

WASHINGTON STATE UNIVERSITY VANCOUVER

PROGRAM DESIGN AND DEVELOPMENT - CS 121

Assignment 3

Professor:
Ben MCCAMISH

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Overall Assignment

Using the template provided, fill out the four functions named `primeBattle()`, `facForLoop()`, `facWhileLoop()`, and `coolMatrix()`.

Prime Battle (20 points)

The `primeBattle(low, high)` function takes 2 arguments, `low` and `high`, representing the range of values you should check. Your function should find all numbers within this range (inclusive) that are divisible by 7 and not a multiple of 5. You should store these results in a list and return said list. **Hint:** Only store values that are positive. Also, 0 is not divisible by 7 or 5 (for the sake of this problem). You may have an empty list, which you should still return.

Factorial (20 points)

The next two functions are different implementations of the recursive factorial function we covered in class. You must implement two functions that provide the same results as the recursive implementation, where one function utilizes a `for` loop and the other a `while` loop. You may assume $n \geq 1$.

Cool Matrix (30 points)

The final function you will implement will create a matrix using the specified formula. The `coolMatrix(x,y)` takes two parameters, `x` and `y`, which determine the dimensions of your matrix, `x` being rows and `y` being columns. The values for the matrix are based on the index in the matrix, such that $matrix[i][j] = i - j$, where $i = 0, \dots, x - 1$ and $j = 0, \dots, y - 1$. If either x or y are values such that a matrix cannot be created, then your function should return an empty list.

Commenting/Style (10 points)

Your code will be examined for comments and style. This means that you should include reasonable comments in your code. You might comment and add a small description for each function you create. If there is a particularly complex line of code, then you may comment that single line. **Note:** You must remove all comments and `pass` statements that came with the template to receive full marks.

What to turn in (in a single .py on Autolab):

- assignment3.py