LAB 4

| Question | Task | TIME ALLOCATION | REMARKs |
| --- | --- | --- | --- |
| 1 | Accessor functions, Array in functions | 40 minutes |  |
| 2 | Pointer to object | 20 minutes |  |
| 3 | Functions Call | 60 minutes |  |

**Question 1**

(a) Complete the codes based on the given program segments:

#include<iostream>

using namespace std;

class Fraction

{ --------(a)---------

};

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);

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

}

return 0;

}

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| **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**  **Press any key to continue…** |

* 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
* 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]

1. Airstax Car Manufacturing Company has commissioned you to write a program that will display a bar graph showing the productivity of each of its four manufacturing plants for any given day.

* Each asterisks(\*) represent 2 cars and a hash(#) represents 1 car.
* Therefore if a plant produces 7 cars in a day, the output for the graph would be:

**\* \* \* #**

Complete the following program as given and answer the following questions.

**#include<iostream>**

**#include<iomanip>**

**using namespace std;**

**class CarProduction**

**{ int quantity;**

**string plantno;**

**public:**

**void setdata(string s, int q)**

**{ plantno = s;**

**quantity = q;**

**}**

**//b.display\_graph() function**

**};**

**int main()**

**{ //a. declare an array named C of 4 object elements of CarProduction class**

**string s; int qty;**

**for(int i=0; i<4; i++)**

**{ cout<<"Enter the plant no# : ";**

**cin>>s;**

**cout<<"Enter the amount of cars produced today : ";**

**cin>>qty;**

**C[i].setdata(s, qty);**

**}**

**cout<<"\n Daily Productivity Report "<<endl;**

**for(int i=0; i<4; i++)**

**C[i].display\_graph();**

**}**

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| **Sample Output Screen** |
| Enter the plant no# : *A151*  Enter the amount of cars produced today : *5*  Enter the plant no# : *AB14*  Enter the amount of cars produced today : *10*  Enter the plant no# : *AV07*  Enter the amount of cars produced today : *8*  Enter the plant no# : *AV11*  Enter the amount of cars produced today : *9*  Daily Productivity Report  ====================================  A151  \* \* #  ====================================  AB14  ***display\_graph()***  \* \* \* \* \*  ====================================  AV07  \* \* \* \*  ====================================  AV11  \* \* \* \* # |

* Declare an array named C of the class that has 4 object elements.
* Write the codes for member function *display\_graph( )*that displays the graph according to output as shown at sample output . (See Label ***display\_graph(*)**).

**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 Independent Day celebration in Kuala Lumpur. Given below is the incomplete program and the expected output as requested by the International Affairs Department.

#include<iostream>

#include<cstring>

using namespace std;

class Trivia

{ private:

string name, country, game\_name;

int age;

float score[3];

char status [20];

public:

void setParticipant()

{ cout<<"\nEnter Name : ";

getline(cin,name);

cout<<"Enter Country : ";

getline(cin, country);

cout<<"Enter Age : ";

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 if (avg >= 50 && avg < 60)

strcpy(status , "Keep Trying");

else

strcpy(status, "Loser");

}

// c) void display\_result() function

};

int main()

{

// d) Write the codes based on the requirements as stated below

}

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| **Sample Output Screen** |
| How many warrior ? 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 |

1. Write the codes for member function *void score\_Gained( )*that prompt and get user input for *scores* of the 3 series of Quiz (Refer to sample output screen. Use a for-loop).
2. For the *void average\_Val ( )* function; you must declare appropriate variables, define total calculation and calculate *average* value based on the 3 series of Quiz. Call function **set\_status(…),** passing *average* as parameter.
3. Refer to the sample output screen, write the codes for *void display\_result( )* function to display the warrior’s result scored details (*name*, *country*, *age*, *game\_name*, scores for the 3 series of Quiz and *status*).
4. In *main ( ),* prepare these appropriate codes:

* Get user input on how many warrior’s data 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 start from 1st input
* Call **setParticipant( )**, **score\_Gained( )**, **average\_Val( )** and **display\_result( )** using pointer **TV1**.

**Question 3**

a) Write a complete program based on the information given below.

* Create a class for Insurance Agent data called **Increment**.
* Data member (set to private): **name(char []), Sc\_Point (float)** and **rating(char).**
* Member function: declare the member function in the class.
* **char\* set\_name()**
* Get name from user and set the value to name.
* **float set\_ Sc\_Point ()**
* Get the Score Point from the user and set the value to Sc\_Point.
* **float set\_rating()**
* Calculate the Rating based on the following data.
  + Score Point 3.00 to 4.00 = rating ‘A’.
  + Score Point 2.00 to 2.99 = rating ‘B’.
  + Score Point 0.00 to 1.99 = rating ‘F’.
* Create an object called **M** in **main()** function.
* Call all the three functions from **main()**.
* Print the name, Sc\_Point and rating in **main()** function.

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| **Sample Output Screen** |
| **===================================**  **AGENT INFORMATION**  **===================================**  **Enter Name : Jane**  **Score Point : 3.33**  **===================================**  **INCREMENT SLIP**  **===================================**  **Name : Jane**  **Point Awarded : 3.33**  **Rating : A**  **Press any key to continue** |

b) As a programmer, Tutti Frutti Branch Owner requested you to develop a simple program for their upcoming “***Strawberry Lover***” campaign.

You’re required to do the following:

1. Create a class called **Strawberry**.
   * Data member (set to private): **selection(string), price(double);**
   * Member Functions (public):
     1. 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

* + 1. 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: use if-else statements here***). If user enters any number other than 1,2,3,4, or 5 the price should be set to 0.00 and selection=”Not Available”.
    2. double **getPrice()** : returns price
    3. string **getSelection()** : returns selection;

1. Create a class called **Customer**.
   * Data member (set to private): **StrawSelect(string), name(string), payment(double), st(Strawberry);**
   * Member Functions (public):
     1. void **set\_data()**: this function display Tutti Frutti header, it will sets the name with user input, and calls the function getOrder()
     2. 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();**
     3. void dispDetails(): this function displays the customer’s details(name, StrawSelect, payment)
2. In the main function:
   * 1. Create an object of Customer
     2. Invoke on the Customer object, the function setData() and dispDetails();

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| **Sample Output Screen** |
| ++++++++++++++++++++++++++++++++++  Tutti Frutti: Strawberry  ++++++++++++++++++++++++++++++++++  Your 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 |