

INDIVIDUAL ASSIGNMENT

1. Submit by **18st October, 2021 (Tuesday), 12.00pm.**
2. Ensure that you have written down your **name** and **student id** on the first page.
3. Do not plagiarize/copy from your friends or zero marks will be given.
4. **Submit WRITTEN answer.**
5. Total marks is 20 marks.

Question 1 (10 marks)

- a. Given below is an incomplete program with a sample output screen. Complete the program as instructed.

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

int main()
{
    int arr1[] = {2,4,6,8}, arr2[4];

    //-----(i)-----
    //-----(ii) -----
}
```

SAMPLE OUTPUT SCREEN
1 2 3 4

- i. Write C++ statements to divide the values of all elements in array *arr1* by 2. [2 marks]
- ii. Write C++ statements to display all the data stored in array *arr2*. [2 marks]

Solution

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

int main()
{
    int arr1[] = {2,4,6,8}, arr2[4];

    for(int i=0;i<4;i++)
    {
        //-----(i)Write C++ statements to divide the values of all
        //elements in array arr1 by 2-----
        arr2[i]=arr1[i]/2;
    }
}
```

```

//-----(ii)Write C++ statements to display all the data
stored in array arr2-----
    cout<<arr2[i]<<" ";
}

}

```

- b. Given below is an incomplete program. Write code based on the following instructions.

```

#include<iostream>
using namespace std;
float calculate(float*);
//.....(i).....



int main()
{
    struct orange ob;
    cout<<"Enter the weight(Gram) of the orange : ";
    cin>>ob.weight;

    //.....(ii).....



    cout<<"Cost for "<<ob.weight<<" gram is RM "<<ob.cost;
}

//.....(iii).....
{
    //.....(iv).....
}

```

- (i) Define the *struct* named *orange* with elements : *weight* (*float*) and *cost* (*float*). [2 marks]
- (ii) Call a function *calculate(...)* and pass *ob*'s *weight* by using **reference** as parameter to calculate the *cost* of orange. [1.5 marks]
- (iii) Write a function header *calculate(...)* that has return data type float and a pointer parameter *weight*. [1.5 marks]
- (iv) Calculate the *cost* based on the formula given below and return the cost value.
Cost = weight * 0.02 [1 mark]

SAMPLE OUTPUT SCREEN

Enter the weight(Gram) of the orange: 1100
--

Cost for 1100 gram is RM 22

Solution

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

float calculate(float*);

//-----(i)Define the struct named orange with elements : weight
// (float) and cost (float). -----
struct orange
{
    float weight;
    float cost;
};

int main()
{
    struct orange ob;
    cout<<"Enter the weight(Gram) of the orange : ";
    cin>ob.weight;

    //----- (ii)Call a function calculate(...) and pass ob's weight
    // by using reference as parameter to calculate the cost of orange.-----
    ob.cost=calculate(&ob.weight);

    cout<<"Cost for "<<ob.weight<<" gram is RM "<<ob.cost;
}

//-----(iii)Write a function header calculate(...) that has
// return data type float and a pointer parameter weight.-----
float calculate(float *weight)
{
    //----- (iv)Calculate the cost based on the formula
    // given below and return the cost value [Cost = weight * 0.02]-----
    float cost;
    cost=*weight *0.02;
    return cost;
}
```

Question 2 (10 marks)

- a. Given the following incomplete table. Write code based on the following instructions.
[10 marks]

```

#include<iostream>
using namespace std;
const float price=10.50;
class book
{
    private:
        string name,           float payment;   int quantity;
    public:

        //-----(i)-----

        void calculate();

        int getQuantity()
        { return quantity; }
};

//-----(ii)-----


int main()
{
    book person1;
    //-----(iii)-----


    float totalqty = 0;
    cout<<"\n-----" << endl;
    cout<<"      3 Buyers          " << endl;
    cout<<"-----" << endl;
    book buyer[3]; //an array of objects
    //-----(iv)-----


    cout<<"The total quantity books for 3 Buyers :" << endl;
    cout<< totalqty << endl;
}

```

SAMPLE OUTPUT SCREEN

Enter your name : *Sebastian*

Enter book quantity : *5*

Total Payment: RM 52.50

 3 Buyers

Enter your name : *Johan*

Enter book quantity : *2*

Total Payment: RM 21.00

Enter your name : *Imran*

Enter book quantity : *10*

Total Payment: RM 105.00

```

Enter your name      : Celine
Enter book quantity : 3
Total Payment: RM 31.50

The total quantity books for 3 Buyers :20

```

- i. Write a member function definition for *setQuantity()* inside the class. This function gets user inputs for *name* and *quantity*. [2 marks]
- ii. Write a member function definition for *calculate()* **outside** of the class. This function is to calculate total payment by multiplication of the *price* and *quantity*. Display the total *payment*. [2 marks]//(iii)
- iii. Call a function *setQuantity()* and *calculate()* using the **person1** object. [2 marks]
- iv. Write the codes to create a *for* loop that will repeat for 3 times:
 - a. For every object element of *buyer* array of objects: [4 marks]
 - i. Call function *setQuantity()* and *calculate()*
 - ii. Accumulate the *quantity* of the object element into variable *totalqty*.

[Hint: Make use of the accessor function – *getQuantity()*]

Solution

```

#include<iostream>
#include<iomanip>
using namespace std;
const float price=10.50;
class book
{
    private:
        string name; float payment;     int quantity;
    public:

        void set()
    {
        cout<<"Enter your name : ";
        getline(cin,name);

        cout<<"Enter book quantity : ";
        cin>>quantity;
    }

    //-----(i)Write a member function definition for
    //setQuantity() inside the class. This function gets user inputs for name and
    //quantity.
    void setQuantity()
    {
        cout<<"Enter your name : ";
        getline(cin,name);

        cout<<"Enter book quantity : ";
        cin>>quantity;
    }

    void calculate();

    //Hint: Make use of the accessor function - getQuantity()
}

```

```

        int getQuantity()
        {
            return quantity;
        }

//-----(ii)Write a member function definition for calculate() outside
of the class. This function is to calculate total payment by multiplication
of the price and quantity. Display the total payment.
void book::calculate()
{
    payment=quantity*price;
    cout<<"Total Payment : RM
"<<fixed<<setprecision(2)<<payment<<endl<<endl;
}

int main()
{   book person1;

    //-----(iii)Call a function setQuantity() and calculate() using the
person1 object.
    person1.setQuantity();
    person1.calculate();

    float totalqty = 0;
    cout<<"\n-----" "<<endl;
    cout<<"          3 Buyers           " "<<endl;
    cout<<"-----" "<<endl;

    //For every object element of buyer array of objects
book buyer[3];

    //Write the codes to create a for loop that will repeat for 3 times
for(int i=0;i<3;i++)
{
    fflush(stdin);
    //Call function setQuantity() and calculate()
    buyer[i].setQuantity();
    buyer[i].calculate();

    totalqty=totalqty+buyer[i].getQuantity();
}

    //Accumulate the quantity of the object element into variable
totalqty.
    cout<<"The total quantity books for 3 Buyers :
"<<fixed<<setprecision(0)<<totalqty+person1.getQuantity()<<endl;

    return 0;
}

```