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DSA LAB

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Lab # 1: C++ Review

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Lab Exercise 1.1:

a) Declare a class named House for a real estate locator service. The following information should be included:
Owner: (a string of up to 20 characters)
Address: (a string of up to 20 characters)
Bedrooms: (an integer)
Price (floating point)

b) Declare available to be an array of 100 objects of class House.

c) Write a function to read values into the members of an object of House.

d) Write a driver program to test the data structures and the functions you have developed.

The driver program should read in house entries into the available array. After the code for entering the data, you should write code to output the data that you have entered to verify that it is correct. Your program should look like this:

Enter Owner : M. Khan

Enter Address : G-9, Islamabad

Number of Bedrooms ? : 4

Price : 4500000

Enter another house? N

The output should look like:

Owner Address Bedrooms Price

M. Khan G-9, Islamabad 4 4500000

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Extra Credit:

The real estate company is very happy with the program that was developed in the earlier to track their listings. Now they want to add some features to the processing.

Additional features:

- Search for a house that meets a potential buyer's specifications for the following:

• The price is not more than a specified amount

• The size is not less than a specified number of bedrooms

- The house with lowest price
- The largest house (with maximum number of bedrooms)
- In a given city
- With best ratio price/size
- The user may enter a "?" to indicate no preference.

- Print all the entries that meet the buyer's need.

Solution:

GitHub

Code:

```
#include<iostream>
#include<conio.h>
#include<string>

using namespace std;
class House
{
private:
	char Owner[20];
	char Address[20];
	char city[20];
	int bedrooms;
	float Price;

public:
	House() {};


	void InputFromUser() {
		cout << "Enter the House Owner NAME: ";
		cin.ignore();
		cin.getline(Owner, 20);


		cout << "Enter the House Address: ";
		cin.getline(Address, 20);

		cout << "Enter the City: ";
		cin.getline(city, 20);

		cout << "Enter the House BedRooms no.: ";
		cin >> bedrooms;
```

```
		cout << "Enter the House Price: ";
		cin >> Price;

		cin.ignore();
	}

	void OutputData() {
		cout << Owner << "\t" << Address << "\t" << bedrooms << "\t    " <<
Price << endl;
	}
	string getcity() {
		return city;
	}
	int getbedrooms(){
		return bedrooms;
	}
	float getPrice() {
		return Price;
	}

};


//Global Variables
	House available[100];
	int houseNo = 0;
	int choice;
	bool check = false;

	void Add() {

		available[houseNo].InputFromUser(); //Taking Input From user through
InputFromUser().
		houseNo++; //Whenever the house Added, the houseNo var will be
incremented by +1
		check = true; //"check" var will be become true when house added
otherwise it will be false.

	}
	void Output() {
		if (check)
		{
			cout << "---------------------------------" << endl;
			cout << "Owner\tAddress\tBedRooms\tPrice\n";
			for (int i = 0; i < houseNo; i++)
			{
				available[i].OutputData(); //printing output through
OutputData().

			}
		}
		else
		{
			cout << "No House data Stored yet??" << endl; //if no house is
addded then this message will be  shown.
		}
	}
	void query() {
```

```
		do
		{
			int optionMENU;
			cout << "1. Find houses within your budget" << endl;
			cout << "2. Find Houses with number of bedrooms query" << endl;
			cout << "3. Find most affordable (Lowest) house" << endl;
			cout << "4. Find the largest home with the most bedrooms" <<
endl;
			cout << "5. Search for properties in a specific city" << endl;
			cout << "6. Get the best value for price per size" << endl;
			cout << "0. Exit" << endl;

			cout << "Enter your choice: ";
			cin >> optionMENU;
			float priceinput;
			int bedrooms;

			if (optionMENU == 1) {
				cout << "Enter your budget: ";
				cin >> priceinput;
				cout << "---------------------------------" << endl;
				cout << "Owner\tAddress\tBedRooms\tPrice\n";
				for (int i = 0; available[i].getPrice() <= priceinput;
i++)
				{
					available[i].OutputData();

				}


			}
			else if (optionMENU == 2) {
				cout << "Enter number of bedrooms: ";
				cin >> bedrooms;

				cout << "---------------------------------" << endl;
				cout << "Owner\tAddress\tBedRooms\tPrice\n";
				for (int i = 0; available[i].getbedrooms() >= bedrooms;
i++)
				{
					available[i].OutputData();

				}
			}
			else if (optionMENU == 3) {
				cout << "The most affordable (Lowest) house is: " << endl;
				House lowest = available[0];
				for (int i = 1; i < houseNo; i=i+1)
				{
					if (available[i].getPrice() < lowest.getPrice())
					{
						lowest = available[i];
					}
				}
				cout << "---------------------------------" << endl;
				cout << "Owner\tAddress\tBedRooms\tPrice\n";
				lowest.OutputData();
```

```
                }
                else if (optionMENU == 4) {
                        cout << "The largest house with the most bedrooms is: " <<
endl;
                        House largestHouse = available[0];
                        for (int i = 1; i < houseNo; i = i + 1)
                        {
                                if (available[i].getbedrooms() >
largestHouse.getbedrooms())
                                {
                                        largestHouse = available[i];
                                }
                        }
                        cout << "--------------------------------" << endl;
                        cout << "Owner\tAddress\tBedRooms\tPrice\n";
                        largestHouse.OutputData();

                }
                else if (optionMENU == 5) {
                        char SearchCity[20];
                        cin.ignore();
                        cout << "Enter city: ";
                        cin.getline(SearchCity, 20);
                        cout << "--------------------------------" << endl;
                        cout << "Owner\tAddress\tBedRooms\tPrice\n";
                        for (int i = 0; i < houseNo; i++)
                        {
                                if (SearchCity == available[i].getcity()) {
                                        available[i].OutputData();
                                }
                        }
                }
                else if (optionMENU == 6) {
                        cout << "You chose to get the best value for price per
size." << endl;
                        // Add your code to get the best value for price per size
                }
                else if (optionMENU == 0) {
                        break;
                }
                else {
                        cout << "Invalid choice. Please enter a number between 1
and 6.And for EXIT enter 0" << endl;
                }

        } while (true);
    }

void main() {
    do
    {
        //Main Menu
       cout << " ------ Welcome to Society Management System -------- " << endl;

        cout << "-----------------------------------------------------" <<
endl;
        cout << "1. Add a House details." << endl;
        cout << "2. Display All Houses details." << endl;
```

```
            cout << "3.Check Houses details Through queries." << endl;
            cout << "0.Exit!!" << endl;
            cout << "_____________________________________\n Your Answer: ";


            cin >> choice;

            //Conditions On the bases of choices....
            if (choice == 1)
            {
                //Addition of house.
                   Add();
                   system("cls");
            }
            else if (choice == 2)
            {
                   //For output the details of Houses.
                   Output();

            }
            else if (choice == 3)
            {
                   //For different Queries or Filters
                   system("cls");
                   query();
            }

            else if (choice == 0)
            {
                   //For Exting Program
                   break;
            }
            else
            {
                   //For Handling Invalid Entered choices!!
                   cout << "Invalid Choice!!" << endl;
            }
      } while (true);
}
```

Output:

```
 ------ Welcome to Society Management System --------
-----------------------------------------------------
1. Add a House details.
2. Display All Houses details.
3.Check Houses details Through queries.
0.Exit!!

 Your Answer:
```

```
 ------ Welcome to Society Management System --------
-----------------------------------------------------
1. Add a House details.
2. Display All Houses details.
3.Check Houses details Through queries.
0.Exit!!

 Your Answer: 1
Enter the House Owner NAME: asim
Enter the House Address: street 15
Enter the City: islamabad
Enter the House BedRooms no.: 5
Enter the House Price: 5000
```

```
 Your Answer: 2
-----------------------------------
Owner   Address BedRooms        Price
asim    street 15       5           5000
ahmed   street 15       8           4000
```

```
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1. Find houses within your budget
2. Find Houses with number of bedrooms query
3. Find most affordable (Lowest) house
4. Find the largest home with the most bedrooms
5. Search for properties in a specific city
6. Get the best value for price per size
0. Exit
Enter your choice:
```