CSC107 2.0 Computer Programming - Laboratory I
Lab sheet 15

Note: Use **functions** appropriately. You can practice *Passing Arguments by Values* concept.

1. Write a simple C program that contains the following two functions.
   /** Convert from feet to meters */
   double footToMeter(double foot)
   /** Convert from meters to feet */
   double meterToFoot(double meter)

   The formula for the conversion is:
   meter = 0.305 * foot
   foot = 3.279 * meter
   Write a test program that calls these function to display the following tables

Feet	Meters		Meters	Feet
1.0	0.305	|	20.0	65.574
2.0	0.610	|	25.0	81.967
...				
9.0	2.745	|	60.0	196.721
10.0	3.050	|	65.0	213.115

2. Write a function that prints characters using the following header.
   void printChars(char ch1, char ch2, int numberPerLine)
   This function prints the characters between ch1 and ch2 with the specified numbers per line. Write a test program that prints ten characters per line from 1 to Z. Characters are separated by exactly one space.

3. Write two function that return the average of an array with the following headers:
   int average(int[] array)
   double average(double[] array)
   Write a test program that prompts the user to enter ten double values, call this function , and displays the average value.

4. Suppose the weekly hours for all employees are stored in a two-dimensional array. Each row records an employee's seven-day work hours with seven columns. For example, the following array stores the work hours for eight employees. Write a program that displays employees and their total hours in decreasing order of the total hours.

	Su	M	T	W	Th	F	Sa
Employee 0	2	4	3	4	5	8	8
Employee 1	7	3	4	3	3	4	4
Employee 2	3	3	4	3	3	2	2
Employee 3	9	3	4	7	3	4	1
Employee 4	3	5	4	3	6	3	8
Employee 5	3	4	4	6	3	4	4
Employee 6	3	7	4	8	3	8	4
Employee 7	6	3	5	9	2	7	9

5. Write a C program that simulates a simple bookstore shopping system. The program should perform the following tasks using functions:

   The program should start by displaying a catalog of books with their book number, titles and prices. The catalog should contain at least 5 books. You can implement the void displayCatalog(); function to display as below.

```
Book Catalog:
1. C Programming - $15.50
2. Data Structures - $22.75
3. Algorithms - $18.20
4. Operating Systems - $25.00
5. Computer Networks - $20.00
```

   Allow the user to select books from the catalog by entering the corresponding book number and specifying the quantity they want to purchase. Continue adding books until the user chooses to stop. Write the void addBookToCart(int bookNumber, int quantities[], float prices[], int counts[]); function.

```
Enter the number of the book you want to add to your
cart (or 0 to finish): 3
Enter the quantity: 5
Book added to cart.
```

   Display all the books in the cart along with their quantities, individual prices, and the total cost for each book. You can implement void viewCart(int quantities[], float prices[]);

```
Your Cart:
1. Quantity: 10, Price: $15.50, Total: $155.00
```

```
3. Quantity: 5, Price: $18.20, Total: $91.00
```

float calculateTotal(int quantities[], float prices[]); function calculate and display the total cost of all books in the cart.

```
Total Cost: $246.00
```

Ask the user if they have a discount code. If they do, apply a discount (e.g., 5% off the total cost) and display the discounted total. You can implement float applyDiscount(float total, float discount); function

```
Do you have a discount code? (yes/no): Yes
Enter discount code: 2344
Discount applied: 5%
Final Total Cost: $233.70
```

Confirm the purchase by displaying the final total cost after the discount, if applicable, and thanking the user for their purchase using void checkout(float total); function.

```
Final Total Cost: $233.70
Thank you for your purchase!
```