Create a shapefile of LSOAs for Leeds City Region.

R script to create a shapefile of LSOAs for the City Leeds Region. You can find the boundary of Output Areas for the LCR region here. You will need a lookup table of 2011 OAs to LSOAs available here. Download and unzip both files, then follow the steps below.

```
library(rgdal)
library(rgeos)

setwd("~/Leeds_City_Region")

# Read shapefile
leeds_oas <- readOGR(".", "Leeds_City_Region", stringsAsFactors = F)

# Read lookup table
lookup <- read.csv("OA11_LSOA11_MSOA11_LAD11_EW_LUv2.csv", stringsAsFactors = F)[,1:2]

# Join data
leeds_oas@data <- data.frame(leeds_oas@data$OA11CD,
                             lookup[match(leeds_oas@data$OA11CD, lookup$OA11CD), ])
leeds_oas@data[,1] <- NULL

# Dissolve OAs to LSOA level,
# Returns a SpatialPolygons object with no attributes
leeds_lsoas <- gUnaryUnion(leeds_oas, id = leeds_oas@data$LSOA11CD)

# Store the attributes in a data frame, the LSOA codes are the row names of the SpatialPolygons object
LSOA11CD <- data.frame(LSOA11CD = row.names(leeds_lsoas), stringsAsFactors = F)
# Make sure the row names of leeds_lsoas and LSOA11CD match
row.names(LSOA11CD) <- row.names(leeds_lsoas)
# Add attributes
leeds_lsoas <- SpatialPolygonsDataFrame(leeds_lsoas, LSOA11CD)

writeOGR(leeds_lsoas, ".", "LCR_lsoas", driver = "ESRI Shapefile")
```