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Import JJIO
Class Date
-- Name Anon Y Mous
-- Does compute dates in the same year

-- Data attributes
Box year  ofType int is private -- YYYY
Box month ofType int is private -- 1 to 12
Box day   ofType int is private -- 1 to 31

Constructor Date (y,m,d) is public
  Slot y ofType int -- year of 4 digits
  Slot m ofType int -- month number
  Slot d ofType int -- day number
-- Does set a Date: year, month and day
  Set year  = y
  Set month = m
  Set day   = d
EndConstructor Date

Function daysInMonth (mon, yr) ofType int is public
  Slot mon ofType int -- month
  Slot yr  ofType int -- year
  Box result ofType int
-- Does return number of days in a month
  If (mon == 4) or (mon == 6) or
    (mon == 9) or (mon == 11) then
    Set result = 30
  ElseIf (mon == 2) then
    Set result = daysInFeb (year)
  Else
    Set result = 31
  EndIf
EndFunction daysInMonth

Function isLeap (year) ofType bool is public
  Slot year  ofType int
  Box result ofType bool
-- Does indicate if year is a leap -- needs fix
  If ( (year % 4) == 0) then
    Set result = true
  Else
    Set result = false
  EndIf
EndFunction isLeap

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Function daysInFeb (year) ofType int is private
  Slot year  ofType int
  Box result ofType int
-- Does return the number of days in February
  If ( isLeap (year) ) then
    Set result = 29
  Else
    Set result = 28
  EndIf
EndFunction daysInFeb

Function dayOfTheYear (none) ofType int is public
  Box result ofType int
  Box days   ofType int
  Box mon    ofType int
-- Does return days since Jan 1
  Set days = 0
  Set mon  = 1
  Repeat -- over intervening months
  ExitOn (mon == month)
    Inc days by daysInMonth (mon, year)
    Inc mon by 1
  EndRepeat
  Inc days by day
  Set result = days
EndFunction dayOfTheYear

Routine test (none) is public
  Box Xmas  ofClass Date
  Box July4 ofClass Date
  Box diff  ofType int
-- Does use the Date class to find elapsed days
Start
  New Xmas  ofClass Date with (2001,12,25)
  New July4 ofClass Date with (2001, 7, 4)

  Set diff = Xmas.dayOfTheYear() - July4.dayOfTheYear()
  Output "Days between July 4 and Christmas are: "
  Outputln diff
EndRoutine test

EndClass Date

-- output:
-- Days between July 4 and Christmas are: 174

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