

Some interesting graphics

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We would show how to use `circlize` package to draw several rather interesting graphics.

The first one is a clock. The key function here is `circos.axis` (figure 1).

```
> library(circlize)
> factors = letters[1]
> par(mar = c(1, 1, 1, 1))
> circos.par("gap.degree" = 0, "cell.padding" = c(0, 0, 0, 0), "start.degree" = 90)
> circos.initialize(factors = factors, xlim = c(0, 12))
> circos.trackPlotRegion(factors = factors, ylim = c(0, 1), bg.border = NA)
> circos.axis(sector.index = "a", major.at = 0:12, labels = "", direction = "inside",
+   labels.cex = 1.5, major.tick.percentage = 0.3)
> circos.text(1:12, 0.5, 1:12, direction = "horizontal")
> arrows(0, 0, 0, 0.7)
> arrows(0, 0, 0.4, 0)
> circos.clear()
```

The second example is a dartboard. In the graphic, each cell is initialized with different colors (figure 2).

```
> library(circlize)
> factors = 1:20
> par(mar = c(1, 1, 1, 1))
> circos.par("gap.degree" = 0, "cell.padding" = c(0, 0, 0, 0),
+   start.degree = 360/40, track.margin = c(0, 0), "clock.wise" = FALSE)
> circos.initialize(factors = factors, xlim = c(0, 1))
> circos.trackPlotRegion(ylim = c(0, 1), factors = factors, bg.col = "black",
+   track.height = 0.15)
> circos.trackText(rep(0.5, 20), rep(0.5, 20),
+   labels = c(13, 4, 18, 1, 20, 5, 12, 9, 14, 11,
+     8, 16, 7, 19, 3, 17, 2, 15, 10, 6),
+   factors = factors, col = "#EEEEEE", font = 2, direction = "horizontal")
> circos.trackPlotRegion(ylim = c(0, 1), factors = factors,
```

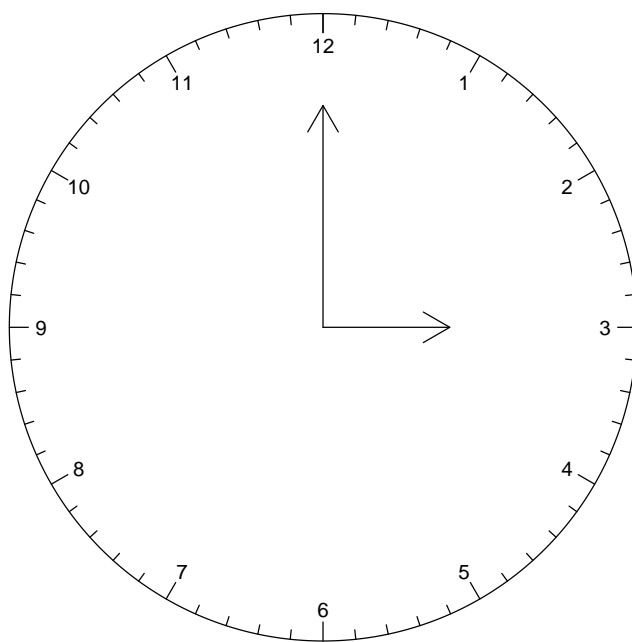


Figure 1: A clock

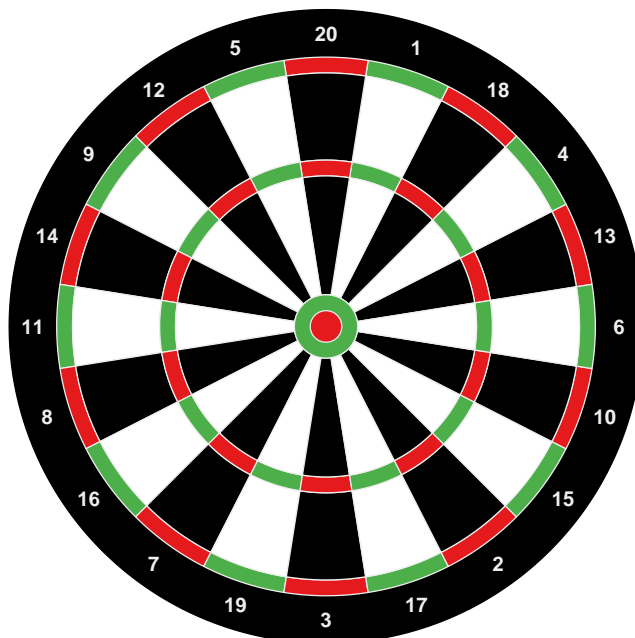


Figure 2: A dartboard

```
+      bg.col = rep(c("#E41A1C", "#4DAF4A"), 10), bg.border = "#EEEEEE",
+      track.height = 0.05)
> circos.trackPlotRegion(ylim = c(0, 1), factors = factors,
+      bg.col = rep(c("black", "white"), 10), bg.border = "#EEEEEE",
+      track.height = 0.275)
> circos.trackPlotRegion(ylim = c(0, 1), factors = factors,
+      bg.col = rep(c("#E41A1C", "#4DAF4A"), 10), bg.border = "#EEEEEE",
+      track.height = 0.05)
> circos.trackPlotRegion(ylim = c(0, 1), factors = factors,
+      bg.col = rep(c("black", "white"), 10), bg.border = "#EEEEEE",
+      track.height = 0.375)
> draw.sector(center = c(0, 0), start = 0, end = 360, rou1 = 0.1,
+      col = "#4DAF4A", border = "#EEEEEE")
> draw.sector(center = c(0, 0), start = 0, end = 360, rou1 = 0.05,
+      col = "#E41A1C", border = "#EEEEEE")
> circos.clear()
```

The third example is Ba-gua (https://en.wikipedia.org/wiki/Ba_gua). The key functions are `circos.rect` and `draw.sector` (figure 3).

```

> library(circlize)
> factors = letters[1:8]
> par(mar = c(1, 1, 1, 1))
> circos.par("default.track.height" = 0.15, "start.degree" = 22.5)
> circos.initialize(factors = factors, xlim = c(0, 1))
> circos.trackPlotRegion(ylim = c(0, 1), factors = factors, bg.border = NA,
+   panel.fun = function(x, y) {
+     i = get.cell.meta.data("sector.numeric.index")
+     if(i %in% c(1, 3, 5, 6)) {
+       circos.rect(0,0,1,1, col = "black")
+     } else {
+       circos.rect(0,0,0.45,1, col = "black")
+       circos.rect(0.55,0,1,1, col = "black")
+     }
+   })
> circos.trackPlotRegion(ylim = c(0, 1), factors = factors, bg.border = NA,
+   panel.fun = function(x, y, ...) {
+     i = get.cell.meta.data("sector.numeric.index")
+     if(i %in% c(1, 2, 5, 8)) {
+       circos.rect(0,0,1,1, col = "black")
+     } else {
+       circos.rect(0,0,0.45,1, col = "black")
+       circos.rect(0.55,0,1,1, col = "black")
+     }
+   })
> circos.trackPlotRegion(ylim = c(0, 1), factors = factors, bg.border = NA,
+   panel.fun = function(x, y, ...) {
+     i = get.cell.meta.data("sector.numeric.index")
+     if(i %in% c(1, 4, 5, 8)) {
+       circos.rect(0,0,1,1, col = "black")
+     } else {
+       circos.rect(0,0,0.45,1, col = "black")
+       circos.rect(0.55,0,1,1, col = "black")
+     }
+   })
> # draw taiji
> draw.sector(center = c(0, 0), start = -90, end = 90, rou1 = 0.4,
+   col = "black", border = "black")
> draw.sector(center = c(0, 0), start = 90, end = 270, rou1 = 0.4,
+   col = "white", border = "black")
> draw.sector(center = c(0, 0.2), start = 0, end = 360, rou1 = 0.2,
+   col = "white", border = "white")
> draw.sector(center = c(0, -0.2), start = 0, end = 360, rou1 = 0.2,
+   col = "black", border = "black")
> draw.sector(center = c(0, 0.2), start = 0, end = 360, rou1 = 0.05,
+   col = "black", border = "black")

```



Figure 3: A Ba-gua

```
> draw.sector(center = c(0, -0.2), start = 0, end = 360, roul = 0.05,  
+   col = "white", border = "white")  
> circos.clear()
```