Track Expenses Using Object-Oriented Programming

Objectives:
- Design C++ class
- Understand how to call methods defined in C++ class
- Handle input errors and invalid values

Description:
This project is an enhancement of your previous project using OOP concepts. You'll define class and instantiate objects instead of using struct to implement your design.

Write a menu-driven program that provides the following options:
```
1. Show All
2. Spend
3. Search expenses containing this string
4. Search expenses with greater than or equal to this amount
5. Exit
```
It allows the user to select a menu option to display all expenses, add new entry, search for a substring and find the list of entries greater a given amount.

Requirements:
1. Re-write your previous project with following new requirements:
    a. Create a new header file called **"expense.h"**. This header file contains your data definitions and method prototypes. All data members must be declared as "private" and provide getter/setter methods to access them.
    b. Create a new CCP file called **"expense.cpp"** to implement methods defined your header file.
    c. Create a main program called **"main-expense.cpp"** that display the menu and utilize your expense class to:
        i. Display description and amount
        ii. Determine if a substring is part of the description and return true or false
2. The program must **produce the same output as provided**. The output should be formatted nicely as given.
3. The program must use array of **Expense** class
4. The program must not use global variables. In another words, it must use local variables and pass-by-value or pass-by-reference parameters.
5. The program must define the maximum number of entries such as 100 and keeps track of the actual count of the current number of expenses entered by the user
6. You should use data file to save or read from. At the beginning of your program, it reads data from a data file named **"expenses.txt"** and initialize your array with this data. Your program must check to see if the file exists or has data to read. Before your program exits, it must save all expenses amount and descriptions into the data file.
7. You must write at least 2 functions.
8. You need to submit both your program and data file **"expenses.txt"**

Required error handling:
The program MUST perform the following checks:
1. Check for invalid amount (negative or 0 number)
2. Description cannot be empty.
3. Search is case-insensitive

Sample run:

```
D:\>TrackExpensesUsingArray.exe
Welcome to my expense tracker.

Expense Tracking Menu:
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 1

There is no expense entry available.

Expense Tracking Menu:
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 2

Please enter the description for the expense: Monthly telephone and
Internet services
Please enter the amount: 45.25
AMOUNT(45.25) DESC(Monthly telephone and Internet services)

Expense Tracking Menu:
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 2
```

```
Please enter the description for the expense: Monthly electric,
water and gas
Please enter the amount: 200.20
AMOUNT(200.2) DESC(Monthly electric, water and gas)

Expense Tracking Menu:
   1. show all
   2. spend
   3. search expenses containing this string
   4. search expenses with greater than or equal to this amount
   5. exit
Enter your option: 2

Please enter the description for the expense: Rent
Please enter the amount: 1200
AMOUNT(1200) DESC(Rent)

Expense Tracking Menu:
   1. show all
   2. spend
   3. search expenses containing this string
   4. search expenses with greater than or equal to this amount
   5. exit
Enter your option: 2

Please enter the description for the expense: Netflix membership
Please enter the amount: 12.90
AMOUNT(12.9) DESC(Netflix membership)

Expense Tracking Menu:
   1. show all
   2. spend
   3. search expenses containing this string
   4. search expenses with greater than or equal to this amount
   5. exit
Enter your option: 2

Please enter the description for the expense: Amazon membership
Please enter the amount: 99
AMOUNT(99) DESC(Amazon membership)

Expense Tracking Menu:
   1. show all
   2. spend
   3. search expenses containing this string
   4. search expenses with greater than or equal to this amount
   5. exit
Enter your option: 2

Please enter the description for the expense: Monthly gym membership
Please enter the amount: 50
AMOUNT(50) DESC(Monthly gym membership)

Expense Tracking Menu:
```

```
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 1

Expenses:
AMOUNT(45.25) DESC(Monthly telephone and Internet services)
AMOUNT(200.2) DESC(Monthly electric, water and gas)
AMOUNT(1200) DESC(Rent)
AMOUNT(12.9) DESC(Netflix membership)
AMOUNT(99) DESC(Amazon membership)
AMOUNT(50) DESC(Monthly gym membership)

Expense Tracking Menu:
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 3

Please enter the search string: membership
AMOUNT(12.9) DESC(Netflix membership)
AMOUNT(99) DESC(Amazon membership)
AMOUNT(50) DESC(Monthly gym membership)

Expense Tracking Menu:
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 3

Please enter the search string: MEMBERSHIP
AMOUNT(12.9) DESC(Netflix membership)
AMOUNT(99) DESC(Amazon membership)
AMOUNT(50) DESC(Monthly gym membership)

Expense Tracking Menu:
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 4

Please enter the amount: 50
AMOUNT(200.2) DESC(Monthly electric, water and gas)
AMOUNT(1200) DESC(Rent)
AMOUNT(99) DESC(Amazon membership)
AMOUNT(50) DESC(Monthly gym membership)
```

```
Expense Tracking Menu:
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 4

Please enter the amount: 200
AMOUNT(200.2) DESC(Monthly electric, water and gas)
AMOUNT(1200) DESC(Rent)

Expense Tracking Menu:
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 4

Please enter the amount: 1000
AMOUNT(1200) DESC(Rent)

Expense Tracking Menu:
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 2

Please enter the description for the expense: Home repair and
improvement
Please enter the amount: -1
Invalid amount. Amount cannot be negative or string. Please try it
again.
Please enter the amount: -100
Invalid amount. Amount cannot be negative or string. Please try it
again.
Please enter the amount: -1000
Invalid amount. Amount cannot be negative or string. Please try it
again.
Please enter the amount: 175.75
AMOUNT(175.75) DESC(Home repair and improvement)

Expense Tracking Menu:
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 1
```

```
Expenses:
AMOUNT(45.25) DESC(Monthly telephone and Internet services)
AMOUNT(200.2) DESC(Monthly electric, water and gas)
AMOUNT(1200) DESC(Rent)
AMOUNT(12.9) DESC(Netflix membership)
AMOUNT(99) DESC(Amazon membership)
AMOUNT(50) DESC(Monthly gym membership)
AMOUNT(175.75) DESC(Home repair and improvement)

Expense Tracking Menu:
  1. show all
  2. spend
  3. search expenses containing this string
  4. search expenses with greater than or equal to this amount
  5. exit
Enter your option: 5


D:\>
```