
Article

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Advent of Code 2016 Day3: Squares with Three Sides

This is a series of programming challenges for beginners and experienced Caché programmers.

For an introduction : goto to article <https://community.intersystems.com/post/advent-code-2016-day1-no-time-ta...> or look at the <http://adventofcode.com/> website.

In today's challenge, you have to find out how many 'valid' triangles you find on the walls of the Easter Bunny HQ. (you can find the input on the adventofcode website : <http://adventofcode.com/2016/day/3/input>)

A sample of the input looks like this :

```
810 679 10
783 255 616
545 626 626
84 910 149
607 425 901
556 616 883
938 900 621
```

A valid triangle is a set of three side lengths where the sum of any two sides is larger than the remaining side.

You can find the complete instructions here : <http://adventofcode.com/2016/day/3>

We can solve this challenge in only a few steps :

- stripping the input for unnecessary whitespace : `$ZStrip(var,"<=>W")` will strip leading, trailing, and repetitive whitespace
- check each input line for the three sides, and test on valid values : $(S1 + S2 > S3, S1 + S3 > S2, S2 + S3 > S1)$
- and display the number of valid triangles

... thats really all there is to do.

Here is my solution as a classmethod :

```
ClassMethod Part1(file As %String = "j:\winfo\aac\day3.txt")
{
#Dim possibles as %Integer = 0
#Dim line as %String
#Dim values as %Integer
#Dim t, combi as %String
#Dim possible as %Integer

Open file:"R":1 Else Use 0 Write "Could not open file ",file Quit
Try {
```

```

For {
    Use file Read line If line="" Quit
    Set line=$ZStrip(line,"<=>W")
    For values=1:1:3 Set t(values)=$Piece(line," ",values)
    Set possible = 1
    For combi=$lb(1,2,3),$lb(1,3,2),$lb(2,3,1) {
        If (t($List(combi,1))+t($List(combi,2)))>t($List(combi,3)) set
possible=0 quit
    }
    If possible set possibles = possibles + 1
}
} Catch {
    If $ZE'["ENDOFFILE" Use 0 Write "Error : ",$ZE,!
}
Close file
Use 0 Write "Possibles : ",possibles,!
Quit
}

```

The answer will unlock the second part of the puzzle, which does a twist in reading the input file : instead of each line being one triangle, for each three lines each column will be a triangle.

So after some fiddling with reading the input file, I think it's better to first read the input into an array (but that's for next time).

Here is the routine code that Bert wrote for the second part :

```

Start2() PUBLIC {

    s count=0
    #Dim objFileStream As %Stream.FileCharacter
    s objFileStream = ##Class(%Stream.FileCharacter).%New()
    s sc=objFileStream.LinkToFile(
"C:\Users\15274\workspace\adventofcode\2016\input\day03\input.txt")
    while 'objFileStream.AtEnd {
        s line=objFileStream.ReadLine()
        s line2=objFileStream.ReadLine()
        s line3=objFileStream.ReadLine()
        s a=$ZSTRIP($EXTRACT(line,3,5),"*W")
        s b=$ZSTRIP($EXTRACT(line,8,10),"*W")
        s c=$ZSTRIP($EXTRACT(line,13,15),"*W")
        s a2=$ZSTRIP($EXTRACT(line2,3,5),"*W")
        s b2=$ZSTRIP($EXTRACT(line2,8,10),"*W")
        s c2=$ZSTRIP($EXTRACT(line2,13,15),"*W")
        s a3=$ZSTRIP($EXTRACT(line3,3,5),"*W")
        s b3=$ZSTRIP($EXTRACT(line3,8,10),"*W")
        s c3=$ZSTRIP($EXTRACT(line3,13,15),"*W")
        if $$IsValidTriangle(a,a2,a3) {
            s count = count + 1
        }
        if $$IsValidTriangle(b,b2,b3) {
            s count = count + 1
        }
        if $$IsValidTriangle(c,c2,c3) {
            s count = count + 1
        }
    }
}

```

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```
w !,count
}

IsValidTriangle(A,B,C) {
  s sides(A)=""
  s sides(B)=""
  s sides(C)=""
  s smallest = $ORDER(sides(""))
  s middle = $ORDER(sides(smallest))
  s last = $ORDER(sides(middle))
  q (smallest+middle)>last
}
```

I have a feeling that the next challenges will not all be so easy ...

As mentioned before, you can get all our solutions of the challenges as they pass on <https://github.com/DannyWijnschenk/AdventOfCode2016> and <https://bitbucket.org/bertsarens/advent2016>

Here is the list of all Advent of Code 2016 articles :

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