

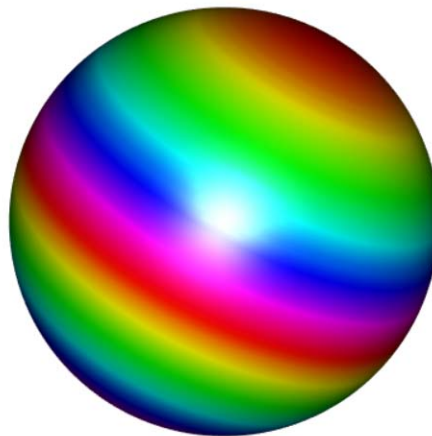
STAT2005 Programming Languages for Statistics  
Exercise for Chapter 7

1. Draw a unit sphere with rainbow colour spectrum using the `rgl` package.

Hint: A unit sphere can be parametrized by the spherical coordinate

$$\begin{cases} x = \cos \theta_1 \sin \theta_2, \\ y = \sin \theta_1 \sin \theta_2, \\ z = \cos \theta_2, \end{cases} \quad 0 \leq \theta_1 \leq 2\pi, 0 \leq \theta_2 \leq \pi.$$

Your sphere should have color pattern similar to the one as shown below.



2. Regenerate the following plots written in `qplot()` using `ggplot()`.

(a) `qplot(carat, price, data = diamonds, alpha = I(1/100))`

(b) `qplot(carat, price, data = diamonds, geom = c("point", "smooth"))`

(c) `qplot(carat, data = diamonds, geom = "histogram", binwidth = 0.1,  
xlim = c(0,3))`

(d) `qplot(carat, data = diamonds, geom = "histogram", fill = color)`