

EE 289 – Homework Chapter 5

1 Write a function called `checkFactor` that takes in two numbers and checks if they are divisible, that is, if the first is divisible by the second. You may assume that both numbers are positive. Your function should return a logical value, true or false.

For example:

`checkFactor(25,6)` should return false.

`checkFactor(9,3)` should return true.

`checkFactor(3,9)` should return false.

3 Coming off a respectable 87-6 record last year, your football team is looking to improve on that this seasons. They have contacted you and asked for your help projecting some of the scenarios for their win-loss record. They want to write a function called `teamRecord` that takes in two parameters –wins, and losses, and return two values – season, and `wPercentage`. Season should be a logical result that is true for a winning season. `wPercentage` is the percentage of games won (ranging from 0 to 100).

For example:

`[season wPercentage]=teamRecord(3,9)` should return `season=false, wPercentage=25`

`[season wPercentage]=teamRecord(10,2)` should return `season=true, wPercentage=83.3`

6 Write a function `meansAndMedian` that takes in a vector of numbers and returns the arithmetic and geometric means, as well as the median. You may not use the built-in functions `mean()`, `median()`, or `geomean()`. However, you could type “help `geomean`” to familiarize yourself with computing the geometric mean of a group of numbers. Hint: the built-in function `sort()` might help you compute the median.

9 You are already familiar with the logical operators `&&` (and) and `||` (or), as well as the unary negation operator `~`(not). In a weakly typed language such as MATLAB, the binary states true and false could be equivalently expresses as a 1 or a 0, respectively. Let us now consider a ternary number system, consisting of the states true (1), maybe (2), and false (0). The truth table for such a system is shown below. Implement the truth by writing the functions `f=tnot(x)`, `f=tand(x,y)`, and `f=tor(x,y)`. You may not assume that only valid input number will be entered.

| x | y | tnot(x) | tand(x,y) | tor(x,y) |
|---|---|---------|-----------|----------|
| 1 | 1 | 0 | 1 | 1 |
| 1 | 0 | 0 | 0 | 1 |
| 1 | 2 | 0 | 2 | 1 |
| 0 | 1 | 1 | 0 | 1 |
| 0 | 0 | 1 | 0 | 0 |
| 0 | 2 | 1 | 2 | 0 |
| 2 | 1 | 2 | 2 | 1 |
| 2 | 0 | 2 | 2 | 0 |
| 2 | 2 | 2 | 2 | 2 |