Question 1

Complete the code based on the given program segments:

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

class Fraction
{
 //--------(i)---------
};

int isValid(Fraction ob)
{  int valid;
   if (ob.getDenom()==0)
   {  valid = 0;
      cout<<"\nAlert: Denominator is having value zero "<<endl;
   }
   else if (ob.getNume()>ob.getDenom())
   {  valid = 0;
     cout<<"\nAlert: Numerator greater than denominator"<<endl;
      }
   else
     valid = 1;
 return valid;
}

int main()
{ Fraction ob1[3];
 for(int i=0; i<3; i++)
 {     ob1[i].setdata(i+1,2-i);
       //--------(ii)----------
 }
 return 0;
}
```

(i) In the class , include the following:

- Data members (set to private): **denom** of ***int*** type, **nume** of ***int*** type
- Public Member functions:
  - void **setData(…)**
    To set the *nume* and *denom* based on the values being passed from function call.
  - Accessor functions

(ii) In the main():

- Display the fraction by calling accessor functions
- Make function call to isValid(…) , passing the object element. The function call shall be part of an if-statement. If the value returned is 1 (means True), display “is valid”, else display “is invalid”. [Note: Refer to sample output screen]

Sample Output Screen

Fraction 1/2 is valid

Fraction 2/1
Alert: Numerator greater than denominator
is Invalid

Fraction 3/0
Alert: Denominator is having value zero
is Invalid

Question 2

KLCC International Affairs Department asked you to create a simple program to calculate and display appropriate data towards supporting their Trivia Quiz for Malaysia Independence Day celebrations in Kuala Lumpur. Given below is the incomplete program and the expected output as requested by the International Affairs Department.

```
#include<iostream>
#include<iomanip>
#include<cstring>
using namespace std;
class Trivia
{  private:
    string name, country, game_name;
    int age;
    float score[3];
    char status [20];
   public:
    void setParticipant()
    { cin.ignore();
    cout<<"\nEnter Name\t: ";
      getline(cin,name);
      cout<<"Enter Country\t: ";
      getline(cin, country);
      cout<<"Enter Age\t: ";
      cin>>age;
      cin.ignore();
      cout<<"Enter Game Name : ";
      getline(cin, game_name);
    }
    // a) void score_Gained() function
    // b) void average_Val() function
```

```
    void set_status (double avg)
    {
      if (avg >= 80 && avg <= 100)
            strcpy(status , "Excellent");
     else if (avg >= 60 && avg < 80)
            strcpy(status , "Great");
     else
            strcpy(status , "Keep Trying");
    }
   // c) void display_result() function
};
int main()
{
   // d) Write the code based on the requirements as stated below
}
```

Sample Output Screen

```
How many warriors? 2

Enter Name          : Melissa Ng
Enter Country       : Malaysia
Enter Age           : 19
Enter Game Name     : Trivia Quiz
      Enter Score 1 : 85
      Enter Score 2 : 74
      Enter Score 3 : 80

--------------------------
  RESULT SCORED
--------------------------
Name          : Melissa Ng
Country       : Malaysia
Age           : 19
Game name     : Trivia Quiz
     Score 1  : 85
     Score 2  : 74
     Score 3  : 80
     Status   : Great

Enter Name          : Aliana
Enter Country       : Brunei
Enter Age           : 20
Enter Game Name     : Trivia Quiz
      Enter Score 1 : 74
      Enter Score 2 : 85
      Enter Score 3 : 60
```

```
---------------------------
   RESULT SCORED
---------------------------
Name        : Aliana
Country     : Brunei
Age         : 20
Game name   : Trivia Quiz
     Score 1  : 74
     Score 2  : 85
     Score 3  : 60
     Status   : Great
```

a) Write the code for member function *void score_Gained( )* that prompts and gets user input for the *scores* of the series of 3 quizes (Refer to sample output screen. Use a for-loop).

b) For the *void average_Val( )* function; you must declare appropriate variables, calculate the total of the three quizzes, and then calculate *average* value from the total. It should then call the function **set_status(…),** passing *average* as the parameter.

c) Refer to the sample output screen, and write the code for the *void display_result( )* function to display the warrior's details, scores, and status (*name*, *country*, *age*, *game_name*, scores for the series of 3 quizzes, and *status*).

d) In *main ( )*:

- Get user input on how many warrior's data is to be entered.
- Declare an object **tv** of class **Trivia.**
- Declare a pointer object **tv1** of class **Trivia**.
- **Make pointer tv1** point to object **tv. [**Hint: use **address** of object **tv]**
- Using a *for* loop that loops a number of times starting from the 1st input
- Call **setParticipant( )**, **score_Gained( )**, **average_Val( )** and **display_result( )** using pointer **tv1**.

Question 3

Sekolah Kebangsaan Cyberjaya has asked you, as one of the PIBG members, to assist them in preparing a simple program that is able to convert the UPSR trial exam results to the 'STAR'-graph based on the District Education Office scale. The program will show the achievement of all "Standard 6" classes (Total class: 4 classes).

Given below is the scale received from the District Education Office:

No.	Class Achievement	Star Result
1	The passing grade is between 85 and 100	* * * * *
2	The passing grade is between 70 and 84.9	* * * *
3	The passing grade is between 60 and 69.9	* * *
4	The passing grade is between 50 and 59.9	* *
5	Less than 50	Poor Achievement

***Hint:** Place the score as stated in the table above in a member function called **display_scale().**

In getting the requested output (refer to the sample output), you must:

- Create a class called **Achievement**
  - Declare two data members: **class name(string)** and **score(int)**
  - Define two member functions:
    - void **set_data(……)**
      To set all the data members to the appropriate variables.
    - void **display_scale()**
      - To display the achievement. Example:
        ==========
        6Q1
        The Class Passing Grade Achievement: 86%
        * * * * *
      - Use a suitable selection structure to determine the Star Result based on the *score* data

- In the main() function:
  - Declare necessary variables and array object
  - Call appropriate functions to set and display the information as shown in the sample output

Sample Output Screen

```
--------------------------------------------------
        Enter Class Achievement
--------------------------------------------------
Enter the class name          : 6Q1
The class achievement (%)     : 86

Enter the class name          : 6Q2
The class achievement (%)     : 56

Enter the class name          : 6Q3
The class achievement (%)     : 75

Enter the class name          : 6Q4
The class achievement (%)     : 49

  THE SUMMARY OF UPSR TRIAL EXAM RESULT
==================================
          6Q1
The Class Passing Grade Achievement: 86%
* * * * *
==================================
          6Q2
The Class Passing Grade Achievement: 56%
* *
==================================
```

```
        6Q3
The Class Passing Grade Achievement: 75%
 * * * *
==================================
        6Q4
The Class Passing Grade Achievement: 49%
 Poor Achievement
==================================
```

Question 4

Tutti Frutti Branch Owner requests you to develop a simple program for their upcoming "***Strawberry Lover***" campaign. You are required to do the following:

(i) Create a class called **Strawberry**.

- Data members (set to private): **selection(string), price(double);**
- Member Functions (public):
  - void **dispStrawberrySelection()** : this function displays the following menu

    [1] Strawberry & Nutella Crepe Price: RM10.00
    [2] Strawberry & Chocolate Crepe Price: RM12.00
    [3] Strawberry Waffle with Custard Price: RM13.40
    [4] Strawberry Smoothie Price: RM10.00
    [5] Strawberry & Country Cream Price: RM13.00
  - void **purchase()**: this function accepts users selection based on the menu (***tip:use the number to set selection***). User can only select one selection. Price and selection of the menu should also be set accordingly (***tip: you may use if-else statements here***). If the user enters any number other than 1,2,3,4, or 5 the price should be set to 0.00 and selection="Not Available".
  - double **getPrice()** : returns price
  - string **getSelection()** : returns selection;

(ii) Create a class called **Customer**.

- Data member (set to private): **strawSelect(string), name(string), payment(double), st(Strawberry);**
- Member Functions (public):
  - void **set_data()**: this function displays the Tutti Frutti header; it will sets the name according to the user input, and calls the function getOrder()
  - void **getOrder():** this function calls the Strawberry's member functions (void **dispStrawberrySelection()** , void **purchase**) on the object **st**. It also sets the payment with the value that is returned from the Strawberry's **getPrice()** and the StrawSelect with the value that is returned from the Strawberry's **getSelection();**
  - void dispDetails(): this function displays the customer's details(name, StrawSelect, payment)

(iii) In the main function:

- Create an object of Customer
- Invoke on the Customer object, the function setData() and dispDetails();

Sample Output Screen

```
++++++++++++++++++++++++++++++++++
    Tutti Frutti: Strawberry
++++++++++++++++++++++++++++++++++
Enter name      : Jasmine

[1] Strawberry & Nutella Crepe        Price:  RM10.00
[2] Strawberry & Chocolate Crepe      Price:  RM12.00
[3] Strawberry Waffle with Custard    Price:  RM13.40
[4] Strawberry Smoothie               Price:  RM10.00
[5] Strawberry & Country Cream        Price:  RM13.00

Enter your choice based on the number
4
.....................
Jasmine, Your purchase details
.....................
Selection                : Strawberry Smoothie
Payment to be made       : RM 10.00
```