Object Oriented Programming

Fall 2022

Instructions:

- Comment your code.
- Use meaningful variable names.
- Plan your code carefully on a piece of paper before you implement it.
- Name of the program should be same as the task name. i.e. the first program should be Task_1.cpp

- **void main() is not allowed. Use int main()**
- **You are not allowed to use system("pause")**
- **You are not allowed to use any built-in functions**

- **You are required to follow the naming conventions as follow:**
  Variables: firstName; (no underscores allowed)
  Function: getName(); (no underscores allowed)
  ClassName: BankAccount (no underscores allowed)

Students are required to complete the following tasks in lab timings.

Lab Tasks:

Lab Task 1:

Write the definition of a class, swimming Pool, to implement the properties of a swimming pool. Your class should have the instance variables to store the length (in feet), width (in feet), depth (in feet), the rate (in gallons per minute) at which the water is filling the pool, and the rate (in gallons per minute) at which the water is draining from the pool.

Now add setter and getter functions. Also add member functions to determine the amount of water needed to fill an empty or partially filled pool; determine the time needed to completely or partially fill or empty the pool; add or drain water for a specific amount of time.

Lab Task 2:

Design and implement a class dayType that implements the day of the week in a program. The class dayType should store the day, such as Sun for Sunday. Write setter and getter functions of the class dayType. Also add member functions to perform the following operations on an object of type dayType:

a) Print the day.
c) Return the next day.
e) Return the previous day.
f) Calculate and return the day by adding certain days to the current day. For example, if the current day is Monday and we add 4 days, the day to be returned is Friday. Similarly, if today is Tuesday and we add 13 days, the day to be returned is Monday.

Lab Task 3:

Write a C++ program to represent a bank account using class and objects. Display the details such as name, account number, account type and balance in the given account number. Add setter and getter functions. User can deposit and withdrawn money from the account.

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Lab Task 4:

Create a class for traffic signal. use an object of the class to turn the green , red and yellow signals on and off.

Lab Task 5:

An automobile company has serial number for engine parts starting from AA0 to FF9. The other characteristics of parts to be specified as attributes are: Year of manufacture, material and quantity manufactured.

Write getters and setters for each characteristic. Make three objects and set the values of these characteristics through setters and display them through getters.

Lab Task 6:

A class named "employee" holds information like employee code, name, date of joining. Write a program to create three objects of employee and enter some data into it through setters. Make getters and setters for all employee information. Then ask the user to enter current date. Display the names of those employees whose tenure is 2 or more than 2 years according to the given current date only using getters.

Lab Task 7:

Write a program that compares two given dates. To store date use structure "date" that contains three members namely date, month and year. If the dates are equal then display message as "Equal" otherwise "Unequal". (You have to re-do the problem that you did in the previous lab. However, this time, all data members must be private and use appropriate getters, setters and functions)

Lab Task 8:

A class named "Card" holds information of card suit (i.e diamond, hearts, Spades, Clubs), card number (2-10), and face (front/back). Diamonds and hearts have red color; spaded and clubs have black color.

Write a program to create 5 objects of Card and set data by taking input from user (note that **cin** statement is never ever used in the setter function). Display information of the same cards. (Same number, same color, face=front)