



School of Computer Science Engineering and Information Systems

Winter Semester 2023-2024

Continuous Assessment Test – II

Programme Name & Branch: B.Tech IT

Course Name & code : Structured and Object Oriented Programming BCSE 102L

Class Number (s) : VL2023240503283, VL2023240503282, VL2023240503270

Faculty Name (s) : Dr. Suganya P, Dr. Chandra Mouliswaran S, Dr. Rampriya R S

Exam Duration : 90 Min. Maximum Marks: 50

General instruction(s):

Answer all the Questions:

1) Write C program to accept batting information of cricket team using structure and dynamic memory allocation. It contains player name and runs scored by player. Calculate total runs scored by cricket team. Display the runs of the individual players and the total runs scored by the team.

2) A fingerprint machine is kept in a school. All the students are required to record their fingerprint on their arrival. Expected arrival time is common to all the students. Given the details of students, their arrival time on a particular day and expected arrival time, design an OOP model and write a C++ code to print the roll no and the name of the students who came late and calculate fine amount. For every one minute of late arrival, 50 rupees is charged as fine.

3) Write a C++ program to find Strong Numbers within a range of numbers by using friend function in C++.

[A strong number is one in which the factorial of the digits equals the number itself. Ex: 145 => $1! + 4! + 5! = 1 + 24 + 120 = 145$]

4) Create a base class Patient (pat-name, age, sex) and IPD (ward-no, bed-no, charge-per-day). Derive a class IPD-patient from these two base classes with no-of-days-admitted attribute. Print the patient details, IPD details, no of days admitted and the charge for the no of days admitted.

5) a) Find the output of the following:

(6 Marks)

```
a)
#include <iostream>
using namespace std;
class Test
{
    static int x;
public:
    Test() { x++; }
    static int getX() {return
x;}
};
int Test::x = 0;
int main()
{
    cout << Test::getX()
<< " ";
    Test t[5];
    cout << Test::getX();
};
```

```
b)
#include<iostream>
using namespace std;
class Test
{
private:
    static int count;
public:
    Test& fun();
};
int Test::count = 0;
Test& Test::fun()
{
    Test::count++;
    cout << Test::count << " ";
    return *this;
};
int main()
{
    Test t;
    t.fun().fun().fun().fun();
    return 0;
};
```

```
c)
#include<iostream>
using namespace std;
class Point {public:
    Point() ;
    cout << "Normal Constructor called\n";
};
Point(const Point &t) ;
    cout << "Copy constructor called\n";
};
};
int main() {
    Point *t1, *t2;
    t1 = new Point();
    t2 = new Point(*t1);
    Point t3 = *t1;
    Point t4;
    t4 = t3;
    return 0;
};
```

b) Answer the questions (i) to (iv) based on the following:

(4 Marks)

```
class PUBLISHER {
char Pub[!2];
double Turnover;
protected:
void Register();
public:
PUBLISHER();
void Enter();
void Display();
};
```

```
class BRANCH {
char CITY[20];
protected:
float Employees;
public:
BRANCH();
void Haveit();
void Giveit();
};
```

```
class AUTHOR:private BRANCH,public PUBLISHER
{
int Acode;
char Aname[20];
float Amount;
public:
AUTHOR();
void Start();
void Show();
};
```

- i) Write the names of data members, which are accessible from objects belonging to class AUTHOR.
- ii) Write the names of all the member functions which are accessible from objects belonging to class BRANCH.
- iii) Write the names of all the members which are accessible from member functions of class AUTHOR.
- iv) How many bytes will be required by an object belonging to class AUTHOR?