Don Bosco Institute of Technology, Kurla(W)
Department of Electronics and Tele-Communication Engineering
ECL304 - Skill Lab: C++ and Java Programming
Sem III
2021-22

Lab Number:	3
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Title:

3.1 Write a C++ program to Create a class Student with two method getData() and printData(). getData() to get the value from the user and display the data in printData(). Create the two objects s1 ,s2 to declare and access the values from class StudentTest.

3.2 Write a C++ program for Basic bank Management System

Learning Objective:

- Students will be able to write C++ and java program for using classes and objects.

Learning Outcome:

- Ability to execute a simple C++and Java program by accepting and displaying values using functions
- Understanding the classes and objects concept in C++ and Java.

Course Outcome:

ECL304.1	Understand object-oriented programming concepts and implement using C++ and Java

Theory:Q1. Explain about Constructor.

A constructor is a special type of member function of a class which initializes objects of a class. In C++, Constructor is automatically called when object (instance of class) create. It is special member function of the class because it does not have any return type.

* Constructor has same name as the class itself

* Constructors don’t have return type

* A constructor is automatically called when an object is created.

* It must be placed in public section of class.

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* If we do not specify a constructor, C++ compiler generates a default constructor for object(expects no parameters and has an empty body)

Q2. Explain about classes and objects in C++.

Class: A class in C++ is the building block, that leads to Object-Oriented programming. It is a user-defined data type, which holds its own data members and member functions, which can be accessed and used by creating an instance of that class. A C++ class is like a blueprint for an object.For Example: Consider the Class of Cars. There may be many cars with different names and brand but all of them will share some common properties like all of them will have 4 wheels, Speed Limit, Mileage range etc. So here, Car is the class and wheels, speed limits, mileage are their properties.

Object: It is an instance of a Class. When a class is defined, no memory is allocated but when it is instantiated (i.e. an object is created) memory is allocated. When a class is defined, only the specification for the object is defined; no memory or storage is allocated. To use the data and access functions defined in the class, you need to create objects.

Q3.How to access class attributes and methods? Explain with example

Class attributes are just variables from a general programming point of view. But when it comes to Object Oriented Programming, these class attributes define the state of the class objects.Attributes are one of the key features of modern C++ which allows the programmer to specify additional information to the compiler to enforce constraints (conditions), optimise certain pieces of code or do some specific code generation.Following class defines a class named Student, with three attributes.

```
class Student {
 string name;
 int rollno;
 int section;
};
```

C++ class methods

Methods of a class defines the behavior of the class objects. Class methods are functions that can be accessed within the class or on the class objects. There are two ways to define functions that belongs to a class:

1. Inside class definition
2. Outside class definition

Following example, defines a class named Student with method printDetails().

```
class Student {
 //attributes
 string name;
 int rollno;int section;
 //methods
 void printDetails(){
 cout << "Name : " << name << endl;
 cout << "Roll Number : " << name << endl;
 cout << "Section : " << name << endl;
 }
};
```

1. Write a C++ program to Create a class Student with two method getData() and printData(). getData() to get the value from the user and display the data in printData(). Create the two objects s1 , s2 to declare and access the values from class StudentTest.

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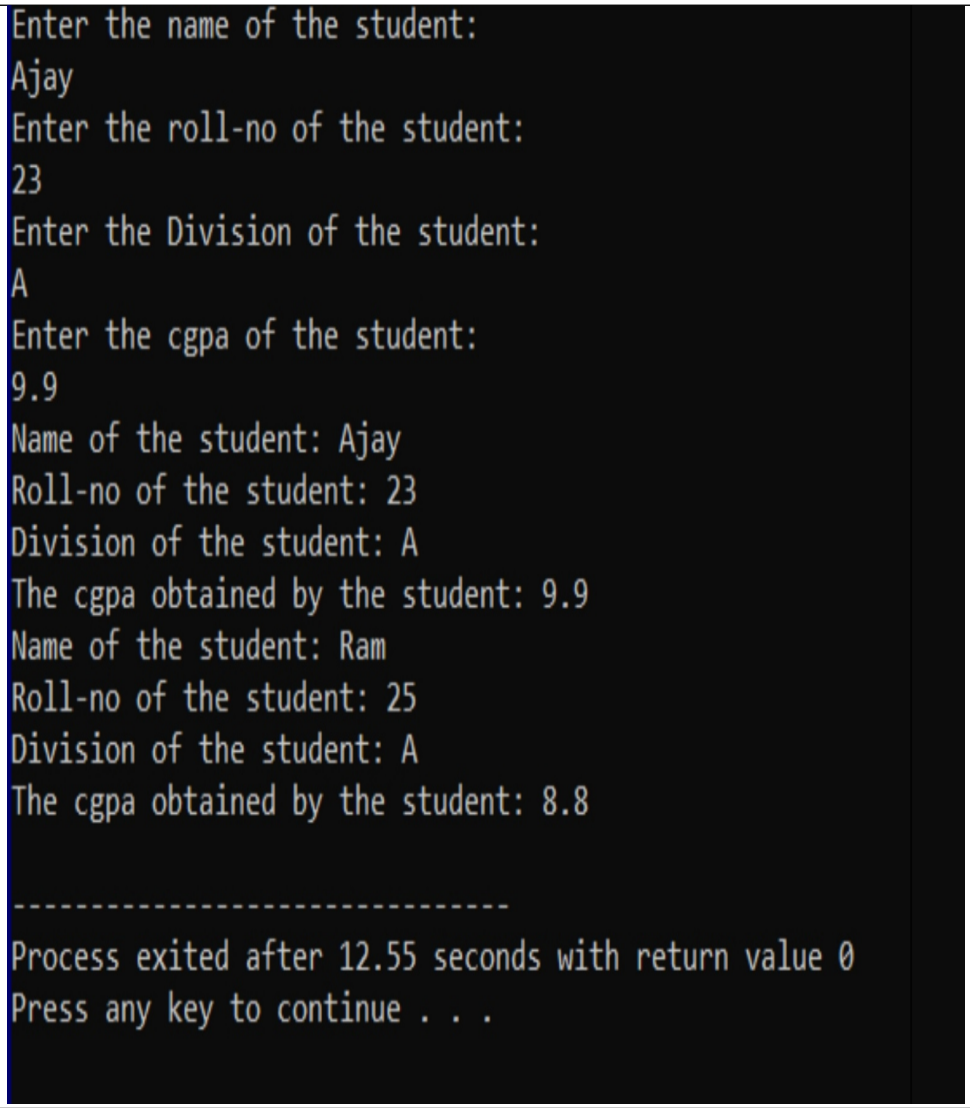
Algorithm :	STEP 1. Start STEP 2. Define Class Student STEP 3. Define attributes – Name , Roll_no, cgpa, div , branch STEP 4. Define and declare method – getdata() to get input from user. STEP 5. Define and declare method – printdata() to print the values STEP 6. Define Main function() STEP 7. Create object s1, s2 to call the class functionality. STEP 8. Print result STEP 9. End.
Program:	#include<iostream> using namespace std; class Student { public: string name; int roll_no; string div; float cgpa; void getdata() { cout<<"Enter the name of the student: "<<endl; cin>>name; cout<<"Enter the roll-no of the student: "<<endl; cin>>roll_no; cout<<"Enter the Division of the student: "<<endl; cin>>div; cout<<"Enter the cgpa of the student: "<<endl;

```
cin>>cgpa;
}
/*int getdata(string n,int r,char d,float c)
{
name=n;
roll_no=r;
div=d;
cgpa=c;
return 0;
}*/
void printdata()
{
cout<<"Name of the student: "<<name<<endl;
cout<<"Roll-no of the student: "<<roll_no<<endl;
cout<<"Division of the student: "<<div<<endl;
cout<<"The cgpa obtained by the student: "<<cgpa<<endl;
}
};
int main()
{
Student StudentTest;
Student s1;
s1.getdata();
s1.printdata();
Student s2;
s2.name="Ram";
s2.roll_no=25;
s2.div="A";
```

	s2.cgpa=8.8;
	s2.printdata();
	return 0;
	}
	https://github.com/prathamkoturwar/Skill-labs-with-OOPM./blob/8a1358e29ebf1add0c147d47fa334e0ed65f348d/24_labs-3.1

Input given:	Name: Ajay Roll no: 23 Division: A cgpa: 9.9
Output Screenshot:	

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2. Write a C++ program for Basic bank Management System

Algorithm :	STEP 1. Start STEP 2. Define Class BankLab 2 STEP 3. Define attributes – Name , account_type , account_number, amount, balance. STEP 4. Declare attributes by using constructor of class. STEP 5. Define and declare method – deposit() to deposit the amount STEP 6. Define and declare methods – withdraw() to withdraw the amount STEP 7. Define and declare methods – display() to display the account details STEP 8. Define Main function() STEP 9. Create object b1, b2, b3 to call the class functionality. STEP 10. Do – while loop to repeat the process. STEP 11. Print result STEP 12. end

Program:	#include<iostream>
	using namespace std;
	class BankLab2 {
	public:
	string name;
	char account_type;
	int account_number,amount;
	float balance;
	BankLab2(string n,int a, char t, float b) {
	name = n;
	account_number=a;

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```
account_type=t;
balance=b;
 }
int deposit()
{
cout<<"Enter the amount to deposit: ";
cin>>amount;
if(amount<0)
{
cout<<"Invalid amount,Enter a valid amount";
return 0;
}
balance=balance+amount;
return 1;
}
int withdraw()
{
cout<<"Your Balance= "<<balance;
cout<<"Enter amount to withdraw: ";
cin>>amount;
if (balance<amount)
{
cout<<"Insufficient Balance: ";
return 0;
}
if(amount<0)
{
cout<<"Invalid amount";
```

```
return 0;
}
balance=balance-amount;
return 1;
}
void display()
{
cout<<"Name :"<<name<<endl;
cout<<"Account Number:"<<account_number<<endl;
 cout<<"Account Type:"<<account_type<<endl;
 cout<<"Balance: "<<balance<<endl;
}
};
 int main()
 {
int account_number;
char ans;
BankLab2 b1("salman",1,'s',2000);
BankLab2 b2("makarand",2,'s',2000);
BankLab2 b3("siddharth",3,'s',2000);
cout<<"Menu"<<endl;
cout<<"1.Deposit"<<endl;
cout<<"2.Withdraw"<<endl;
cout<<"3.Display"<<endl;
cout<<"Enter option"<<endl;
 int op;
 cin>>op;
do
```

```
{
cout<<"Please enter your account number:"<<endl;
cin>>account_number;
switch(account_number)
{
case 1: if(op==1)
b1.deposit();
if(op==2)
b1.withdraw();
if(op==3)
b1.display();
break;
case 2: if(op==1)
b2.deposit();
if(op==2)
b2.withdraw();
if(op==3)
b2.display();
break;
case 3: if(op==1)
b3.deposit();
if(op==2)
b3.withdraw();
if(op==3)
b3.display();
break;
default: cout<<"Enter value between 1
to 3";
```

	break;
	}
	cout<<"Do you want to continue?[Y/N]";
	cin>>ans;
	if(ans=='Y' || ans == 'y')
	{
	cout<<"Menu"<<endl;
	cout<<"1.Deposit"<<endl;
	cout<<"2.Withdraw"<<endl;
	cout<<"3.Display"<<endl;
	cout<<"Enter option"<<endl;
	cin>>op;
	}
	}
	while(ans!='N');
	}
	https://github.com/prathamkoturwar/Skill-labs-with-OOPM./blob/8a1358e29ebf1add0c147d47fa334e0ed65f348d/24_labs-3.2

Input given:	Entered option: 1(deposit) Entered ac no:2 Amount to be deposited:14 To continue or not? Yes Entered option: 3(display) Entered ac no.2

Output Screenshot: