**C++ Files Amanda Waigumo**

Exercise 1

C++ Function for Cylinder volume calculation

#include <iostream>

#include <cmath>

using namespace std;

// Function to calculate volume of a cylinder

double cylinderVolume(double radius, double height) {

    return M\_PI \* radius \* radius \* height;

}

int main() {

    double radius, height;

    // Get user input

    cout << "Enter the radius of the cylinder: ";

    cin >> radius;

    cout << "Enter the height of the cylinder: ";

    cin >> height;

    // Calculate and display volume

    double volume = cylinderVolume(radius, height);

    cout << "The volume of the cylinder is: " << volume << " cubic units" << endl;

    return 0;

}

Exercise 2

Python program for Library fine

bookID = input("Enter Book ID: ")

dueDate = int(input("Enter Due Date (as day of the month): "))

returnDate = int(input("Enter Return Date (as day of the month): "))

\* Calculate days overdue

daysOverdue = returnDate - dueDate

\*Determine fine rate based on overdue days

if daysOverdue <= 7:

    fineRate = 20

elif 8 <= daysOverdue <= 14:

    fineRate = 50

else:

    fineRate = 100

\*Calculate total fine amount

fineAmount = daysOverdue \* fineRate if daysOverdue > 0 else 0

\*Display output

print("\nLibrary Fine Details")

print(f"Book ID: {bookID}")

print(f"Due Date: {dueDate}")

print(f"Return Date: {returnDate}")

print(f"Days Overdue: {daysOverdue if daysOverdue > 0 else 0}")

print(f"Fine Rate: Ksh {fineRate}")

print(f"Total Fine Amount: Ksh {fineAmount}")

Exercise 3

C++ class for car details

#include <iostream>

using namespace std;

class Car {

private:

    string brand;

    string model;

    float price;

    int mileage;

public:

    // Constructor

    Car(string b, string m, float p, int mil) {

        brand = b;

        model = m;

        price = p;

        mileage = mil;

    }

    // Function to display car details

    void display() {

        cout << "Car Details:" << endl;

        cout << "Brand: " << brand << endl;

        cout << "Model: " << model << endl;

        cout << "Price: $" << price << endl;

        cout << "Mileage: " << mileage << " miles" << endl;

    }

    // Function to drive the car and update mileage

    void drive(int distance) {

        mileage += distance;

        cout << "Car driven for " << distance << " miles. Updated mileage: " << mileage << " miles" << endl;

    }

};

int main() {

    // Creating Car object

    Car myCar("Toyota", "Corolla", 20000, 5000);

    // Display initial car details

    myCar.display();

    // Drive the car for 150 miles

    myCar.drive(150);

    // Drive the car for 300 miles

    myCar.drive(300);

    return 0;

}