Practical Work 4

Programming with MATLAB

Exercise 01:

Create a script named ***Conditional_Structures*** to record the following instructions:

1. Use a **for** loop to multiply all *even* numbers from 2 to 20.

2. Use a **while** loop to multiply all *odd* numbers from 2 to 20.

3. Assign the values 10, 20, 30, 40, and 50 to a vector **V** using a for **loop**.

4. Assign the values 60, 70, 80, 90, and 100 to a vector **W** using a while **loop**.

5. Is there a simpler way to do this without using loops?

6. Given a vector **A**=[1 8 3 9 0 1]: (use

(a) Add up the values of all elements in **A**.

(b) Calculate the cumulative sum, i.e., 1; 9; 12; 21; 21; 22, of the elements in **A**.

Exercise 02:

Create a function named ***myFactorial*** that takes as input a number **x** and returns as output its factorial.

1. Use the for or **while** loop to calculate the factorial.

2. Which technique is the fastest? Compare to the time taken by MATLAB's built-in **factorial()** function. Why is the execution time of built-in functions faster than user-implemented functions?

Exercise 03:

Write a function named ***Pol***y that receives as input a vector **p** and a vector **x**. The output of the function returns a vector **y** that calculates the value of the polynomial represented by **p(0) + p(1)x + p(2)x^2 + p(3)x^3 +...** at each of the points given by the vector **x**.

Use your function to plot the graph of **p(x) = x^2 + 1** over the interval [−4, 4].