polygonTestScript.R

a1

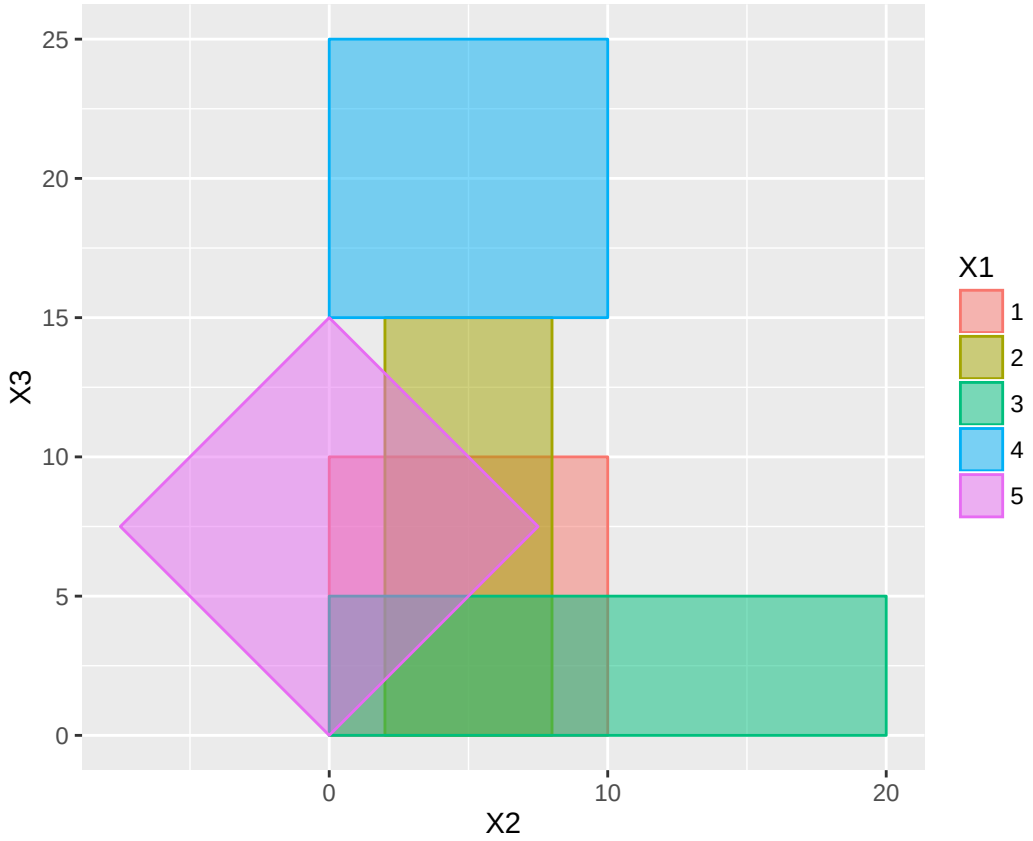
Mon Aug 29 22:43:02 2016

```
#########################################################
# This script generates a set of polygons that can
# be used to test the Rcpp code in intersectPolygons.cpp
#########################################################
rm(list = ls(all = TRUE))

# Create the List of polygons.
## Each polygon is an element of the list.
## Each polygon is stored as a matrix.
#install.packages("ggplot2")
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 3.2.4
```

```
poly1 <- matrix(c(0, 0, 0, 10, 10, 10, 10, 0, 0, 0), 5, 2, byrow = TRUE)
poly2 <- matrix(c(2, 0, 2, 15, 8, 15, 8, 0, 2, 0), 5, 2, byrow = TRUE)
poly3 <- matrix(c(0, 0, 0, 5, 20, 5, 20, 0, 0, 0), 5, 2, byrow = TRUE)
poly4 <- matrix(c(0, 15, 0, 25, 10, 25, 10, 15, 0, 15), 5, 2, byrow = TRUE)
#poly5 <- matrix(c(5, 0, 5, 5, 0, 5, 0, 10, 5, 10, 5, 15, 10, 15, 10, 10, 15, 10, 15, 5, 10, 5, 10, 0,
poly5 <- matrix(c(0, 0, -7.5, 7.5, 0, 15, 7.5, 7.5, 0, 0), 5, 2, byrow = TRUE)

# Here I create one sample list of polygons to test findIntersections() from intersectPolygons.cpp
listOfPolygons1 <- list(poly1, poly5)

# Here I create another sample list of polygons to test findIntersections() from intersectPolygons.cpp
listOfPolygons2 <- list(poly1, poly2, poly3, poly4, poly5)


##### OPTIONAL PLOTING ######
### These lines will plot the two different listOfPolygons so you can get a sense of what they look lik
## Un comment the lines and run them to see a plot of the polygons using ggplot2

polyOne <- cbind(c(1),poly1)
polyTwo <- cbind(c(2),poly2)
polyThree <- cbind(c(3),poly3)
polyFour <- cbind(c(4),poly4)
polyFive <- cbind(c(5),poly5)
#

# plotingDataFrame1 <- data.frame(rbind(polyOne,polyTwo,polyThree))
plotingDataFrame2 <- data.frame(rbind(polyOne,polyTwo,polyThree,polyFour,polyFive))
#

#
plotingDataFrame2$X1 <- as.factor(plotingDataFrame2$X1)
#
```

```
# # This plots the first set of polygons in listOfPolygons2
ggplot() + geom_polygon(data = plotingDataFrame2, mapping = aes(group = X1, color = X1, fill = X1, x = X
```



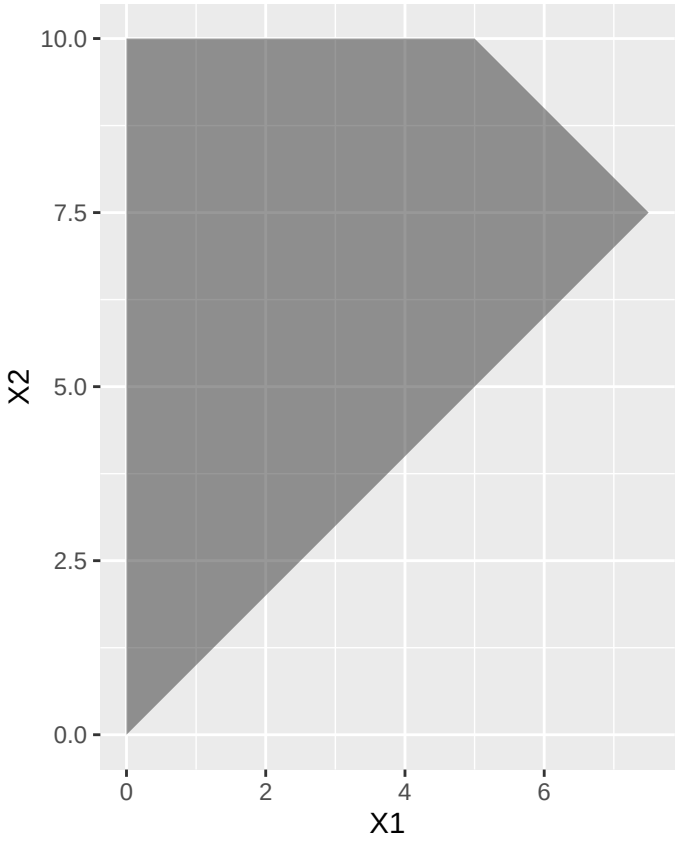

```
# the following code will call findIntersections() from intersectPolygons.cpp

library(Rcpp)
```

```
## Warning: package 'Rcpp' was built under R version 3.2.5
```

```
#load cpp source from current folder
Rcpp::sourceCpp('findIntersectionspolygons.cpp')

outputIntersections1 <- findIntersections(listOfPolygons1)
outputIntersections1
```

```
## $`1_intersect_2`
##          [,1] [,2]
## [1,] 4.999999 10.0
## [2,] 7.500000  7.5
## [3,] 0.000000  0.0
## [4,] 0.000000 10.0
## [5,] 4.999999 10.0
```

```
#intersection poly1 and poly5
plotingDataFrame_1_5 <- data.frame(outputIntersections1[[1]])
ggplot() + geom_polygon(data = plotingDataFrame_1_5, aes(x = X1, y = X2), alpha = 1/2) + coord_fixed()
```

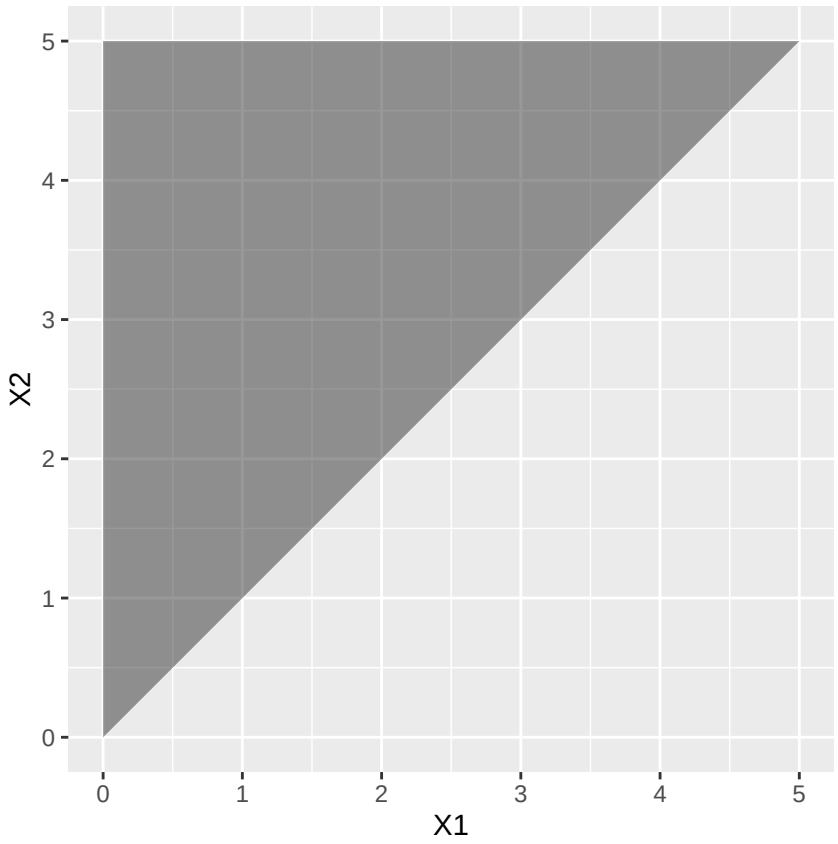



```
outputIntersections2 <- findIntersections(listOfPolygons2)
outputIntersections2
```

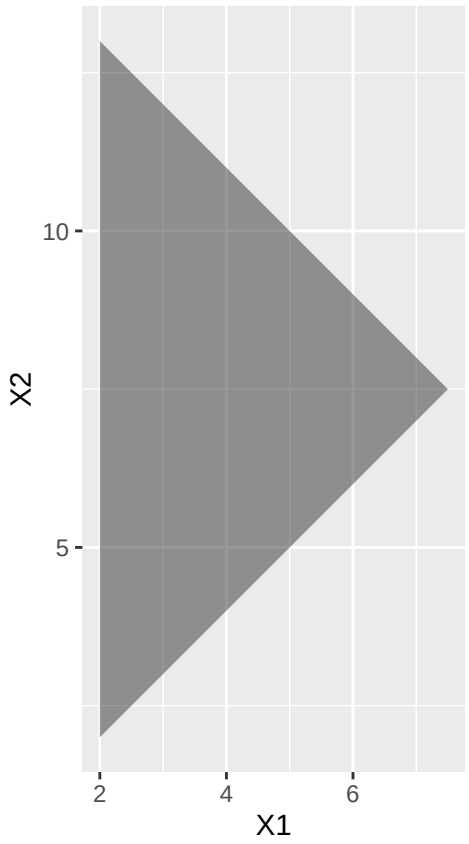
```
## $`1_intersect_2`
##      [,1] [,2]
## [1,]    2   10
## [2,]    8   10
## [3,]    8    0
## [4,]    2    0
## [5,]    2   10
##
## $`1_intersect_3`
##      [,1] [,2]
## [1,]    0    5
## [2,]   10    5
## [3,]   10    0
## [4,]    0    0
## [5,]    0    5
##
## $`1_intersect_4`
## <0 x 0 matrix>
##
```

```
## $`1_intersect_5`
##          [,1] [,2]
## [1,] 4.999999 10.0
## [2,] 7.500000  7.5
## [3,] 0.000000  0.0
## [4,] 0.000000 10.0
## [5,] 4.999999 10.0
##
## $`2_intersect_3`
##      [,1] [,2]
## [1,]    2    5
## [2,]    8    5
## [3,]    8    0
## [4,]    2    0
## [5,]    2    5
##
## $`2_intersect_4`
## <0 x 0 matrix>
##
## $`2_intersect_5`
##          [,1]      [,2]
## [1,] 2.000001 12.999999
## [2,] 7.500000  7.500000
## [3,] 2.000001  2.000001
## [4,] 2.000001 12.999999
##
## $`3_intersect_4`
## <0 x 0 matrix>
##
## $`3_intersect_5`
##      [,1] [,2]
## [1,]    5    5
## [2,]    0    0
## [3,]    0    5
## [4,]    5    5
##
## $`4_intersect_5`
## <0 x 0 matrix>
```

```r
#intersection poly3 and poly5
plotingDataFrame_3_5 <- data.frame(outputIntersections2[[9]])
ggplot() + geom_polygon(data = plotingDataFrame_3_5, aes(x = X1, y = X2), alpha = 1/2) + coord_fixed()
```




```
#intersection poly2 and poly5
plotingDataFrame_2_5 <- data.frame(outputIntersections2[[7]])
ggplot() + geom_polygon(data = plotingDataFrame_2_5, aes(x = X1, y = X2), alpha = 1/2) + coord_fixed()
```


10
5
X2
2
4
6
X1