Αντικειμενοστραφής προγραμματισμός

Ενότητα 9

'' #$%$&' ()!& * +, ' –. ∕0!

12!#3-' 405!6!7' 8!9, 4%5 * 5%$: ;)!6k(0$5!9+0#=$&. ; ' $5!

>?@@+)!A4' ; .%4)!

B4C+0$: ()!DEF!G!9, 4%5 * 5%$: ;)!H!I JKH!LMN!

OPQQRST PUVPU8Q0!

"#$%$&' ()!&*+,' -./OWXYKXZ[ÞUV!MRV\]ÞVQ^!

- _0.$' #.` =$&4!#3+$%#.$:`0!&*+,' -./0!=5a!=%5: b=.5a0!: +.-!.40!#: .c, #&4!#0.()!=%5@%-'' +.5)!
  - 9ᴕC8!
    - _0+d; .4&4!#: .()!5%?/0!=?0+: +!
    - "#$%$&' ()!e#e5' c0/0!e$+*5%#.$: 5b!.b=5a!
    - _=(=#$%+!: ,; &4)!' #f(e5a!&#!+0+*5%-!Vg]]!
    - 888!!

- D!+0.$' #.` =$&4!.c.5$/0!0gV[ÞhX!X00U0Sℍ!.+!5=5?+!e#0!#?0+$!#b: 5,5!0+!+0$C0#af5b0!: +.-!.4!' #.+@,`..$&4!#=$.%c=#$!.4!e4' $5a%@?+!=%5@%+'' -./0!
  - _0f#: .$:`0!&#!&*-,' +.+!
  - 95a!.#%' +.?d50.+$!' #!: 5' i (!.%(=5!

9+%-e#$@' +!

- _: c%+$+!e$+?%#&4!!
  - F=5,5@$&' ()!=4,?: 5a!

- *Τι μπορεί να πάει λάθος;*

PhZU0[!jRkR8g[P]8JKRVVX0I!
!
Zgm]PK!K]RSS!nV[NPkPSU0!o!
!!!!!
　　　　　　　!　　　　　　　　　!!!!!!!!!!!!!!!!!!!EE!e$+$%#.c5)H!!!!!!!!e$+$%c.4)!
!!!!Zgm]PK!S[R[PK!PV[!pgU[PXV[WPV[!VghX0R[U0H!PV[!\XVUhPVR[U0!^!o!
!!!!!!!!!0X[g0V!VghX0R[U0E\XVUhPVR[U0I!
!!!!q!
!!!!!
!!!!Zgm]PK!S[R[PK!kUP\!hRPVWJ[0PVQrs!R0QS^!o!
!!!!!!!!!JKRVVX0!SK!t!VXu!JKRVVX0WJvS[Xh8PV^I!
!!!!!!!!!
!!!!!!!!!JvS[Xh8Ug[8Z0PV[WwA` &#!e$+$%#.#(x!w^I!
!!!!!!!!!PV[!V!t!SK8VXY[nV[W^I!
!!!!!!!!!
!!!!!!!!!JvS[Xh8Ug[8Z0PV[WwA` &#!e$+$%c.4x!w^I!
!!!!!!!!!PV[!\!t!SK8VXY[nV[W^I!
!!!!!!!!!
!!!!!!!!!JvS[Xh8Ug[8Z0PV[]VWw94,?: 5x!wy!pgU[PXV[WVH!\^^I!
!!!!!!!!!
!!!!q!
q!

7$!' =5%#?!O+!=−#$!, −f5)!&#!c0+!+=, (!=%(@%+' ' +l!

!

!

A$+?%#&4!' #!' 4ec0!→!

!

!

!

z+!' 4!e5f#?!+: c%+$5)!→!

PhZU0[!jRkR8g[P]8JKRVVX0I!
!
Zgm]PK!K]RSS!nV[NPkPSU0!o!
!!!!!
    !   !!!!!!!!!!!!!!!!!!!EE!e$+$%#. c5)H!!!!!!!!e$+$%c. 4)!
!!!!Zgm]PK!S[R[PK!PV[!pgU[PXV[WPV[!VghX0R[U0H!PV[!\XVUhPVR[U0!^!o!
!!!!!!!!!0X[g0V!VghX0R[U0E\XVUhPVR[U0I!
!!!!q!
!!!!!
!!!!Zgm]PK!S[R[PK!kUP\!hRPVWJ[0PVQrs!R0QS^!o!
!!!!!!!!!JKRVVX0!SK!t!VXu!JKRVVX0WJvS[Xh8PV^I!
!!!!!!!!!
!!!!!!!!!JvS[Xh8Ug[8Z0PV[WwA` &#!e$+$%#. #(x!w^I!
!!!!!!!!!PV[!V!t!SK8VXY[nV[W^I!
!!!!!!!!!
!!!!!!!!!JvS[Xh8Ug[8Z0PV[WwA` &#!e$+$%c. 4x!w^I!
!!!!!!!!!PV[!\!t!SK8VXY[nV[W^I!
!!!!!!!!!
!!!!!!!!!JvS[Xh8Ug[8Z0PV[]VWw94, ?: 5x!wy!pgU[PXV[WVH!\^^I!
!!!!!!!!!
!!!!q!
q!

XYRhZ]XSE{|!
28/11/2016

95$5!. 5!+=5. c, #&' +l!

- A$+?%#&4!' #!' 4ec0!
  jRkR!nV[NPkPSU0!!
  A` &#!e$+$%#. #(x!}!
  A` &#!e$+$%c. 4x!{!
  ~YKXZ[PUV!PV![M0XR\!whRPVw!jRkR8]RVQ8•0P[MⱧX[PK~YKXZ[PUVx!E!mv!€X0U!
  !!!!!!!!!R[!nV[NPkPSU08pgU[PXV[WnV[NPkPSU08jRkRx•^!
  !!!!!!!!!R[!nV[NPkPSU08ⱧRPVWnV[NPkPSU08jRkRx|, ^!

Exception

StackTrace

- ƒ?&5e5)!e$+ * 5%#. $: 5b!. b=5a!
  jRkR!nV[NPkPSU0!!
  A` &#!e$+$%#. #(x!„!
  A` &#!e$+$%c. 4x!MX]]U!
  ~YKXZ[PUV!PV![M0XR\!whRPVw!jRkR8g[℗]8nVZg[I PSⱧR[KM~YKXZ[PUV!
  !!!!!!!!!R[!jRkR8g[℗]8JKRVVX08[M0Uu…U0WJKRVVX08jRkRx†{†^!
  !!!!!!!!!R[!jRkR8g[℗]8JKRVVX08VXY[WJKRVVX08jRkRx|„}{^!
  !!!!!!!!!R[!jRkR8g[℗]8JKRVVX08VXY[nV[WJKRVVX08jRkRx‡|•{^!
  !!!!!!!!!R[!jRkR8g[℗]8JKRVVX08VXY[nV[WJKRVVX08jRkRx‡||†^!
  !!!!!!!!!R[!nV[NPkPSU08ⱧRPVWnV[NPkPSU08jRkRx|•^!

A4' $5a%@?+!~YKXZ[ℙUV!

- ^. +0!&a' ‰+?0#$!c0+!&*‐,' +!&#!: ‐=5$+!' cf5e5⑂!4!' cf5e5)!e$+: (=. #$!. 40!: +050$: ; !. 4)!#: . c, #&4⑂!e4' $5a%@#?!c0+!+0. $: #?' #05!. b=5a!~YKXZ[ℙUV!⑈&a04fc&. #%+!a=56 : , ‐&4)!. 4)^!: +$!. 5!Š=#. ‐#$<!⑈[M0U∪S^8!

- 75!~YKXZ[ℙUV!+0. $: #?' #05!=#%$, +' ‰‐0#$!=, 4%5*5%?#)!@$+!. 5!&*‐,' +⑂!(=∕)!5!. b=5)!. 5a!: +$!4!: +. ‐&. +&4!. 5a!=%5@%‐' ' +. 5)!(. +0!&a0c‰48!

- D!ŒRkR!=#%$' c0#$!0+!‰%#$!: ` e$: +!5!5=5?5)!f+!=$‐&#$!. 5!~YKXZ[ℙUV!: +$!#?. #!f+!. 5! e$+C#$%$&. #?!#?. #!f+!. 5!Š=#. ‐3#$<!#: !0c5a!

  - _0+d4. ‐!&. 40!. %cC5a&+!' cf5e5!: +$!&. 4!&a0cC#$+!&#!(, #)!. $)!' #f(e5a)!&. 4! &. 5?‰+!#: . c, #&4)!' cC%$!: +$!. 4!ℏRℙV!!

  - _0!: +0#?)!e#0!=$‐&#$!: +$!e$+C#$%$&. #?!c0+!~YKXZ[ℙUV!. (. #!4!Œ•I !. a=` 0#$!. 5! ' ; 0a' +!&*‐,' +. 5)!=5a!=#%$, +' ‰‐0#$x!

    - 750!. b=5!. 5a!~YKXZ[ℙUV!!

    - 9$f+0‐!' 40b' +. +!

    - 95a!&a0c‰4!. 5!&*‐,' +!

9`)!=%5@%+' ' +.?d5a' #!@$+!. 40!+0. $' #.` =$&4!XYKXZ[ℙUVSI!

- *(Γιατί να το κάνουμε;)*
  - *Το πρόγραμμά μας μπαίνει σε μια αβέβαια κατάσταση αν δεν διαχειριστούμε σφάλματα που συμβαίνουν*

- ƒ0.5, c)![0v!Ž !KR[KM!

- [0v!m]UK•!
  - •` e$: +)!=5a!=+%+: 5, 5af#?. +$!@$+!#' * –0$&4!&* +, ' –. ∕0!

- KR[KM!m]UK•!
  - '' #$%$&. ;)!#3+?%#&4)!

9`)!C%4&$' 5=5$5b0. +$!

888!
[0v!o!
!!!!EE!: ` e$: +)!=5a!=+%+: 5, 5af#?. +$!!
!!!!EE!=$f+0(!0+!=%5: b=. 5a0!&* -, ' +. +!!
!!!!EE!#: . c, #&4)!. +!5=5?+!e4' $5a%@5b0!
!!!!EE!: -=5$+!~YKXZ[ꟼUVS!
q!
KR[KM!W~YKXZ[ꟼUV' vZX•!XY^!o!
!!!!EE!C#$%$&' ()!~YKXZ[ꟼUV' vZX•!!
!!!!EE!; !a=56: , -&#` 0!. 4)!
q!
KR[KM!W~YKXZ[ꟼUV' vZX' !XY^!o!
!!!!EE!C#$%$&' ()!~YKXZ[ꟼUV' vZX' !!
!!!!EE!; !a=56: , -&#` 0!. 4)!
q!

[0v!o!
!!!!!!!!!!!!!!!!!!JvS[Xħ8Ug[8Z0PV[ꟽwA` &#!e$+$%#. #(x!w^!!
!!!!!!!!!!!!!!!!!!ꟼV[!V!t!SK8VXY[nV[ꟽ^!!
!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!JvS[Xħ8Ug[8Z0PV[ꟽwA` &#!e$+$%c. 4x!w^!!
!!!!!!!!!!!!!!!!!!ꟼV[!\!t!SK8VXY[nV[ꟽ^!!
!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!JvS[Xħ8Ug[8Z0PV[]Vꟽw94,?: 5x!wy!pgU[ꟼXV[ꟽVꟷ!\^^!!
!!!!!!!!!!!!!!!!!!XYKXZ[ꟼUV…]RQ!t!"R]SX!!
q!
KR[KM!W•0P[Mħ X[PK~YKXZ[ꟼUV!RXY^!o!
!!!!!!!!!!!!!!!!!!JvS[Xħ8Ug[8Z0PV[]Vꟽw"V•a0c‰4!c0+!!
               !   !•0P[Mħ X[PK~YKXZ[ꟼUVx!wy!RXY^!!
!!!!!!!!!!!!!!!!!!JvS[Xħ8Ug[8Z0PV[]VꟽwA5: $' -&. #!=-, $8!!
         !—a' 4f#?. #-ꟷA#0!e$+$%5b' #!' #!. 5!' 4ec08w^!!
q!
KR[KM!WjRkR8g[ꟼ]8nVZg[I ꟼSħR[KM~YKXZ[ꟼUV!ꟼħXY^!o!
!!!!!!!!!!!!!!!!!!JvS[Xħ8Ug[8Z0PV[]Vꟽw"V•a0c‰4!c0+!
          !!nVZg[I ꟼSħR[KM~YKXZ[ꟼUVx!wy!ꟼħXY^!!
!!!!!!!!!!!!!!!!!!JvS[Xħ8Ug[8Z0PV[]VꟽwA5: $' -&. #!=-, $888!: +$!!
          !+a. ; !. 4!*5%-!e` &. #!eb5!_•ƒ>_<^ F•-"Vw^!!
!!!!!!!!!!!!!!!!!!SK8VXY[˜ꟼVXꟽ^!!EE9+%+‰, c=5a' #!. 4!!
          !!!!!!!!!!!!!!!!!!!!EE, -ƒ5)!#?&5e58!
q!

7$!=#%$cC#$!: −f#!' =, 5: !: ` e$: +!

- [0v!m]UK•!
  - •` e$: +)!5!5=5?5)!?&∕)!5e4@; &#$!&#!&*−,' +!
  - •` e$: +)!5!5=5?5)!e#0!=%c=#$!0+!#: .#, #&.#?!#−0!0∕%?.#%+!a=−%3#$!&*−,' +!!
    - ˆ!: ` e$: +)!+=(!. 5!&4' #?5!. 5a!&*−,' +. 5)!c∕)!. 5!KR[KM!+@05#?. +$!(. +0! &a' ‰+?0#$!: −=5$5!&*−,' +!
    - B#. −!. 5!C#$%$&' (!. 5a!~YKXZ[ꓑUV!+=(!: −=5$5!KR[KM!m]UK•!4!#: . c, #&4! =%5@%−' ' +. 5)!e#0!#=$&. %c*#$!&. 5![0v!m]UK•!+, , −!&a0#C?d#$!' #. −!. 5!. #, #a. +?5! KR[KM!m]UK•!
      - _0!a=; %C+0!]UKR]!' #. +‰, 4. c)!#0. ()!. 5a![0v!m]UK•ꟸ!+a. c)!#?0+$!=, c50!#: . ()! #' ‰C, #$+)!

- KR[KM!m]UK•!
  - •−f#!KR[KM!m]UK•!ꟼ' =5%#?!0+!a=−%C5a0!=5, , −ˆ!=$−0#$!c0+!. b=5!~YKXZ[ꓑUVS!ꟸ: +$!. $)! a=5ɓ: , −&4)!+a. 5bˆ!: +$!=%+@' +. 5=5$#?!: +. −, , 4, 5a)!C#$%$&' 5b)!
  - B#. −!+=(!: −f#![0v!m]UK•!=%c=#$!0+!: 5, 5af#?!c0+!. 5a, −C$&. 50!KR[KM!m]UK•!ꟸ; !c0+! ™VR]]v!m]UK•!=5a!f+!e5b' #!=$5!: −. ∕ˆ!

9#%?=./&4!™VR]]v!

- •#!5%$&' c0#)!=#%$=.` &#$)!: -=5$5)!: ` e$: +)!=%c=#$!0+!#: .#, #&. #?!#?. #!4!#: .c, #&4!. 5a![0v!m]UK•!; . +0!5' +, ; !; !+: (' 4!: +$!+0!=%5c: ai #!: -=5$5!~YKXZ[ÞUV8!

  - 9&C8!: , #?&$' 5!: -=5$50!=(%/0!&a&. ; ' +.5)!

- 1$+!0+!+=5*b@5a' #!#=+0-, 4i 4!. c. 5$5a!: ` e$: +!#0. ()!. 5a![0v!m]UK•!: +$!(, /0!. /0! KR[KM!m]UK•S!C%4&$' 5=5$5b' #!. 5!™VR]]v!m]UK•!

9+%-e#$@' +!

[0v!o!
!!!!!!!!!!!!!!!!!!JvS[Xh8Ug[8Z0PV[WwA` &#!e$+$%#. #(x!w^!
!!!!!!!!!!!!!!!!!!!PV[!V!t!SK8VXY[nV[W^!
!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!JvS[Xh8Ug[8Z0PV[WwA` &#!e$+$%c. 4x!w^!
!!!!!!!!!!!!!!!!!!!PV[!\!t!SK8VXY[nV[W^!
!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!JvS[Xh8Ug[8Z0PV[]VWw94,?: 5x!wy!pgU[PXV[WVH!\^^!
!!!!!!!!!!!!!!!!!!!!XYKXZ[PUV…]RQ!t!"R]SX!
q!
KR[KM!W•0P[MhX[PK~YKXZ[PUV!RXY^!o!
!!!!!!!!!!!!!!!!!!JvS[Xh8Ug[8Z0PV[]VWw"V•a0c‰4!c0+!•0P[MhX[PK~YKXZ[PUVx!wy!
               !   !   !!RXY^!
!!!!!!!!!!!!!!!!!!JvS[Xh8Ug[8Z0PV[]VWwA5: $' -&. #!=-,$8!—a' 4f#?. #−!A#0!!
               !   !   !e$+$%5b' #!' #!. 5!' 4ec08"Vw^!
!!!!!!!!!!!!!!q!
KR[KM!WjRkR8g[P]8nVZg[I PSHR[KM~YKXZ[PUV!PhXY^!o!
!!!!!!!!!!!!!!!!!!JvS[Xh8Ug[8Z0PV[]VWw"V•a0c‰4!c0+!nVZg[I PSHR[KM~YKXZ[PUVx!wy!!
               !   !   !PhXY^!
!!!!!!!!!!!!!!!!!!JvS[Xh8Ug[8Z0PV[]VWwA5: $' -&. #!=-,$888!•+$!+a. ;!. 4!*5%-!!
               !   !   !e` &. #!eb5!_•f>_<ˆ F•-"Vw^!
!!!!!!!!!!!!!!!!!!SK8VXY[~PVXW^!!
q!
™VR]]v!o!
!!!!!!!!!!!!!!!!!!JvS[Xh8Ug[8Z0PV[]VWwB4!3#C0-. #!(. $!. 5!&b05, 5!. /0!+: #%+?/0!
e#0!#?0+$!: ,#$&. (!/)!=%5)!. 4!e$+?%#&4H!' =5%#?!0+!a=-%C#$!: +$!
a=(, 5$=5-w^!
q!

9%5#$e5=5?4&4!@$+!=$f+0-!~YKXZ[�androidUVS!

- ˆ%f; !=%5@%+' ' +.$&.$: ; !=%+: .$: ; x!
  - ˆ$!' cf5e5$!0+!=$-05a0!. +!~YKXZ[ᴘUVS!=5a!' =5%#?!0+!&a' ‰5b0!#0. ()!. 5a)!: +$!0+!. +!e$+C#$%?d50. +$!
  - šD!0+!=%5#$e5=5$5b0!@$+!~YKXZ[ᴘUVS!. +!5=5?+!' =5%#?!0+!&a' ‰5b0!

- "%; &4!, c34)!: , #$e?![M0UᴗS!
  - A4, ` 0#$!' $+!, ?&. +!+=(!~YKXZ[ᴘUVS!=5a!' $+!' cf5e5)!=$f+0(0!0+!=#. -3#$!

9+%-e#$@' +!

- 75![M0U∪S!e4,` O#. +$!' #. -!. 40!
  υπογραφή!. 4)!' #f(e5a!: +$!=%$O!. +!
  -@: $&. %+!. 5a!m]UK•!: ` e$: -!. 4)!

Zgm]ℙK!S[R[ℙK!ℙV[!pgU[ℙXV[ℙℙV[!Vgℏ︎X0R[U0ℍ! !!
      !ℙV[!\XVUℏ︎ℙVR[U0!^!!
    ![M0U∪S!•0ℙ[Mℏ︎X[ℙK~YKXZ[ℙUV!
!!!!o!ℍℍ!e$+$%#. c5)ℍ!e$+$%c. 4)!
!!!!!!!!!0X[g0V!Vgℏ︎X0R[U0ℍ\XVUℏ︎ℙVR[U0I!
!!!!q!
!!

•: (=$' 5!=c. +@' +!~YKXZ⫪UV!

- A#0!: +, 5b' +&. #!+=, -!=$-&5a' #!
  ~YKXZ⫪UVS!
  - B=5%5b' #!: +$!0+!=+. -' #!~YKXZ⫪UVS!
    (=5. #!: %?05a' #!(. $!: -. $!' 4!
    e$+C#$%?&$' 5!=%(: #$. +$!0+!&a' ‰#?!

- "%; &4!#0. 5, ;)!⫪M0Uu!

- 75!?e$5!' =5%#?!0+!@?0#$!: +$!#0. ()!#0()!
  KR⫪KM!m]UK•!. 5!5=5?5!e#0!' =5%#?!
  =, ; %⁄)!0+!e$+C#$%$&. #?!c0+!& * -, ' +!
  W3+0+6=#. -' #!. 5!?e$5!~YKXZ⫪UV^!
  - ' U!™VR]]v!m]UK•!#: . #, #?. +$-!

- ^C$!(' ⁄)!#0. ()!™VR]]v!m]UK•!

Zgm]⫪K!S⫪R⫪⫪K!⫪V⫪!pgU⫪⫪XV⫪⫪⫪V⫪!Vgⱨ X0R⫪U0!
        !⫶!⫪V⫪!\XVUⱨ⫪VR⫪U0!^!
        !⫪M0Uⱨ S!•0⫪⫪ⱨX⫪⫪K~YKXZ⫪UV!
o!!
!!!!!!!!⫪⫶!⫪!!\XVUⱨ⫪VR⫪U0!tt!{!^!!
        !⫪M0Uⱨ!VXⱨ!•0⫪⫪ⱨX⫪⫪K~YKXZ⫪UV!
        !   !Ⱳw^!e$+$%c. 4)!e#0!!
        !   !' =5%#?!0+!#?0+$!' 4ec0!!
        !   !ⱲE{^–w^!!
!!!!!!!!!!EE!e$+$%#. c5)⫶!e$+$%c. 4)!
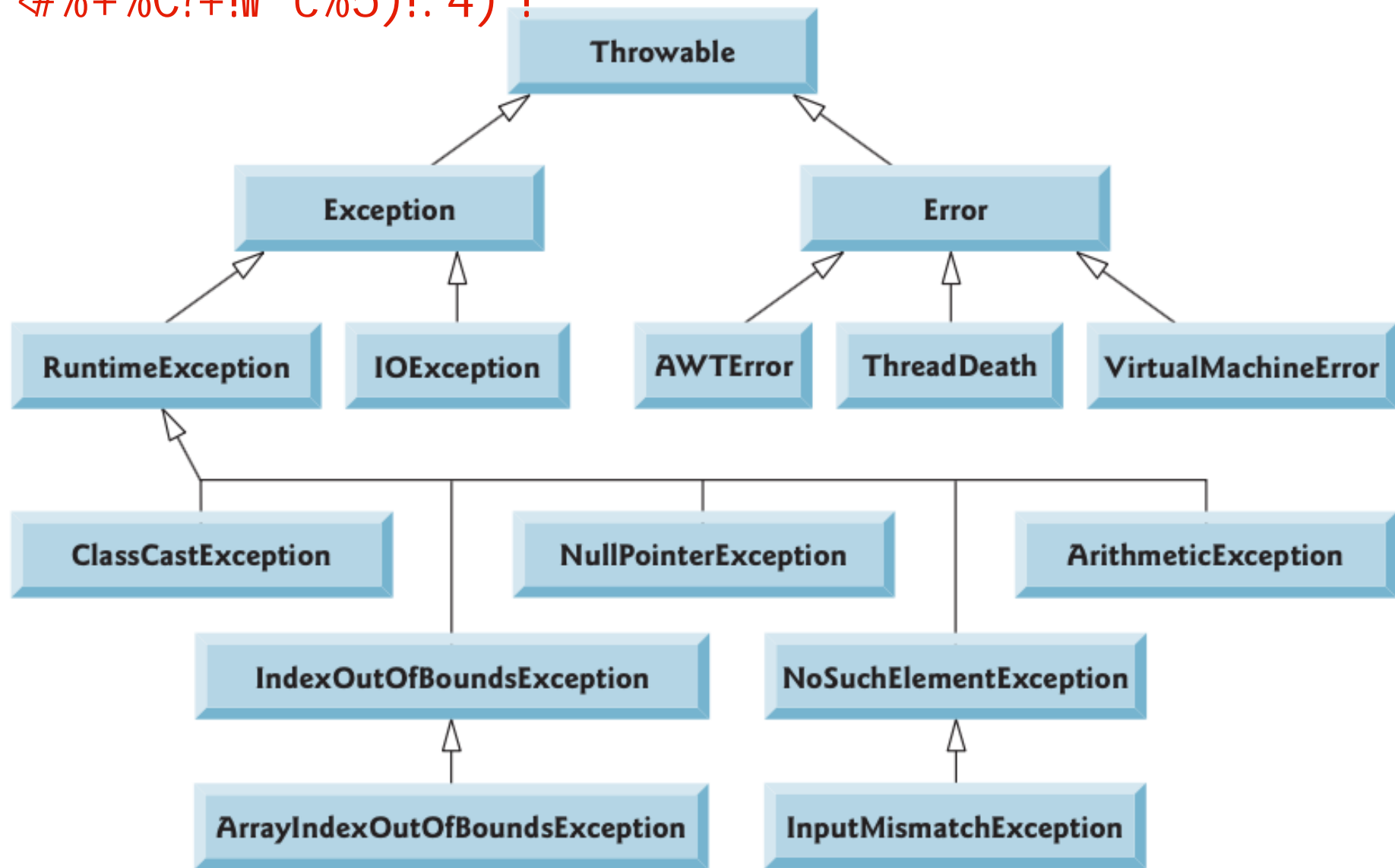!!!!!!!!!!0X⫪g0V!Vgⱨ X0R⫪U0E\XVUⱨ⫪VR⫪U0I!
!!!!q!

' M0U∪Rm]X!

- D!: , -&4!' 0MU∪Rm]X!#?0+$!4!a=#%6: , -&4!(, ⁄0!. ⁄0!X00U0S!: +$!XYKXZ[℗UVS!&. 4!ŒRkR!
  - B(05!+0. $: #?' #0-!. 4)!; !a=56: , -&#` 0!. 4)!' =5%5b0!0+!=#. +C. 5b0!+=(!' $+!#0. 5, ; ! [M0U∪!: +$!' =5%5b0!0+!#?0+$!=+%-' #. %5$!&#!' $+!KR[KM!

- ƒC#$!ea5!+=5@(05a)!
  - ~00U0!
    - ƒ3+$%#. $: -!&=-0$+!&*-, ' +. +!#0. ()!. 4)!•P0[gR]!I RKMPVX!
    - 7+!=%5@%-' ' +. +!e#0!' =5%5b0!&a0; ƒ⁄)!W: +$!e#0!=%c=#$^!0+!=%5&=+ƒ5b0!0+!. +! Š=$-&5a0‹H!=C!œg[œ"I XⱵU0v~00U0!
  - ~YKXZ[℗UV!
    - ƒ3+$%#. $: c)!: +. +&. -&#$)!#0. ()!. 5a!=%5@%-' ' +. 5)!
    - 7+!=%5@%-' ' +. +!' =5%5b0!: +$!5*#?, 5a0!0+!e$+C#$%?d50. +$!

ƒ,#@C(' #0+!G!' 46#,#@C(' #0+!WKMXK•!G!gVKMXK•X\^!~YKXZ[ƤUVS!

- D!ŒRkR!e$+: %?0#$!' #. +3b!. /0!~YKXZ[ƤUVS!&#!#,#@C(' #0+!: +$!' 46#,#@C(' #0+!

- 1$+!. +!#,#@C(' #0+!5!KUⱧZƤ]X0!+=+$. #?!4!' cf5e5)!
  - #?. #!0+!. +!Š=$-0#$<!: +$!0+!. +!e$+C#$%?d#. +$!!
  - ¡ !0+!. +!e4,` 0#$!W[M0U∪S^!

- B46#,#@C(' #0+!
  - •, -&4!: +$!a=56: , -&#$)!. 4)!jRkR8]RVQ8•gV[ⱣⱧX~YKXZ[ƤUV!
  - ž, -&4!: +$!a=56: , -&#$)!. 4)!jRkR8]RVQ8~00U0!

- ƒ,#@C(' #0+!
  - F=56: , -&4)!. 4)!~YKXZ[ƤUV!=5a!e#0!#?0+$!a=56: , -&#$)!. 4)!•gV[ⱣⱧX~YKXZ[ƤUV!

A4' $5a%@?+!0c5a!. b=5a!~YKXZ[ℙUV!

- _3$5=5$` 0. +)!. 40!: , 4%505' $: (. 4. +!' =5%5b' #!0+!e4' $5a%@; &5a' #!0c#)!: , -&#$)! =5a!#=#: . #?05a0!. 40!~YKXZ[ℙUV!; !: -=5$+!a=5ɩ: , -&4!. 4)!

- ƒ0+)!0c5)!. b=5)!I vŸgS[Uℏ~YKXZ[ℙUV!&a0; ƒ╱)!=+%cC#$!. c&&#%$)!KUVS[0gK[U0Sx!

    ## !Zgm]ℙK!I vŸgS[Uℏ~YKXZ[ℙUV!𝕎^!

    - A4' $5a%@#?!c0+!0c5!I vŸgS[Uℏ~YKXZ[ℙUV!C╱%?)!: -=5$5!' ; 0a' +!, -ƒ5a)!

    ## !Zgm]ℙK!I vŸgS[Uℏ~YKXZ[ℙUV!𝕎J[0ℙVQ!ℏXSSRQX^!

    - A4' $5a%@#?!c0+!0c5!I vŸgS[Uℏ~YKXZ[ℙUV!' #!: -=5$5!' ; 0a' +!, -ƒ5a)!

    ## !I vŸgS[Uℏ~YKXZ[ℙUV!𝕎J[0ℙVQ!ℏXSSRQX𝕎!' M0U⊔Rm]X!KRgSX^!

    - A4' $5a%@#?!c0+!0c5!I vŸgS[Uℏ~YKXZ[ℙUV!C╱%?)!: -=5$5!' ; 0a' +!, -ƒ5a)!: +$! +$. ?+!: -=5$5!=%54@5b' #05!' M0U⊔Rm]X!+0. $: #?' #05!

    ## !I vŸgS[Uℏ~YKXZ[ℙUV!𝕎' M0U⊔Rm]X!KRgSX^!

    - A4' $5a%@#?!c0+!0c5!I vŸgS[Uℏ~YKXZ[ℙUV!' #!+$. ?+!: -=5$5!=%54@5b' #05! ' M0U⊔Rm]X!+0. $: #?' #05!

ƒ0+!~YKXZ[ℙUV!/)!=4@; !=, 4%5＊5%$` 0!

- Bc&/!./0!' #ƒ(e/0x!

Zgm]ℙK!J[0PVQ!QX[Ι XSSRQXℤ^!

  - •X[g0VS![MX!\X[Rℙ]!ㅏXSSRQX!S[0PVQ!U"![MℙS![M0U∪Rm]X8!

Zgm]ℙK!' M0U∪Rm]X!QX[ŸRgSXℤ^!

  - •X[g0VS![MX!KRgSX!U"![MℙS![M0U∪Rm]X!U0!Vg]]!ℙ"![MX!KRgSX!ℙS!VUVXYℙS[XV[!U0!
    gV•VU∪V8!ℤ' MX!KRgSX!ℙS![MX![M0U∪Rm]X![MR[!KRgSX\![MℙS![M0U∪Rm]X![U!QX[![M0U∪V8^!

Zgm]ℙK!kUℙ\!Z0PV[J[RK•'0RKXℤ^!

  - L0PV[S![MℙS![M0U∪Rm]X!RV\!ℙ[S!mRK•[0RKX![U![MX!S[RV\R0\!X00U0!S[0XRㅏ8!

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