Experiment No 02

Aim: - Implementation of Class, object, member functions and array of object for given Statement.

Objectives:-

1) To learn the basic concept of class and member function.

2) To design and implement the problem using member function.

Theory:-

The main purpose of C++ programming is to add object orientation to the C Programming language and classes are the central feature of C++ that supports object oriented Programming and are often called user-defined types. A class is used to specify the form of an Object and it combines data representation and methods for manipulating that data into one neat Package. The data and functions within a class are called members of the class.

Class:-

- Class is a user defined data type.
- It is a collection of data members and function members.
- When you define a class, you define a blueprint for a data type. This doesn't actually define any data, but it does define what the class name means, that is, what an object of the class will consist of and what operations can be performed on such an object.
- A class definition starts with the Keyword class followed by the class name; and the class body, enclosed by a pair of curly braces.
- A class definition must be followed either by a semicolon or a list of declarations. For example

We defined the Box data type using the keyword class as follows:

```
class Box

{

public:

double length; // Length of a box

double breadth; // Breadth of a box

double height; // Height of a box

};
```

The keyword public determines the access attributes of the members of the class that follow it.

A public member can be accessed from outside the class anywhere within the scope of the class object. You can also specify the members of a class as private or protected which we will discussion a sub- section.

Object:-

- "A basic runtime entity in object oriented systems".
- Object is a instance of type class.
- Object is a variable of type class. A class provides the blueprints for objects, so basically an object is created from a class. We declare objects of a class with exactly the same sort of declaration that we declare variables of basic types.

Following statements declare two objects of class Box:

Box Box1; // Declare Box1 of type Box

Box Box2; // Declare Box2 of type Box

Both of the objects Box1 and Box2 will have their own copy of data members.

Member Function:-

- Member functions are the functions, which have their declaration inside the class definition and works on the data members of the class. The definition of member functions can be inside or outside the definition of class.
- If the member function is defined inside the class definition it can be defined directly, but if its defined outside the class, then we have to use the scope resolution operator :: along with class name along with function name.

Class cube

{

Public:

int side;

int getvolume();//declaring function getvolume with no argument and return type int.

};

If we define the function inside class then we don't not need to declare it first, we can directly

Define the function.

```
class Cube
{
public:
int side;
int getVolume()
{
return side*side*side; //returns volume of cube
}
};
```

But if we plan to define the member function outside the class definition then we must declare

the function inside class definition and then define it outside.

```
class Cube
{
public:
int side;
int getVolume();
}
int Cube :: getVolume() // defined outside class definition
{
return side*side*side;
}
```

The maine function for both the function definition will be same. Inside main() we will create

object of class, and will call the member function using dot . operator.

```
int main()
{
Cube C1;
```

```
C1.side=4; // setting side value

cout<< "Volume of cube C1 ="<< C1.getVolume();

}
```

For Laptop Customization System we have created the following class and member functions.

1. class Features => class name as Features
2. void select_os() => Take the input from user for the Operating System.
3. void select_processor() => Take the input from user for the Processor.
4. void select_ram() => Take the input from user for the RAM.
5. void display_features() => Display all the selected Features.

Conclusion:-Thus we studied and implemented student details using class and member Functions.

Code For Laptop Customization System for Class, Object and Member Function :-

```
// Assignment 2 PPL


/* Here we have created the class named features which has Features

 of the laptop like Os, Ram ,Processor and that have the options for

 user to select his/her specification  */


#include<iostream>

#include<stdio.h>

using namespace std;


class Features  //class named Features

{

   int os;
```

```
    int processor;
    int ram;
public:
    void select_os();
    void select_processor();
    void select_ram();
    void display_features();
};
void Features::select_os() // member function
{
    cout<<"\n ** Please Select The Operating system you want in your Laptop : \n"<<endl;
    cout<<"\n 1.Windows "<<endl;
    cout<<"\n 2.MAC Os "<<endl;
    cout<<"\n 3.Exit"<<endl;
    cout<<"\n Enter Your Choice : ";
    cin>>os;
    switch(os)
    {
    case 1:
        cout<<"\n * You have Selected Your Os ==> windows Os"<<endl;
        break;

    case 2:
        cout<<"\n * You have Selected Your Os ==> MAC Os"<<endl;
        break;

    case 3:
```

```
        cout<<"\n Terminated Successfully !!"<<endl;
        cout<<"\n Thank You Visit Again !!!!\n"<<endl;
        exit(0);
        break;

    default :
        cout<<"\n Enter valid choice ";
        exit(0);
    }
}
void Features::select_processor()
{
if(os==1){
    cout<<"\n\n **Select the Processor : \n"<<endl;
    cout<<"1. Intel i3"<<endl;
    cout<<"2. Intel i5"<<endl;
    cout<<"3. Intel i7"<<endl;
    cout<<"4. Intel i9"<<endl;
    cout<<"5. AMD Ryzen 5"<<endl;
    cout<<"6. AMD Ryzen 7"<<endl;
    cout<<"7. Exit"<<endl;
    cout<<"\n Enter Your Choice : ";
    cin>>processor;
    switch(processor)
    {
    case 1:
```

```
    cout<<"\n * You have Selected Your Processor ==> Intel i3 "<<endl;
    break;
case 2:

    cout<<"\n * You have Selected Your Processor ==> Intel i5 "<<endl;
    break;
case 3:

    cout<<"\n * You have Selected Your Processor ==> Intel i7 "<<endl;
    break;
case 4:

    cout<<"\n * You have Selected Your Processor ==> Intel i9 "<<endl;
    break;
case 5:

    cout<<"\n * You have Selected Your Processor ==> AMD Ryzen 5 "<<endl;
    break;
case 6:

    cout<<"\n * You have Selected Your Processor ==> AMD Ryzen 7 "<<endl;
    break;
case 7:
    cout<<"\n Terminated Successfully !!"<<endl;
    cout<<"\n Thank You Visit Again !!!!\n"<<endl;
    exit(0);
    break;
```

```
default :
   cout<<"\n Enter valid choice ";
   exit(0);
}
}

else if(os==2)
{
cout<<"\n\n **Select the Processor : \n"<<endl;
cout<<"1. Intel i3"<<endl;
cout<<"2. Intel i5"<<endl;
cout<<"3. Intel i7"<<endl;
cout<<"4. Intel i9"<<endl;
cout<<"5. Exit"<<endl;
cout<<"\n Enter Your Choice : ";
cin>>processor;
switch(processor)
{
case 1:
   cout<<"\n * You have Selected Your Processor ==> Intel i3 "<<endl;
   break;

case 2:
   cout<<"\n * You have Selected Your Processor ==> Intel i5 "<<endl;
   break;
```

```
    case 3:
        cout<<"\n * You have Selected Your Processor ==> Intel i7 "<<endl;
        break;

    case 4:
        cout<<"\n * You have Selected Your Processor ==> Intel i9 "<<endl;
        break;

    case 5:
        cout<<"\n Terminated Successfully !!"<<endl;
        cout<<"\n Thank You Visit Again !!!!\n"<<endl;
        exit(0);
        break;

    default :
        cout<<"\n Enter valid choice ";
        exit(0);
    }
    }
}

void Features::select_ram()
{

if(os==1){
    cout<<"\n\n **Select the RAM : \n"<<endl;
    cout<<"1. 4 GB"<<endl;
```

```
cout<<"2. 8 GB"<<endl;
cout<<"3. 16 GB"<<endl;
cout<<"4. 32 GB"<<endl;
cout<<"5. Exit"<<endl;
cout<<"\n Enter Your Choice : ";
cin>>ram;
switch(ram)
{
case 1:

   cout<<"\n * You have Selected Your RAM ==> 4 GB "<<endl;
   break;
case 2:

  cout<<"\n * You have Selected Your RAM ==> 8 GB "<<endl;
   break;
case 3:

   cout<<"\n * You have Selected Your RAM ==> 16 GB "<<endl;
   break;
case 4:

   cout<<"\n * You have Selected Your RAM ==> 32 GB "<<endl;
   break;
case 5:
   cout<<"\n Terminated Successfully !!"<<endl;
   cout<<"\n Thank You Visit Again !!!!\n"<<endl;
```

```
        exit(0);
        break;
    default :
        cout<<"\n Enter valid choice ";
         exit(0);
    }
}

if(os==2)
{
    cout<<"\n\n **Select the RAM : "<<endl;
    cout<<"1. 8 GB"<<endl;
    cout<<"2. 16 GB"<<endl;
    cout<<"3. Exit"<<endl;
    cout<<"\n Enter Your Choice : ";
    cin>>ram;
    switch(ram)
    {
    case 1:

       cout<<"\n * You have Selected Your RAM ==> 8 GB "<<endl;
        break;
    case 2:

        cout<<"\n * You have Selected Your RAM ==> 16 GB "<<endl;
        break;
```

```
    case 3:
        cout<<"\n Terminated Successfully !!"<<endl;
        cout<<"\n Thank You Visit Again !!!!\n"<<endl;
        exit(0);
        break;
    default :
        cout<<"\n Enter valid choice ";
         exit(0);
    }

}
}


void Features::display_features()
{
    cout<<"\n\n";
    cout<<"\n * Your Selected Specifications are ==> \n"<<endl;

 //OS
    if(os==1){
        cout<<"\n Operating System ==> Windows Os"<<endl;


    //Processor
    if(processor==1)
        cout<<"\n Processor ==> Intel i3"<<endl;
```

```
    else if(processor==2)
        cout<<"\n Processor ==> Intel i5"<<endl;
    else if(processor==3)
        cout<<"\n Processor ==> Intel i7"<<endl;
    else if(processor==4)
        cout<<"\n Processor ==> Intel i9"<<endl;
    else if(processor==5)
        cout<<"\n Processor ==> Ryzen 5"<<endl;
    else if(processor==6)
        cout<<"\n Processor ==> Ryzen 7"<<endl;

     //RAM
    if(ram==1)
        cout<<"\n RAM ==> 4 GB"<<endl;
    else if(ram==2)
        cout<<"\n RAM ==> 8 GB"<<endl;
    else if(ram==3)
        cout<<"\n RAM ==> 16 GB"<<endl;
    else if(ram==4)
        cout<<"\n RAM ==> 32 GB"<<endl;
}
    //for mac
    else if(os==2){
        cout<<"\n Operating System ==> MAC Os "<<endl;
    if(processor==1)
        cout<<"\n Processor ==> Intel i3"<<endl;
     else if(processor==2)
```

```
        cout<<"\n Processor ==> Intel i5"<<endl;
     else if(processor==3)
        cout<<"\n Processor ==> Intel i7"<<endl;
     else if(processor==4)
        cout<<"\n Processor ==> Intel i9"<<endl;

     //ram mac
    if(ram==1)
       cout<<"\n RAM ==> 8 GB"<<endl;
    else if(ram==2)
       cout<<"\n RAM ==> 16 GB"<<endl;
    }
}
int main()
{
    cout<<"\t\t*************************************"<<endl;
    cout<<"\t\t*   Laptop Customization System   *"<<endl;
    cout<<"\t\t*************************************"<<endl;
    Features f; //object created
    f.select_os();
    f.select_processor();
    f.select_ram();
    system("cls");
    f.display_features();
    cout<<"\n\n * Thank you Visit Again :) !!!! "<<endl;
}
```

Output =>

```
                    ************************************
                    *        Laptop Customization System       *
                    ************************************

 ** Please Select The Operating system you want in your Laptop :
 1.Windows
 2.MAC Os
 3.Exit
 Enter Your Choice : 1

 * You have Selected Your Os ==> windows Os

 **Select the Processor :
1. Intel i3
2. Intel i5
3. Intel i7
4. Intel i9
5. AMD Ryzen 5
6. AMD Ryzen 7
7. Exit
 Enter Your Choice : 3

 * You have Selected Your Processor ==> Intel i7

 **Select the RAM :
```

1. 4 GB

2. 8 GB

3. 16 GB

4. 32 GB

5. Exit

Enter Your Choice : 2

* You have Selected Your RAM ==> 8 GB

* Your Selected Specifications are ==>

Operating System ==> Windows Os

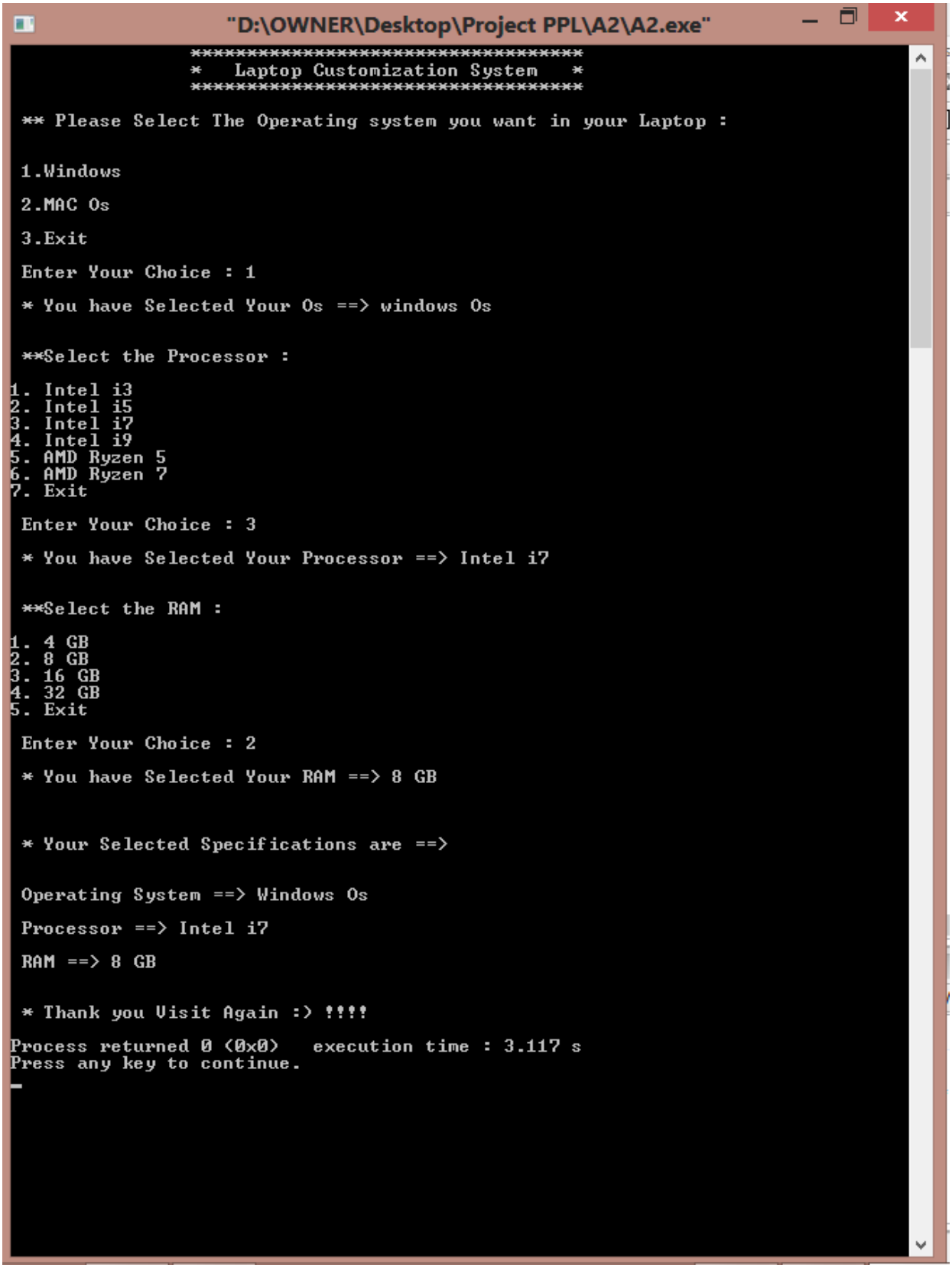
Processor ==> Intel i7

RAM ==> 8 GB

* Thank you Visit Again :) !!!!

Process returned 0 (0x0) execution time : 24.507 s

Press any key to continue.


"D:\OWNER\Desktop\Project PPL\A2\A2.exe"
****
* Laptop Customization System *
****
** Please Select The Operating system you want in your Laptop :
1.Windows
2.MAC Os
3.Exit
Enter Your Choice : 1
* You have Selected Your Os ==> windows Os
**Select the Processor :
1. Intel i3
2. Intel i5
3. Intel i7
4. Intel i9
5. AMD Ryzen 5
6. AMD Ryzen 7
7. Exit
Enter Your Choice : 3
* You have Selected Your Processor ==> Intel i7
**Select the RAM :
1. 4 GB
2. 8 GB
3. 16 GB
4. 32 GB
5. Exit
Enter Your Choice : 2
* You have Selected Your RAM ==> 8 GB
* Your Selected Specifications are ==>
Operating System ==> Windows Os
Processor ==> Intel i7
RAM ==> 8 GB
* Thank you Visit Again :) !!!!
Process returned 0 (0x0) execution time : 3.117 s
Press any key to continue.