International University of Business Agriculture and Technology

Lab Report 9

Course Code: CSC 284

Course Name: Programming in C++ Lab

Submitted To: ### Submitted By:

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Section: C

1.Code:

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

class Temperature
{
private:
    double celsius;

public:
    Temperature(double tempC) : celsius(tempC) {}

    double getCelsius() const { return celsius; }

    double operator-()
    {
        return (celsius * 9.0 / 5.0) + 32;
    }
};

int main()
{
    Temperature temp(25.0);
    cout << "Temperature in Fahrenheit: " << -temp << "°F" << endl;
    return 0;
}
```

Output:

```
PROBLEMS   OUTPUT   PORTS   SQL CONSOLE   TERMINAL   DEBUG CONSOLE

 PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice> cd "f:\Un:
  284 - C++ Lab\Cpp_practice\Lab9\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempC
 deRunnerFile }
 Temperature in Fahrenheit: 77 F
 PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice\Lab9>
```

2.Code: `#include <iostream>`

```cpp
using namespace std;

class Account
{
private:
    double balance;

public:
    Account(double initialBalance) : balance(initialBalance) {}

    double getBalance() const { return balance; }

    Account &operator++()
    {
        balance += balance * 0.05;
        return *this;
    }
};

int main()
{
    Account acc(1000.0);
    cout << "Initial Balance: " << acc.getBalance() << endl;
    ++acc;
    cout << "Balance after increment: " << acc.getBalance() << endl;
    return 0;
}
```

Output:

```
PROBLEMS    OUTPUT    PORTS    SQL CONSOLE    TERMINAL    DEBUG CONSOLE

 PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice> cd "f:\U
  284 - C++ Lab\Cpp_practice\Lab9\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o temp
 deRunnerFile }
 Initial Balance: 1000
 Balance after increment: 1050
 PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice\Lab9> |
```

3.Code:

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

class Vector
{
private:
    double x, y;

public:
    Vector(double x, double y) : x(x), y(y) {}

    void display() const
    {
        cout << "Vector: (" << x << ", " << y << ")" << endl;
    }

    Vector operator-()
    {
        return Vector(-x, -y);
    }
};

int main()
{
    Vector force(3.0, 4.0);
    force.display();
    Vector oppositeForce = -force;
    oppositeForce.display();
    return 0;
}
```

Output:

```
PROBLEMS    OUTPUT    PORTS    SQL CONSOLE    TERMINAL    DEBUG CONSOLE

PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice> cd "f:\U
 284 - C++ Lab\Cpp_practice\Lab9\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o temp
deRunnerFile }
Vector: (3, 4)
Vector: (-3, -4)
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice\Lab9>
```

4.Code:

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

class Item
{
private:
    int stock;

public:
    Item(int initialStock) : stock(initialStock) {}

    int getStock() const { return stock; }

    Item &operator--()
    {
        if (stock > 0)
        {
            --stock;
        }
        return *this;
    }
};

int main()
{
    Item product(10);
    cout << "Initial stock: " << product.getStock() << endl;
    --product;
    cout << "Stock after sale: " << product.getStock() << endl;
    return 0;
}
```

Output:

PROBLEMS   OUTPUT   PORTS   SQL CONSOLE   TERMINAL   DEBUG CONSOLE

```
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice> cd "f:\Uni
 284 - C++ Lab\Cpp_practice\Lab9\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCo
deRunnerFile }
Initial stock: 10
Stock after sale: 9
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice\Lab9> |
```

5.Code:

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

class Signal
{
private:
    bool state;

public:
    Signal(bool initialState) : state(initialState) {}

    bool getState() const { return state; }

    Signal operator!()
    {
        return Signal(!state);
    }
};

int main()
{
    Signal signal(1);
    cout << "Initial Signal: " << signal.getState() << endl;
    Signal invertedSignal = !signal;
    cout << "Inverted Signal: " << invertedSignal.getState() << endl;
    return 0;
}
```

Output:

PROBLEMS   OUTPUT   PORTS   SQL CONSOLE   TERMINAL   DEBUG CONSOLE

```
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice> cd "f:\U
 284 - C++ Lab\Cpp_practice\Lab9\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o temp
deRunnerFile }
Initial Signal: 1
Inverted Signal: 0
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice\Lab9>
```

6.Code:

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

class Date
{
private:
    int day, month, year;

public:
    Date(int d, int m, int y) : day(d), month(m), year(y) {}

    void display() const
    {
        cout << "Date: " << day << "/" << month << "/" << year << endl;
    }

    Date operator+()
    {
        struct tm date = {0};
        date.tm_mday = day;
        date.tm_mon = month - 1;
        date.tm_year = year - 1900;
        mktime(&date);
        date.tm_mday++;
        mktime(&date);
        return Date(date.tm_mday, date.tm_mon + 1, date.tm_year + 1900);
    }
};

int main()
{
    Date date(7, 1, 2025);
    date.display();
    Date nextDay = +date;
    nextDay.display();
    return 0;
}
```

Output:

PROBLEMS   OUTPUT   PORTS   SQL CONSOLE   TERMINAL   DEBUG CONSOLE

```
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice> cd "f:\Univer
 284 - C++ Lab\Cpp_practice\Lab9\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeR
deRunnerFile }
Date: 7/1/2025
Date: 8/1/2025
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice\Lab9>
```

7.Code:

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

class Battery
{
private:
    int energyLevel;

public:
    Battery(int initialEnergy) : energyLevel(initialEnergy) {}

    int getEnergyLevel() const { return energyLevel; }

    Battery &operator-()
    {
        if (energyLevel > 0)
        {
            --energyLevel;
        }
        return *this;
    }
};

int main()
{
    Battery battery(10);
    cout << "Initial Energy: " << battery.getEnergyLevel() << endl;
    -battery;
    cout << "Energy after action: " << battery.getEnergyLevel() << endl;
    return 0;
}
```

Output:

```
PROBLEMS   OUTPUT   PORTS   SQL CONSOLE   TERMINAL   DEBUG CONSOLE

 PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice> cd "f:\
  284 - C++ Lab\Cpp_practice\Lab9\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tem
 deRunnerFile }
 Initial Energy: 10
 Energy after action: 9
 PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice\Lab9>
```

8.Code:

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

class Car
{
private:
    int speed;

public:
    Car(int initialSpeed) : speed(initialSpeed) {}

    int getSpeed() const { return speed; }

    Car &operator--()
    {
        speed -= 10;
        if (speed < 0)
            speed = 0;
        return *this;
    }
};

int main()
{
    Car car(50);
    cout << "Initial Speed: " << car.getSpeed() << endl;
    --car;
    cout << "Speed after braking: " << car.getSpeed() << endl;
    return 0;
}
```

Output:

PROBLEMS   OUTPUT   PORTS   SQL CONSOLE   TERMINAL   DEBUG CONSOLE

```
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice> cd "f:\Universit
 284 - C++ Lab\Cpp_practice\Lab9\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunn
deRunnerFile }
Initial Speed: 50
Speed after braking: 40
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice\Lab9>
```

9.Code:

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

class Character
{
private:
    int health;

public:
    Character(int initialHealth) : health(initialHealth) {}

    int getHealth() const { return health; }

    Character &operator+()
    {
        health += 50;
        return *this;
    }
};

int main()
{
    Character player(100);
    cout << "Initial Health: " << player.getHealth() << endl;
    +player;
    cout << "Health after potion: " << player.getHealth() << endl;
    return 0;
}
```

Output:

```
PROBLEMS    OUTPUT    PORTS    SQL CONSOLE    TERMINAL    DEBUG CONSOLE

PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice> cd "f:\Unive
 284 - C++ Lab\Cpp_practice\Lab9\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCode
deRunnerFile }
Initial Health: 100
Health after potion: 150
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice\Lab9>
```

10.Code:

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

class Task
{
private:
    bool completed;

public:
    Task(bool status) : completed(status) {}

    bool isCompleted() const { return completed; }

    Task &operator!()
    {
        completed = !completed;
        return *this;
    }
};

int main()
{
    Task task(false);
    cout << "Task completed: " << task.isCompleted() << endl;
    !task;
    cout << "Task completed after toggle: " << task.isCompleted() << endl;
    return 0;
}
```

Output:

PROBLEMS   OUTPUT   PORTS   SQL CONSOLE   TERMINAL   DEBUG CONSOLE

```
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice> cd "f:\Un
 284 - C++ Lab\Cpp_practice\Lab9\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempC
deRunnerFile }
Task completed: 0
Task completed after toggle: 1
PS F:\University\3rd Semester - Fall '24\CSC 284 - C++ Lab\Cpp_practice\Lab9>
```