Assignment 3

CS – 1412 (Programming Principles)

Due date: 11.59 pm, 11/09/2024

Points possible: 30

****** Please read the Instructions:***

Q1. Write a C program that prints a one-month calendar. The user specifies the number of days in the month and the day of the week when the month begins. 5

Example Output:

```
Enter number of days in month: 30
Enter starting day of the week (1-Sun, 7=Sat): 6
Sun Mon Tue Wed Thu Fri Sat
                        1   2
3   4   5   6   7   8   9
10  11  12  13  14  15  16
17  18  19  20  21  22  23
24  25  26  27  28  29  30
```

Q2. You are tasked with developing a program to track the daily stock prices of a set of companies over a specific period. You are provided with a dataset containing the daily closing prices of 3 companies for a week (7 days). 5

Each company's data is represented in a two-dimensional array, where rows correspond to different companies, and columns correspond to days of the week.

Your task is to write a C program that accomplishes the following:

- Declare and initialize a two-dimensional array to store the stock prices for five companies for a week (3 companies x 7 days).
- Populate the array with sample stock prices for each company for the week.
- Calculate and display the following information:

Dataset:

Company	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Company 1	45.20	44.80	44.50	45.60	45.75	45.90	45.40
Company 2	62.30	62.10	64.80	63.50	61.90	59.40	60.70
Company3	30.75	34.25	32.90	29.80	31.20	33.10	30.95

```
Company 1:
  Average Closing Price: $45.31
  Highest Closing Price: $45.90 (Day 6)
  Lowest Closing Price: $44.50 (Day 3)

Company 2:
  Average Closing Price: $62.10
  Highest Closing Price: $64.80 (Day 3)
  Lowest Closing Price: $59.40 (Day 6)

Company 3:
  Average Closing Price: $31.85
  Highest Closing Price: $34.25 (Day 2)
  Lowest Closing Price: $29.80 (Day 4)
```

Q3 Write a C code to order 10 different numbers in descending order. Take the input for 10 different numbers. Must use pointer type variable. Also, write a user-defined function to find the order to complete the code. 5

Sample Input-output:

Input: 10 4 5 2 1 98 23 12 7 101
Output: 101 98 23 12 10 7 5 4 2 1

Q4. Create a C program that uses pointers to exchange the corresponding elements of two arrays. you should implement these 3 prototypes: 7

```
void inputArray(int* arr, int size);
void printArray(int* arr, int size);
void swapArray(int* sourceArr, int* destArr, int size);
```

sample output:

```
Enter size of array: 10
Enter 10 elements in source array: 2 45 6 7 8 9 0 5 7 2
Enter 10 elements in destination array: 1 3 2 4 5 6 7 8 9 100


Source array before swapping: 2, 45, 6, 7, 8, 9, 0, 5, 7, 2,
Destination array before swapping: 1, 3, 2, 4, 5, 6, 7, 8, 9, 100,

Source array after swapping: 1, 3, 2, 4, 5, 6, 7, 8, 9, 100,
Destination array after swapping: 2, 45, 6, 7, 8, 9, 0, 5, 7, 2,
```

Q5 Write a C program to manage 50 bank accounts. The accounts are identified by numbers ranging from 100 to 149 as integer values. For instance, Account number 100 corresponds to the data stored in index 0, and account number 111 corresponds to the data stored in index 11. Therefore, when a user provides an account number, your program should include a function that returns the index where that account is stored. 8

The program can handle various transactions and will be implemented as a menu driven program. You will use an array to store information for the 50 accounts. Initially, this array of accounts will be initialized to -1, where -1 signifies that the account is not yet open.

The following table presents the questions that the program will ask the user. Each response to a transaction-type question should be a single character. If the user provides an illegal character, the program should display an error message. All amounts are in dollars and can have up to 2 decimal places. Note: Use the interest formula below for your interest calculation :

balance += balance * interestRate / 100

User input	Functions
Transaction type?: O or o **Initial deposit?:** amount	**Open an account,** giving the initial deposit. Allowed if less than 50 accounts now open and Amount should be greater or equal to 100 dollar. Prints the new account number.
Transaction type?: B or b **Account number?:** account_number	**A Balance inquiry**, prints the account number and the balance, only allowed if the account is open.
Transaction type?: D or d **Account number?:** account_number **Amount?:** amount	**A Deposit**, prints the account number and new balance, only allowed if account open.
Transaction type?: W or w **Account number?:** account_number **Amount?:** amount	**A Withdrawal**, only allowed if account open and sufficient funds available, prints account number and new balance.
Transaction type?: C or c **Account number?:** account_number	**Close the account**. Only allowed if account is open.

Transaction type?: I or i **Interest rate?:** interest_rate	**Compute interest** at given % rate. and apply to all accounts
Transaction type?: P or p	**Print all** the account numbers and amounts.
Transaction type?: E or e	**Close all** accounts and exit program

You should submit your work, and 1 mark will be deducted if you don't submit one of the following requirements.

1) Separate C files for all question

2) Run your code in Cygwin terminal or Mac terminal and include screenshots for your output in your submission.

3) zip your files!

4) The rest of the points will be given based on the correctness of your code