Practical 1

Jumping Rivers

Question 1

```
total = 0
for (i in 1:5) {
    total = total + i
}
total
```

The `for` loop above calculates

$$\sum_{i=1}^{5} i = 1 + 2 + 3 + 4 + 5$$

1. What is the final value of `total` in the above piece of code?
2. Change the above loop to calculate the following summations:

$$\text{(i)} \sum_{i=1}^{20} (i + 1)$$

$$\text{(ii)} \sum_{j=-10}^{15} j$$

3. Rewrite the two loops using the `sum()` function. For example, the for loop in the first example can be written as `sum(1:5)`

Question 2

In the notes, we observed that it was straight forward to loop through a data set set and select the maximum values:

```
dd = data.frame(x = rnorm(10), y = rnorm(10),
    z = rnorm(10))

max_cols = numeric(ncol(dd))
for (i in seq_along(dd)) {
    max_cols[i] = max(dd[, i])
}
max_cols
```

- Alter the above the code to calculate the `mean` instead of the maximum value
- Now, calculate the standard deviation (via `sd`) as well as the mean. You should only have a single loop!

Solutions

Solutions are contained within this package:

```
vignette("solutions1", package = "jrProgramming")
```