhY`DfcZYggcf`DUi ``F cY](#)
[8f`8\]UbY`7cfbYm](#)

F YgYUfW`Gh XYbHg

G]a cb`?Ybh

5V\]g\Y_`G]b[\

<ca Y`p`Dfc^YVWg`p`DYcd^Y`p`K _]`p`7cbHUVWg`
E I H<ca Y`p': ÷H<ca Y`p`E I H`gYUfV\`

[Df\]j UW`p`7cdfm\]\[\h`p`5VWVgg\[V`\]lmi](#)
[@Ugh`a cX\]ZYX`%d5i \[!&\\$ \\$\)`](#)
[7cbHUVWi`g`p': YYXVUW`p`8\]gWU\]a Yf`](#)

EI H\ca Y': =H\ca Y'D@5G<ca Y'Dfc^VWg'DYcd`Y'K _]`7cbhUVWg`

Component Pascal Detailed Information

Component Pascal - The Language

.....DUGW`XYf]j Uh]j Y`
.....GdYVjZW`mXYg][bYX`Zcf'dfc[fUa a]b[`gcZh UfY`Vta dcbYbhg`
.....9b\UbWXX`dfc[fUa a]b[`gUZ/hmh`fci [\ `Ub`UXj UbWXX`hmdY`gmghYa`
.....: cf'a cfY`XYHJ]g`gYY`hY`Ub[i U[Y`fYdcfh`fMti fhYgmUbX`Vtdmf][\h`CVYfcb`A`WcgmghYa`gk`

The GPCP Compiler

.....H\Y`7ca dcbYbhDUGW`Vta d]YfZ[dVdz'dfcXi Wg`VtXY`Zcf`Y]hYf`hY`A`Wcgczh`B9H`d`UhZcfa`cf`Zcf`hY`
 >Uj`U`J`fhi`U`A`UW`jbY`fb`A`k`
.....=a`d`Ya`YbhYX`Ybh]fY`m]b`7ca dcbYbhDUGW`
.....5ddfcI`ja`UhY`m&\$z\$\$\$`bYg`cZ`VtXY`Z`)`zz\$\$\$`Zcf`YUW`fi`bh]a`Y`Huf[`Yh`
.....J`Yf]ZUV`Y`
.....8ck`b`cUX`hY`Vta`d]Yf`"

GHCD'DF`9GG`H\Y`Vta`d]Yf`X]ghf]Vi`h]cb`k`Ug`Ugh`i`dXUhYX`cb`\$(`5dfj`&\$\$\$`

Documentation

.....:`Yh]b[`GHJfhYX`cb`B9H`
.....FY`YUgY`bchYg`Zcf`B9H`
.....:`Yh]b[`GHJfhYX`cb`>JA`
.....FY`YUgY`bchYg`Zcf`>JA`
.....?`>c`b` ; ci [\ `GHJW`b[`h`Ya`i`d`5`7ca`dUf]gcb`cZ`J`fhi`U`A`UW`jbYgZ`DFYgYbhYX`hc`hY`5i`ghfU]Ub`
 7ca`di`hYf`GmghYa`g`UbX`5fW`]hYVh`fY`7cbZYfYbWZ`57G57!`&\$\$%` ; c`X`7cUghZ`5i`ghfU]Uz` : YVfi`Ufm&\$\$%`
 fBfUZh`J`Yfg]cbE`

;`D7D`[g`gh]``i`bXYf`XYj`Y`cda`Ybh`UbX`]g`VW`Ub[`]b[`ei`]hY`cZhYb``5bmVW`Ub[`Yg`cf`i`dXUhYg`k`]``UddYUf`cb`h`]g`
dU[`Y`Ug`h`YmUfY`fY`YUgYX``=h]g`gi`[`[`YghYX`h`Uh`mci`VW`YW`Y`fY`YUW`k`YY`Zcf`YI`HfU`]VfUf]YgZ`VtXY`
Ya`]hYfgZ`YH`Gi`[`[`Ygh]cbg`Zcf`ja`dfcj`Ya`YbhZ`Vi`[`fYdcfhg`YH`UfY`a`cgh`k`Y`Vta`Y`/`d`YUgY`gYbX`h`YgY`hc`
[`dVd4`ei`H`YXi`"Ui`"

H\]g`Ub[i U[Y`]g`dUfh`cZ`U`Uf[Yf`dfc^VW`Vm`hY`Dfc[fUa a]b[`@Ub[i U[Yg`UbX`GmghYa`g`FYgYUfVW`7YbhfY`Uh`
EI`Hz`5i`ghfU]U`h`Uh]g`fYgYUfVW`b[`UbX`XYg][`b]b[`Vta`dcbYbh`dfc[fUa a]b[``Ub[i U[Yg``D`UbbYX`
Yb\UbW`a`Ybhg`Zcf`Z`H`fY`j`Yfg]cbg`cZ`7ca`dcbYbhDUGW`]bW`XY`dUfUa`YHf]Wdc`ma`cfd\]ga`fU`Zcfa`cZ`
[`YbYf]Vt`UbX`dfY`UbX`dcgh`VtbX]h]cbg`hc`VY`hYf`gi`ddcfh`Vta`dcbYbh`dfc[fUa a]b[``

H\]g`dfc^VW`\Ug`VYYb`gi`ddcfhYX`Vm`E`I`Hz`8]ghf]Vi`hYX`GmghYa`g`HYW`bc`c[`mi`7YbhfYZ`UbX`A`Wcgczh`

:`cf`Z`fhYf`]bZcfa`Uh]cb`mci`a`UmVtbhUVh`hY`df]bV]dU`]bj`Ygh[Uhcfg`>c`b` ; ci [\ `^"[ci [\ 4 ei H`YXi`"Ui`UbX`
DUi``F`cY`d`fcY4`ei`H`YXi`"Ui`/\`ck`Yj`Yf`d`YUgY`gYbX`UbmiVi`[`fYdcfhg`cf`gdYVjZW[`dVd`ei`Ygh]cbg`hc`[`dVd4`ei`H`
YXi`"Ui`"

<ca`Y`p`Dfc^VWg`p`DYcd`Y`p`K`_]`p`7cbhUVWg`
E`I`H`<ca`Y`p`:=H`<ca`Y`p`E`I`H`gYUfVW`

Df]j`UW`hp`7cdmf][`h`p`5WV`gg[V`]hmi`
 @Ugh`a`cX]ZYX`%d`5i`[`!&\$\$)`
7cbhUVh`i`g`p`:`YYXVUW`p`8]gWU]a`Yf`

E I H\ca Y : =H\ca Y D@5G<ca Y Dfc^YVWg DYcd^Y`K _]`7cbHUVWg`

..

Component Pascal on the JVM

Features

.....bHYfk cf_g`k]h`Vta dcbYbhg`ja d`Ya YbhYX`]b`>Uj U`
.....5``dfcXi WX`dfc[fUa g`dUgg`hY`ghf]b[Ybh`hYghg`cZ`hY`fi bhja Y`j Yf]Z]Yf`
.....9I YW h]cb`gdYYX`Vta dUfUV`Y`k]h`ZUghYgh`cV`YVW`cf]YbhYX``Ub[i U[Yg`

Papers

6Y`ck `UFY`hY`XfUZhg`cZ`U`ZYk `dUdYfg`k \]W`^`Uj Y`VYYb`dfYgYbhYX`Uh`j Uf]ci g`VtbZYfYbW`g`cb`ci f`
YI dYf]YbW`g`k]h`ja d`Ya Ybh]b[`7ca dcbYbhDUgW`^`cb`hY`>J A "

.....`a d`Ya Ybh]b[`@Ub[i U[Yg`C`h`Yf`h`Ub`>Uj U`cb`hY`>Uj U`J]fh U`^A UW`]bY``dfYgYbhYX`Uh`9j c`j Y`&\$\$\$
.....`9j U`i Uh]b[`hY`>Uj U`J]fh U`^A UW`]bY`Ug`U`Huf[Yh`Zcf`@Ub[i U[Yg`C`h`Yf`h`Ub`>Uj U``dfYgYbhYX`Uh`hY`
>A @7`&\$\$\$`
.....`DufUa YHf`DUgg]b[`Zcf`hY`>Uj U`J]fh U`^A UW`]bY``dfYgYbhYX`Uh`57G7`&\$\$\$

7ca dcbYbhDUgW`^^Ug`VYYb`]bhY[fUH`YX`]bh`9W]dgy``

7ca dcbYbhDUgW``]g`U`gc`Uj U]UV`Y`Zcf`hY`"B9H`d`UhZcfa`"

7`]W`^`YfY`hc`Xck b`cUX`[dW``

<ca Y`p`Dfc^YVWg`p`DYcd^Y`p`K _]`p`7cbHUVWg`
E I H<ca Y`p`:=H<ca Y`p`E I H`gYUfW`

Df[j UW`p`7cdmf][`^`h`p`5VW`gg[V`]lm`
@Ugh`a cX]Z]YX`%d 5i [`!&\$\$\$)`
7cbHUV`i g`p`YYXVUW`p`8]gWU]a Yf`

Component Pascal for IDEs

; D7D`Ug`VYYb`]bhY[fUH`X`]bhc`Hk c`XYj Y`cda Ybh`Ybj]fcb`a Ybhg`"6ch`cZ`h`YgY`UfY`Uj U]`UV`Y`Zcf`Xck b`cUX"

GPCP for Visual Studio

5`j Yfg]cb`cZ[dVd`]bhY[fUH`X`]bhc`J]gi U`GH`X]c`]g`Uj U]`UV`Y`Zcf`VYHU! fY`YUgY`Zcf`J G`&\$\$&`UbX`J G`&\$\$' "

GPCP for Eclipse

5`d`i []b`]g`Uj U]`UV`Y`Zcf`9W]dgY`YbUV`]b[`7ca dcbYbh`DUgVW`dfc[fUa g`hc`VY`YX]h`X`UbX`Vi]`h`Z`ca `k]h`]b`
h`Y`9W]dgY`dfc[fUa a]b[`Ybj]fcb`a Ybh`Bch`U`[dVd`Vd`a d]Yf`]g`fYei]fYX`]b`UXX]h]cb`hc`h`Y`d`i []b"

K Y`k ci `X``_Y`hc`h`Ub`_`CH=`Zcf`gi ddcfh]b[`h`]g`dfc`YVW`

.....; D7D`D`i []b`Zcf`9W]dgY`j`' "\$"\$
.....; D7D`D`i []b`Zcf`9W]dgY`j`' "\$"%

E I H\ca Y : =H\ca Y D@5G<ca Y Dfc^YVWg DYcd^Y K _] 7cbHUVWg

...

PE File Reader/Writer

D9F K 5D=]g^U^a UbU[YX^Wta dcbYbh^k \]W\ dfYgYbhg^cb^h^Y^W]Ybh^g]XY^Ub^5D=^hc^fYUX^UbX^Wtbghfi W^dfc[fUa ^
YI YW HUV^Y^Z^Yg""D9F K 5D=YI hYbXg^D95D=Z^ci f^D9^:]Y^k f]hYf^fgYY^VY^ck E^Vi h^Ug^U^g][\hmX]ZZYfYbh^
]bhYfZUW""D9F K 5D=]bW^ XYg^gi ddcfh^Zcf^"B 9H[YbYf]Vg""5^dfY^ja]bUfmj Yfg]cb^cZD9F K 5D=]g^Uj U]^UV^Y^Zcf^
[Xck b^cUX](#)""D9F K 5D=]g^k f]hYb^]b^7_ ^UbX^]g^fY^YUgYX^Ug^cdYb^gci fW^i bXYf^U^: fYY6G8! _Y^]WbW""W^a ^
XcW^a YbhUh]cb^]g^]bW^ XYX^]b^h^]g^fY^YUgY"

BCH9. =Z^nci ^UfY^i g]b[^D9F K 5D=d^YUgY^Ya U]^[X^WfbYm4 ei h^YXi "Ui](#) ^gc^h^Uh^nci ^Wb^VY^_Ydh^]bZcfa YX^cZ^
i dXUH^g^UbX^UXX]h]cbg""D^YUgY^U^gc^Ya U]^h^]g^UXXfYgg^]Z^nci ^\Uj Y^UbmieI Ygh]cbg^cf^dfcV^Ya g^k]h^D9F K 5D=

PE File Writer

D95D=]g^U^a UbU[YX^Wta dcbYbh^Zcf^Wtbghfi W]b[^dfc[fUa ^YI YW HUV^Y^Z^Yg""K Y^Uj Y^hYghYX^h^]g^Wta dcbYbh^
Ug^Ub^U^hYfbUh]j Y^VUW_YbX^Zcf^; UfXYbg^Dc]bh7ca dcbYbhDUgW^""B 9H^Ci f^dfYj]ci g^j Yfg]cbg^cZ[dW^
dfcXi W^X^hYI h^U^7=@^UbX^]bj c_YX^]Uga ""H^Y^bYk ^VUW_YbX^Wb^WYUH^U^dfc[fUa ^YI YW HUV^Y^Z^Y^]b^U^a cgh^
YI UW^mh^Y^gUa Y^Yb[h^cZ^ha Y^Ug^]h^H_Ug^hc^k f]hY^h^Y^Yei]j U^Ybh7=@^hYI h^Z^Y"

D95D=]g^Uj U]^UV^Y^Zcf^[Xck b^cUX](#)""D95D=]g^k f]hYb^]b^7_ ^UbX^]g^fY^YUgYX^Ug^cdYb^gci fW^i bXYf^U^: fYY6G8!
_Y^]WbW""=bW^ XYX^]b^h^]g^fY^YUgY^]g^dXZXcW^a YbhUh]cb^UbX^Vch^h^ha ^UbX^W^a ^XcW^a YbhUh]cb^H^Y^
a U]b^XcW^a YbhUh]cb^]g^k f]hYb^Ug^]Z^]h^k Ug^U^bYk ^5ddYbX]I ^hc^>c^b^; ci [\fj^Vcc_7ca d^]b[^Zcf^h^Y^"B 9H^
7ca a cb^@Ub[i U[Y^Fi bh]a Yz^DfYbh]W! <U^"&\$\$&"

<ca Y ^p^Dfc^YVWg^p^DYcd^Y^p^K _]^p^7cbHUVWg^
[E I H<ca Y ^p^: =H<ca Y ^p^E I H^gYUfW^](#)

Df]j UW^p^7cdmf][\h^p^5WV^gg[V]^]lm^
@Ugh^a cX]Z^YX^%d 5i [!&\$\$) ^
[7cbHUVh^i g^p^: YYXVUW^p^8\]gWU\]a Yf^](#)

Download Gardens Point Component Pascal

; UfXYbg'Dc]bh7ca dcbYbhDUgWt' Yl]ghg]b'hk c'j Yfg]cbg.'cbY'Zcf'"B9H'UbX'hAY'chAY'Zcf'hAY'>JA'"hAY'>JA'
j Yfg]cb'Wt'b'VY'fi b'c'b'Ubm]bghU'U'h]cb'cZHAY'hAY'>Uj U'F'i bhja Y'9bj]fcb'a Ybhj Yfg]cb'%'&'cf'UHf'fUWt U'mz'
]h'Wt'b'VY'a UXY'hc'k cf_ k]h'j Yfg]cb'%"%*"Z'U'gcl'"hAY'"B9H'j Yfg]cb'fYei]fYg'hAY'"B9H'G8?'6YHU'&'cf'UHf'f'
K Y'bc'cb[Y'f'gi ddcfh'hAY'6YHU!'%cf'D87!&\$\$\$'fY'YUgYg'"; i h'fY'"B9H'j Yfg]cbg'k]'cb'migi ddcfh'hAY'Z]bU'
fY'YUgY'cZHAY'ZfU'a Yk cf_''

=bghU'Yfi VUgYX fY'YUgYg

5g'cZ] Yfg]cb'%"%('hAY'fY'UFY'=-bghU'G\Y'X!VUgYX']bghU'Yfg'Zcf'[dWt'"hAY'g'Xc'hAY'i gi U']bghU'U'h]cbz'UbX'
gYhi d'Ybj]fcb'a Ybhj Uf]UV'Yg'UbX'gc'cb'"CZWti fgyZ'h']g'cb'mUdd']Yg'hc'hAY'K']bXck g'dUhZ'fa g'>i gh'
Xck b'cUX'hAY'"gYH d'"YI Y'"Z]Yz'UbX'fi b']h'

.....[dWt'%" " &"\$!B9H'%"%fPj YfYHt
.....[dWt'%" " &"\$!B9H'&"\$'fK \XVYnt
.....[dWt'%" " %&!B9H'%"%fPj YfYHt
.....[dWt'%" " %&!B9H'&"\$'fK \XVYnt
.....[dWt'%" " %d >J A
.....[dWt'%" " %d B9H'%"%fPj YfYHt
.....[dWt'%" " %d B9H'&"\$'fK \XVYnt
.....[dWt'%" " ! >J A
.....[dWt'%" " ! B9H'%"%fPj YfYHt
.....[dWt'%" " ! B9H'&"\$'fK \XVYnt
.....[dWt'%"&"(!B9H'%"%
.....[dWt'%"&"(!B9H'&"\$'fK \XVYnt

FYU'Ghf' @jVfUfmi' hAY'Zl'Zcf'hAY'FYU'Ghf']VfUfmk]'VY']bWt'XYX']b'hAY'bYl h'fY'YUgY'cZ[dWt'"=b'hAY'
a YUbhja Yz'mci 'a UmXck b'cUX'hAY'gci fW'UbX'Wta d]Y']h'UbX'di h']h']b'mci f'i f'cch' fV]b'X]fYVWcfm'

GHCD'DF 9GG'hAY'Wta d]Y'f'X]ghf]Vi h]cb'k Ug'Ugh'i dXUHfX'cb'%'>i bYz'&\$)\$'""

Njd! UFW'j Y! VUgYX fY'YUgYg

hAY'fY'UFY'gYj YfU'UFW'j] Yg'Zcf'[dWt'h'Uh'a UmVY'Xck'cUXYX/'bcbY'UFY'Uf'Yf'h'Ub' 'A V'"hAY'W'ffYbh'
j Yfg]cb']g'%" " %'"hAY'i "njd'Z]Yg'\Uj Y'hAY'gci fW'g'k]h' A']WcgcZh7F#@'Z'fa UH'hAY'i "[n'Z]Yg'\Uj Y'hAY'
gci fW'g'k]h' hAY'i b]l' @'Z'fa Uh'Zcf']bY!a Uf_Yfg" hAY'"B9H'6YHU!&j Yfg]cb']g'fYWta a YbXYX

.....[dWt'%" " %d j a "HUF"[n'fbJ A # b]l' L'
.....[dWt'%"&"%d j a "HUF"[n'fbJ A # b]l' L' f' b]l'Z'fa Uh'Zcf'gci fW'Z]Ygz']bWt'XYg'gma Vc'Z]Yg'Zcf'>Uj U'%'&'&L'
.....[dWt'%"%*"!bYHf'HA "njd'fB9H#fY'YUgY'hc'A Ubi ZUWt'fYt'
.....[dWt'%"%*"!j a "njd'fbJ A #K']bXck gL'
.....F958A9'Zcf'h']g'j Yfg]cb'fL%'%"'UbX'%"%('L'

Hc'fi b'hAY'"B9H'j Yfg]cb'cZHAY'Wta d]Y'f'mci 'k]'U'gc'bYYX'hAY'"B9H'fi bhja Y/Uj U]UVY'YfYf'"BchY'Zcf'hAY'
>JA'j Yfg]cb'Uga']b']g'bc'cb[Y'f'fYei]fYX'fb'fYWta a YbXYXt'"hAY'f']g'U'gc'U'"B9H'j Yfg]cb'Zcf'hAY'"fY'YUgY'
hc'a Ubi ZUWt'fY"j Yfg]cb'cZHAY'ZfU'a Yk cf_'"CZWti fgy'hAY'J G"B9H'j Yfg]cb'k cf_g'hc"

hAY'Zfgh'hk'c'cZHAYgYz'\Uj Y'hAY'Yl YW'UUV'Yg'UbX'gci fW'Zcf'hAY'Wt'ffYgdcbX]b['"B9H'G8?'j Yfg]cb'"hAY'm
]bWt'XY'hAY'hc'Zcf'Wtbgfhi Wt]b['gma Vc'Z]Yg'Zf'ca '"B9H'UggYa V'Yg'"6fck gY'hAY'WtXY'cZB&7DG']Z'mci 'k']g'>Z'
Vi hXc'bch'fmihc'fYWta d]Y'hAY'W'ffYbhVi]XZ'Ug']h'fYei]fYg'a Ubi U']bhYf'Ybh]cb"

hAY'bYl h'hk'c'\Uj Y'hAY'>JA'j Yfg]cbz']bWt'X]b['U'WUgg'Z]Yg'UbX'gci fW'g'hAY'cb'mfYUgcb'h'Uh'hAY'fY'UFY'
hk'c']g'VYWti gY'hAY'gci fW'Z]Yg']b'hAY'hk'c'Z]Yg'\Uj Y'X]ZZfYbh']bY'a Uf_Yfg" hAY'i "HUF"[n']g']b']b]l'Z'fa Uh'
UbX'\Ug'g'Y'Z]Yg'fUhAY'f'h'Ub' ' "VUh'Z]Yg"

Unpacking the Archive

=Z'mci 'UFY']bghU']b['hAY'"B9H'j Yfg]cb'k Y'ghfcb['mi f[Y'mci 'hc'i gY'hAY'=-bghU'!G\Y'X'j Yfg]cb' "

Unix/Linux etc: JVM version

=Z'mci 'k Ubh'hAY' 'j a'j Yfg]cb'cZ[dWtZ'hAYb'mci 'g\ci 'X'Xck b'cUX'[dWt'%"%" ! j a "HUF"[n'! bdUW' hAY'[dWt'
X]ghf]Vi h]cb']b'mci f'ca Y'X]fYVWcfmU'gcZ'i g]b['[i bn]dZ'UbX'hAYb'HUF'!]Z'h']g'k]' WYUHY'U'Z]Y'\YfUFW'm
f'cch'X'Uh' <CA 9#[dWt'"h']g'X]fYVWcfmk]'VY'hAY' 7DFCCH'Ybj]fcb'a Ybhj Uf]UV'Y'k \W' hAY'W'f' b'UbX'
Wt]bh'g'Y'gW]dh'fYZf'hc'"8cW'a YbHUh]cb'k]'VY']b' <CA 9#[dWt'#XcWtj"

Windows etc: JVM version

=Z'mci 'k Ubh'f' gh'hAY' 'j a'j Yfg]cb'cZ[dWtZ'hAYb'mci 'g\ci 'X'Xck b'cUX'[dWt'%"%" ! j a "njd" Bcfa U'm
[dWt'%"%" ! j a "njd']g'i bdUW'YX']b'U'X]fYVWcfmigi W'Ug'7. f[dWt'"=Z'mci 'k Ubh'hc'i bdUW']b'X]ZZfYbh'
X]fYVWcfY]gz'mci 'a UmbYXX'hc'YX]hgca Y'cZHAY'"65H'Z]Yg']b'f[dWt'PV]b'"! bdUW' hAY'UFW'j] Yz'hAYb'fYUX'hAY'
XcW'a YbHUh]cb']b'f[dWt'PXcWtj"

Mac OS-X: JVM version

<YfY'UFY'gca Y'i gYz' ']bghfi Wt]cbg'Zcf'A UWI gYfg'...

Windows: .NET version

=Z'mci 'k Ubh'f' gh'hAY'"B9H'j Yfg]cb'cZ[dWtZ'hAYb'mci 'g\ci 'X'Xck b'cUX'[dWt'%"%" ! bYH "njd" Bcfa U'm
[dWt'%"%" ! bYH "njd']g'i bdUW'YX']b'U'X]fYVWcfmigi W'Ug'7. f[dWt'"=Z'mci 'k Ubh'hc'i bdUW']b'X]ZZfYbh'X]fYVWcfY]gz'mci 'a UmbYXX'
hc'YX]hgca Y'cZHAY'"65H'Z]Yg']b'f[dWt'PV]b'"! bdUW' hAY'UFW'j] Yz'hAYb'fYUX'hAY'XcW'a YbHUh]cb']b'f[dWt'
PXcWtj"

GD97=5@BCH9:]Z'mci '\Uj Y'dfcV'Ya g'k]h'Wta d]]b['hAY'<Y'c'K c'f'X'Yl Ua d'Yz'k]h' A'g]5ga'ZU]]b['hc'
Z]bX'GmghYa "8]U[b'cgh]Vtj' 'mci 'k]'bYXX'hc'fYWta d]Y'hAY'7. 'Z]Y'A'g]5ga' "Vtj"; c'hc'U'k cf_]b['X]fYVWcfmZ'
UbX'Wt'dmA'g]5ga' "Vtj'UbX'F'HG"X'"]bhc'hAY'X]fYVWcfm'! gY'hAY'Wta a UbX'
'2' VtjW#h']VfUfmi'#. F'HG"X'"A'g]5ga' "Vtj'
]Z'mci '\Uj Y'U'fYVbh'fY'YUgY'Wt]bX]XUH'Z'cf'
'2' VtjW#h']VfUfmi'#. GmghYa "8]U[b'cgh]Vtj'X'"#. F'HG"X'"A'g]5ga' "Vtj'
Zcf'YUF'Yf'j Yfg]cbg'7'cdm'hAY'fYgi 'h]b['A'g]5ga' "X'"hc'hAY'f[dWt'PV]b'X]fYVWcfm'K'Y'Udc'c[]nY']Z'h']g']g'U'
dfcV'Ya z'Vi h'k'Y'UFY'g\cch]b['Zcf'U'a c]]b['HUF[Yh\YfY"

Bug Reports

D'YUgY'fYdcfh'UbmVi [gZ'cf'gYbX'Ubm'dfU]gYz'hc' [dWt4 ei h'YXi "Ui' "

...

```
D@5G`
|
|   Dfc^YVtg
|
|   7ca dcbYbhDUgWV`
|
|   8YHU]YX`dfc^YVh]bZcfa Uh]cb
|
|   @Ub[ i U[ Y`fYdcfh
|
|   7ca dcbYbhDUgWV`cb`B9H
|
|   7ca dcbYbhDUgWV`cb`hY`>J A
|
|   7ca dcbYbhDUgWV`Zcf`=89g
|
|   D9`: JY`K f]hYf
|
|   8ck b`cUX`dU[ Y
|
|   Cb`]bY`; D7D`Wta d]Yf
|
|   ; YbYf]Vtg
|
|   D9`: JY`FYUXYf#K f]hYf
|
|   ; &`7`i ghYf`7ca di h]b[
|
|   A cV`]nYf
|
|   ; UfXYbg`Dc]bhGYfj ]W`@Ub[ i U[ Y
|
|   ; UfXYbg`Dc]bhA cXi `U
|
|   6]c]bZcfa Uh]Vtg
|
|   A YhUd\cf
|
|   9@d
|
|   9@d"B9H
|
|   5Vtgj YG\YYtg
|
|   F _K _
|
|   7cbWfbA Udg
|
|   DYcd`Y
|
|   K _]
|
|   7cbHUVtg
```

Online GPCP compiler

K]h\`hY`cb`]bY`; D7D`Wta d]Yfz`mci `WUb`Wta d]Y`7ca dcbYbhDUgWV`dfc[fUa g`cb`]bY`
UbX`Xck b`cUX`hY`fYgi `h]b[``B9H`YI YW hUV`Yg``

Requirements

.....J Yfg]cb`%`I `cZ`hY`"B9H`: fUa Yk cf_ `fhc`fi b`hY`YI YW hUV`Ygk
.....=Z`mci `VXccgY`hc`gUj Y`hY`YI YW hUV`Y`hc`X]g_`UbX`fi b`]hZ`mci `k J``bYYX`FHG`X```hc`VY`
dfYgYbh`]b`Ub`UVWVggjV`Y`X]fYVWc`fm`

BCH9. `hY`Wta d]Yf`k J``cb`m[YbYfUhY`Ub`"YI Y`Z]Y`JZ`mci `]a dcfh`hY`a cXi `Y`7Da U]b``=Z
mci `Xc`bch`]a dcfh`h\]g`a cXi `Yz`U`"X```k J``VY`[YbYfUhYX``5`gcZ`hY`cb`]bY`Wta d]Yf`cb`m
U`ck g`mci `hc`XYj Y`cd`U`g]b[`Y`a cXi `Y``

Your GPCP program:

Load example program:

```
7ca d]Y`Zcf`hY`7@F`%"$
7ca d]Y`Zcf`hY`7@F`&"$`fk \]XVYmfi
```

Compiler output:

<ca Y`p`Dfc^YVtg`p`DYcd`Y`p`K _]`p`7cbHUVtg`
E I H<ca Y`p`: =H<ca Y`p`E I H`gYUfVX`

Df]j UVh`p`7cdmf][\`h`p`5VWVggjV`]lmi
@Ugh`a cX]Z]YX`%d5i [!&\$)\$`
7cbHUVh`i g`p`: YYXVUW`p`8]gWU]a Yf`