

## 21CSC201T – Object Oriented Design and Programming

### Week - 5 – Tutorial Questions

#### Constructor, Method and Operator Overloading

1. Will the following code run successfully? If not, what modifications are required?

```
#include <iostream>
using namespace std;
class Example {
    int x;
public:
    Example(int a) { x = a; }
    void show() { cout << "Value: " << x << endl; }
};
int main() {
    Example obj; // Error? Why?
    obj.show();
    return 0;
}
```

2. Design a Bank Account class where:

- The account should be initialized with an account number and balance.
- The account should support:
  - Constructor Overloading for creating different types of accounts.
  - Function Overloading to deposit and withdraw using different data types.
  - Operator Overloading to compare two accounts based on balance.

Implement a BankAccount class that meets these requirements.

3. Complete the following code to overload the << operator to print the object's value using cout.

```
#include <iostream>
using namespace std;
class Complex {
    int real, imag;
public:
    Complex(int r, int i) : real(r), imag(i) {}
    // Overload << operator here
    void display() {
        cout << real << " + " << imag << "i" << endl;
    }
};
```

```

int main() {
    Complex c1(3, 4);
    cout << c1; // Expected Output: 3 + 4i
    return 0;
}

```

Demonstrate the ticket booking and cancellation process with multiple objects.

#### 4. Develop a Car Rental System where

i) Constructor Overloading is used for initializing the class 'Car' with

- Default constructor (sets default values).
- Car model, price per day, and availability status.
- Copy constructor to create a duplicate car.

ii) Function Overloading is used by the customers to book a car in different ways as:

- By specifying the number of days (default price applies).
- By specifying a discount percentage.
- By specifying an extra insurance amount.

iii) Operator Overloading where

- The + operator should allow combining the total rental prices of two cars
- The > operator should compare which car is more expensive to rent per day