

National University of Computer and Emerging Sciences



Assignment 2

For

Object Oriented Programming Lab

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FAST School of Computing

Instructions:

1. Make a word document with the naming convention “SECTION_ LAB#_ROLLNO” and put all your source code and snapshots of its output in it. Make sure your word file is formatted properly.
2. Plagiarism is strictly prohibited.
3. Do not discuss solutions with one another.
4. Feel free to explore the internet.
5. Try coming up with a unique solution with whatever you have studied in OOP.

Useful links

Congratulations, you have become a C++ developer, let's start with some real world problems.

Question#1

A **Country bus Company** owns a number of buses. Each bus is allocated to a particular route, although Some routes may have Several buses. Each route passes through a number of towns. One or more drivers are allocated to each stage of a route, which corresponds to a journey through some or all of the towns on a route. Some of the towns have a garage where buses are kept and each of the buses are identified by the registration number and can carry different numbers of passengers, since the vehicles vary in size and can be single or double-decked. Each route is identified by a route number and information is available on the average number of passengers carried per day for each route. Drivers have an employee number, name, address, and sometimes a telephone number. Come up with a solution using Object Oriented Programming and help a country. Remember, you are making this for the administrator who can add, view, delete and update at any time.

Question#2

Monisha's family owns and operates a 640-acre farm for several generations. Since the farm business is growing, Monisha is thinking to build a software that would make easier the management of the activities in the farm. She is considering the following requirements for the database:

1. For each livestock classification group (for example, cow, horse etc.), Monisha keeps track of the following: identification number, classification, total number of livestock per classification group (for example, number of cows, number of horses etc.).

2. For each crop the following information is recorded Crop identification number and classification.
3. Monisha has recorded the yield of each crop classification group during the last ten years. The records consist of the year, yield, sales, price of the crop and the amount of money earned.
4. Monisha has recorded the yield of each livestock classification group during the last ten years. The records consist of the following historical data: the year, (historical) selling price per head, number of livestock in the end of the year, number of livestock sold during one-year period, and the total amount of money earned.

Note: History is stored in multiple files and Monisha can only needs to view it. While submitting the code, paste the file data along with their names at the end of the code and comment it.

Question#3

A shopping store owner has contacted you for a Software for his shop. He has given you the following details about the store:

Store has items, the list of the item names are prices will be given to you in a file (create the file yourself).

He has two types of people in the store, cashier and owner. He only wants to give the right to cashier for generating a bill and viewing items in the inventory, but he can add, view, delete update items.

There is only one user in his store but he needs the flexibility to change his password. Creating bills, managing store items, and user profile is all you have to do. Create a solution using OOP.

Question#4

A blood bank wants a software for helping others. They have some blood bottles in their bank with record stored in a file (bank.txt) and they have persons requesting in a queue. They have set some prices for each bottle. They vary from 1500-2000. The O- bottle is 2500 PKR.

There are persons who want to donate blood for the patients of Thalassemia which given free to the needy. Whenever, a person comes to donate they ask for some details which are later stored in the bank.txt. Whenever, a person comes to request for blood they ask for some details and store in another file donated.txt.

The program you are making is for the person who is communicating directly with people donating and requesting for blood.

When a person donates, generate a certificate and when a person requests, generate a receipt for the record.

Use the concepts of OOP C++ and generate a solution.

Question#5

Govt. has a project going on recently and they need a software for managing their employee wages.

They have a Project Incharge who has (medical allowance, house rent, car expenditures) and some overtime which is added once in a week. A project incharge looks over 6 assistants.

These assistant have medical allowance and house rent and some overtime added twice in week. An assistant looks over 10 employees.

An employee has only medical allowance and no overtime. However, employees are further divided into two categories:

1. Hourly Worker (has medical allowance) and is paid per hour for his services.
2. Daily Worker (has medical allowance) and is paid for the daily services of 8 hours.

There are some people and they are contacted by assistants when the workload is high. At that point, they become employees and they are called according to the need.

The software will be used by Govt. Administrator to find their wages.

For project in charge, the medical allowance is 10%, house rent 5%, car expenditures 2% of his basic pay (Govt. Administrator knows it only).

For Assistants, the medical allowance is 8%, house rent 4% of his basic pay (Govt. Administrator knows it only).

For Employees, the medical allowance is 5% only.