Programming – TU857/1

Lab 13 – Thursday, February 15th, 2024

Note: You are expected to finish all programs in your own time if you do not get these done during the lab session. This is your own responsibility.

Functions (part 3)

Remember: Use Symbolic names in your programs. Do not hard-code.

Write separate programs to:

1. Pass by Reference. Write a program that uses two functions (1 function to calculate the area of a Square, another function to calculate the area of a Circle). Declare a variable in your main for the length of a side of the Square and another variable for the radius of the Circle. Ask the user to enter these values. Using Pass by Reference, pass these as parameters to the separate functions, calculate the areas of the Square and Circle in their separate functions, and display the calculated areas for the Square and Circle back in your main(). Remember, you must use Pass by Reference. Do not forget to declare the signatures for both functions.

   You can assume the value of pi = 3.14

2. Passing 1-D Array. Write a program that uses a function to find the highest number in an array containing 5 numbers. In the main(), you must ask the user to enter 5 numbers and store these in the array. Pass the array to a function and your function must find the highest number. Return this number to your main() and display it.

3. Passing 1-D Array. Write a program that uses a function to calculate the average of 5 numbers in an array. In the main(), you must ask the user to enter 5 numbers and store these in the array. Pass the array to a function in which the function calculates the average of these 5 numbers. Return the average to your main() and display this.

4. Passing 1-D Array. Make a copy of Q2 above but this time, use your function to change the contents of the array, i.e. multiply each number in the array by 2. When your function has finished and your program continues in your main(), print the contents of your array in your main() and see if the changes made to the contents of the array in your function can be seen. If not, why?

Mandatory Exercise Question – You must complete and Demo to your Lab TA

5. Passing 1-D Array. Write a program that asks the user to enter 5 numbers from standard input. Pass the array to a function where the function checks each number in the array if it is even or odd. Your function should display each number and state whether it is even or odd. Finally, your function should calculate the total number of **even** numbers only and return this number to your main() and display it.