# In-class Assignment 13

## Andrew Shao

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## 11.2.6 Q1

```r
n <- 5
output <- 1
for (i in 1:n) {
  output <- output * i
}
paste0('The factorial of ', n, ' is ', output, '.')
```

```
## [1] "The factorial of 5 is 120."
```

## 11.2.6 Q2

```r
n <- 10
output <- 0
for (i in 1:n) {
  output <- output + i
}
paste0("The sum of numbers from 1 to ", n, " is ", output, ".")
```

```
## [1] "The sum of numbers from 1 to 10 is 55."
```

## 11.2.6 Q3

```r
x <- 7
for (i in 1:10) {
  cat(paste(x, 'x', i, '=', x * i, '\n'))
}
```

```
## 7 x 1 = 7
## 7 x 2 = 14
## 7 x 3 = 21
## 7 x 4 = 28
## 7 x 5 = 35
```

```
## 7 x 6 = 42
## 7 x 7 = 49
## 7 x 8 = 56
## 7 x 9 = 63
## 7 x 10 = 70
```

## 11.2.6 Q4

```r
n <- 13
is_prime <- T
for (i in 2:ceiling(sqrt(n))) {
  for (j in i:n) {
    if (i * j == n) {
      is_prime <- F
      break
    }
    if (i * j > n) {
      break
    }
  }
}
paste(n, ifelse(is_prime, 'is a prime number.', 'is not a prime number.'))
```

```
## [1] "13 is a prime number."
```

## 11.3.4 Q1

```r
n <- 5
output <- c()
while(n > 0) {
  output <- c(output, n)
  n = n - 1
}
cat(paste(output, collapse = '\n'), '\nBlast off!')
```

```
## 5
## 4
## 3
## 2
## 1
## Blast off!
```

## 11.3.4 Q2

```r
threshold <- 15
i <- 1
```

```r
sum <- 0
while(sum <= threshold) {
  sum = sum + i
  i = i + 1
}
i = i - 1
paste0('The sum is ', sum, '. The last number added is ', i, '.')
```

```
## [1] "The sum is 21. The last number added is 6."
```