COMP 111: Assignment # 1

Instructions:

1) You **MUST** do and submit your **OWN** work. There will be a severe penalty in case of plagiarism.
2) No late submission Accepted.
3) Full step is required.

Question # 1: (10 Marks)

 Take your name alphabet in character array. Write a function that reverse an array, pass the character array and size of array as argument after reversing the array, and pass the reversed array into new function which prints the result. (Call the print function from reversed array function). **Note:** You cannot create new array where you store the result, you have to reverse the pass array without using any new array.

Example:

Char[] myname={'N','A','B','E','E','L'};

Display Output:

L E E B A N

Question # 2: (15 Marks)

 Write a program that find mid element of the array. Take a size of array and element of array from user (like if user enters the size of element 8 then create an array of 8 elements and take all element from the user). Note you can do this program with or without using functions, that is your choice ☺

Let suppose user enter size: 3 And enter element {8,15,20} then mid element is 15.

If user enter size 4 and enter element {10,20,30,40} then mid element is 30

Part a) Do it by using divide arthemitc operation (5 Marks)

Part b) Do **without using divide arthemetic** operation. (10 Marks)

Question # 3: (20 Marks)

 Write a program that find second maximum and minimum number from an array. Take a size of array and element of array from user (like if user enters the size of element 8 then create an array of 8 elements and take all elements from the user). Write two independent function for finding 2nd maximum and minimum number from the array which return the result. (You can display the result in main method)

Let suppose user enter size of array 10 and enter following number in array {10,100,69,56,23,20,30,40,50,2} then **second maximum number is: 69 and second minimum number is 10**.

Question # 4: (20 Marks)

 Write a program that sort element of an array. Take a size of array and element of array from user (like if user enters the size of element 8 then create an array of 8 elements and take all elements from the user). Write a function and pass unsorted array into it. Sort the unsorted array and return the sorted array. (you cannot create new array. Sort the array which you pass only).You can print the sorted array in main method or call print method to display the element of sorted array.

Let suppose user enter size of array 10 and enter following number in array {10,100,69,56,23,20,30,40,50,2}

Display output after sorting the array. 2, 10, 20, 23, 30, 40, 50, 56, 69, 100

Question # 5: (30 Marks)

 Write a program that finds **Union, Intersection and difference** of two arrays. Take size and element of array A and B from the user. Store the result in array C.

Union: C = A **U** B

Intersection: A **Intersection** B

Difference: C = A - B

Let suppose A = {1, 2, 3, 4, 5} B = {3, 4, 5, 6, 7}

Union C= {1, 2, 3, 4, 5, 6, 7}

Intersection C = {3, 4, 5}

Difference: C= {1, 2}

Create each function for union, intersection and difference separately. Pass the both arrays and size of array into function and return the resultant array. You can display resultant array in main method or pass the result in print function which will print the result.

Question # 5: (15 Marks)

 Write a program that **Sum, difference and multiply** of two 2D array and store the result in third 2D array. You can create two 2D array of size 4 by 4 and take element when declaring both 2D arrays (Not take element from user). Pass the both 2D arrays into function and return the resultant array. You can display resultant array in main method or pass the result in print function which will print the result.

Question # 6: (15 Marks)

Write a guessing game where the user has to guess a secret number. After every guess the program tells the user whether his number was too large or too small. At the end the number of tries needed should be printed. I count only as one try if the user inputs the same number consecutively. Take secret number in variable while writing code.

You can take code from lab 1 which you develop and implement the part "I count only as one try if the user inputs the same number consecutively." Like if user enters 80 and 80 and 80 consecutively count this as 1 instead of 3