Question 1

a) Observe the given class and write the main() based on the instructions below:

```
#include<iostream>

using namespace std;
class Bags
{
   string brand;
   float height, length, width;

   public:
     void setdata()
     {
       cout<<"Enter your bag's brand name: ";
       getline(cin, brand);
       cout<<"Enter value length, width and height of your bag L, W, H ";
       cin>>length>>width>>height;
     }

     void display()
     {
      cout<<"\nYour brand bag name is **"<<brand<<"** and the dimensions are: "
           <<length<<"L "<<width<<"W "<<height<<"H "<<endl;
     }

     Bags (const Bags &bi)
     {
       brand = bi.brand;
       length = bi.length;
       width = bi.width;
       height = bi.height;
       cout<<"\nDo you have the same bag??"<<endl;
     }

     Bags()
     {
       brand = "Adidas";
       length = 35;
       width = 20;
       height = 45;
     }
};

int main()
{       //need to developed by adding object k, l and m;

}
```

Complete the main():

(i) Declare an object named **k**
- Call member functions setdata() and display()

(ii) Declare another object named **l**
- Call display()

(iii) Compile the program and observe the output.
(iv) Declare another object named **m** and initialize it with **l**.
- Call member display()

(v) Compile the program and observe the output.

b) Based on the solution at (a), create a friend function called ***check(….).***
(i) Parameters : object **a**, object **b**, object **c** of the class Bags.
(ii) The function will determine if the 3 Bags objects share the same *height* dimension value and display the result.

In main() , create an array of 3 object elements. Using a for loop, invoke ***setdata()*** for each element. Lastly, pass the 3 object elements to the friend function call.

Sample Output Screen 1 b) #1

```
Enter your bag's brand name : adidas
Enter value length , width and height of your bag L, W, H 10 20 30
Enter your bag's brand name : puma
Enter value length , width and height of your bag L, W, H 15 25 30
Enter your bag's brand name : nike
Enter value length , width and height of your bag L, W, H 20 25 30

Do you have the same bag??

Do you have the same bag??

Do you have the same bag??

Common height for all 3 bags
-----------------------------
```

Sample Output Screen 1 b) #2

```
Enter your bag's brand name : adidas
Enter value length , width and height of your bag L, W, H 12 12 15
Enter your bag's brand name : nike
Enter value length , width and height of your bag L, W, H 20 30 20
Enter your bag's brand name : puma
Enter value length , width and height of your bag L, W, H 15 40 40

Do you have the same bag??

Do you have the same bag??

Do you have the same bag??

--not all bags have the same heights--
-----------------------------
```

Question 2

A. Given the declarations for a class ***IceCream*** that contains the following features:

```
#include<iostream>
#include<iomanip>
using namespace std;
class IceCream
{
   private:
         string flavour;
         int number;
         float price;

   public:
         void menu();
         void setflavour();
         void setHowMany();
         friend void display_receipt(IceCream);
         IceCream();
};
```

Write the definitions of the member functions **outside of the class** based on the descriptions given below:

(i) **menu()**
Display the menu (refer to sample output screen)

(ii) **setFlavour()**
Get user's choice and to set the *flavour* and *price* based on user's choice. (You have to use switch statement for this.)

(iii) **setHowMany()**
Get user input for *number* for the amount of ice cream.

(iv) **IceCream( )**
Display "Barney's House of Ice ".

B. Define friend function named **display_receipt (…)** that accepts an object (from IceCream class). In this function, calculate the total price and display the payment details. (refer to sample output screen)

C. In main(), do the following:
(i) Create an object of class IceCream called **ic**
(ii) Call the required member functions using **ic**
(iii) Pass **ic** when making function call to **display_receipt(…)**

Sample Output Screen

```
BARNEY'S HOUSE OF ICE

=========================================
===       CHOOSE FLAVOUR          ===
=========================================

[1] === Strawberry Flavour RM 3.50
[2] === Chocolate Flavour  RM 2.50
[3] === Vanilla Flavour   RM 1.50
[4] === Durian Flavour    RM 0.50

Choice of flavour : 2
How many : 6

=========================================
===          PAYMENT          ===
=========================================
Flavour          : Chocolate
Total Price      : RM 15.00
```

Question 3

Based on the incomplete program given below:

```
#include<iostream>
using namespace std;

class NumberGame
{ int array[5];
  public:
      //----------- (a)-----------
    friend void search(NumberGame , int*);
};

      //----------- (b)-----------

int main()
{   NumberGame g ;
    int num;
    cout<<"Enter a number :";
    cin>>num;

    search(g, &num);
    return 0;
}
```

a) Define default constructor to set the array with the following values.

15	20	33	38	100

b) Define *friend* function ***search(…)*** to find a number in the array of the object of class *NumberGame*.

- The function will receive two parameters (refer to the prototype given in the class above). The second parameter is a pointer which will receive the number from the function call by pointer. This number will be used in the *do-while* loop.
- Write a *do-while* loop to loop through every element of the *array* to search for the number.
  - Once the number is found, stop the search.
- Using *if-else* statements, display the appropriate message for both situations (whether the number has been found or not).

[Note: refer to sample output screen below]

Sample Output Screen #1
Enter a number :***55*** 55 is NOT found!

Sample Output Screen #2
Enter a number :***33*** 33 is found!