**Tutorial 4:**

1. Write code to declare an 1D-array with 1000 elements of datatype integer and then initialize all its value to 100.
2. For the 1D array in question 1, puts random number between 1-100 at each element of the array and print its index and its value (10 elements at a time) before requesting the user to continue printing the next 10 elements.
3. For the array in question (1), find the following:
4. Sum of all the array elements
5. Find the maximum element of the array and its corresponding index
6. Find the minimum element of the array and its corresponding index
7. Find the average of the array elements
8. Write a program to count frequency of the number 1-100 within the array in question (1) and print your result showing the number and frequency.
9. Write a program to sort even and odd elements of the array in question (1) in separate arrays.
10. Write a program to sort the array elements in ascending and descending order. The program must be capable of sorting 1D array of any dimension. To test the program, you need to construct 3 arrays with 100, 500 and 1000 elements with random numbers between 1-100 in the array.
11. Write a program for Mastermind game. The computer shall act as the code generator, to generate the code from 6 colour code pegs (you may use number codes for the colour pegs, instead of character):

RED = 1, BLUE = 2, YELLOW = 3, GREEN = 4, WHITE = 5, BLACK = 6

The code generated must not contained the same colour twice (i.e. non repeatable). The code generated must be kept in an 1D array with 4 elements.

The code breaker needs to guess the pattern (an attempt), in both order and colour. Each attempt is made by placing a row of colour code and may be inputted by the code breaker in an 1D array with 4 elements. The codemaker (computer) then provides the feedback by indicating to the player

1. the number of guess which is correct in both color and position (through the use of black key peg)
2. The number of guess which is correct in color but not in position (through the use of white key peg).

The player (codebreaker) has 12 attempts before losing the game.

1. Extend Question (7) to allow the player a choice of 8 or 12 attempts and a choice of repeatable colours for the code.