Name: Syed Abdul Muiz

ID: F24CSC001/28770

PROGRAM 01:

#include <iostream>

using namespace std;

int main()

{

int num = 5;

// Use increment operator to display numbers from 5 to 10 vertically

while (num <= 10)

{

cout << num << endl; // Output the current value of num on a new line

num++; // Add num by 1

}

return 0;

}

PROGRAM 02:

#include <iostream>

#include <iomanip>

using namespace std;

int main()

{

double distance\_km;

// Input the distance in kilometers

cout << "Enter the distance from home to SHU (in kilometers): ";

cin >> distance\_km;

// Convert the distance into various units

double distance\_meters = distance\_km \* 1000;

double distance\_centimeters = distance\_meters \* 100;

double distance\_millimeters = distance\_centimeters \* 10;

double distance\_micrometers = distance\_millimeters \* 1000;

// Output the distances in different units

cout << fixed << setprecision(3);

cout << "\nDistance in kilometers: " << distance\_km << " km" << endl;

cout << "Distance in meters: " << distance\_meters << " m" << endl;

cout << "Distance in centimeters: " << distance\_centimeters << " cm" << endl;

cout << "Distance in millimeters: " << distance\_millimeters << " mm" << endl;

cout << "Distance in micrometers: " << distance\_micrometers << " µm" << endl;

return 0;

}

PROGRAM 03:

#include<iostream>

using namespace std;

int main()

{

const int numCourses = 5; // Number of courses

double creditHours[numCourses]; // Array to store credit hours of courses

double gradePoints[numCourses]; // Array to store grade points earned in each course

double totalCredits = 0.0, weightedSum = 0.0, sgpa = 0.0;

// Input the credit hours and grade points for each course

cout << "Enter the Credit Hours and Grade Points for each of the 5 courses:\n";

for (int i = 0; i < numCourses; i++) {

cout << "Course: " << i + 1 << "\n";

cout << "Credit Hours: ";

cin >> creditHours[i];

cout << "Grade Points: ";

cin >> gradePoints[i];

// Calculate the weighted sum and total credits

weightedSum += creditHours[i] \* gradePoints[i];

totalCredits += creditHours[i];

}

// Calculate SGPA

if (totalCredits > 0)

{

sgpa = weightedSum / totalCredits;

cout << "\nThe SGPA for the semester is: " << sgpa << endl;

}

else

{

cout << "Error: Total credits cannot be zero!" << endl;

}

return 0;

}

PROGRAM 06:

#include <iostream>

using namespace std;

int main()

{

int num1, num2, num3;

cout << "Enter the first number: ";

cin >> num1;

cout << "Enter the second number: ";

cin >> num2;

cout << "Enter the third number: ";

cin >> num3;

if (num1 == num2)

{

if (num2 == num3)

{

cout << "All values are equal." << endl;

}

else

{

cout << "They all are not equal." << endl;

}

}

else

{

cout<<"They all are not equal."<<endl;

}

return 0;

}

PROGRAM 07:

#include<iostream>

using namespace std;

int main()

{

char m;

cout<<"Enter m for Male: ";

cin>>m;

if(m == 'm')

{

cout<<"You are Male."<<endl;

}

else

{

cout<<"You are Female."<<endl;

}

return 0;

}

PROGRAM 08:

#include <iostream>

using namespace std;

int main()

{

int marks;

cout << "Enter marks obtained by the student (out of 100): ";

cin >> marks;

if (marks >= 0 && marks <= 100)

{

if (marks >= 90)

{

cout << "Grade: A+" << endl;

}

else if (marks >= 70)

{

cout << "Grade: A" << endl;

}

else if (marks >= 50)

{

cout << "Grade: B" << endl;

}

else

{

cout << "Grade: F" << endl;

}

}

else

{

cout << "Invalid marks entered. Marks should be between in 0 and 100." << endl;

}

return 0;

}

PROGRAM 09:

#include <iostream>

using namespace std;

int main()

{

char gender, city;

int age;

double salary, netSalary;

cout << "Enter the current salary: ";

cin >> salary;

cout << "Enter gender (F/M): ";

cin >> gender;

cout << "Enter age: ";

cin >> age;

cout << "Enter city (K for Karachi, H for Hyderabad, S for Sukker, G for Ghotki): ";

cin >> city;

if (gender == 'F' || gender == 'f')

{

if ((age >= 25 && age <= 35) && (city == 'K' || city == 'H' || city == 'k' || city == 'h'))

{

netSalary = salary + 2000;

cout << "Net salary (after addition): " << netSalary << endl;

}

else

{

cout << "Present salary: " << salary << endl;

}

}

else if (gender == 'M' || gender == 'm')

{

if ((age >= 25 && age <= 40) && (city == 'S' || city == 'G' || city == 's' || city == 'g'))

{

netSalary = salary + 2500;

cout << "Net salary (after addition): " << netSalary << endl;

}

else

{

cout << "Present salary: " << salary << endl;

}

}

else

{

cout << "Invalid gender input." << endl;

}

return 0;

}

PROGRAM 11:

#include <iostream>

#include <string>

using namespace std;

int main() {

string enteredID, enteredPassword;

string validID = "user123";

string validPassword = "pass123";

string userName = "John Doe";

cout << "Enter your ID: ";

cin >> enteredID;

switch (enteredID == validID) {

case true:

{

cout << "Enter your password: ";

cin >> enteredPassword;

switch (enteredPassword == validPassword) {

case true:

cout << "Welcome, " << userName << "!" << endl;

break;

case false:

cout << "Incorrect Password!" << endl;

break;

}

}

break;

case false:

cout << "Incorrect ID!" << endl;

break;

}

return 0;

}

PROGRAM 13:

#include <iostream>

using namespace std;

int main()

{

int mainOption, settingsOption, displayOption;

cout << "Welcome to the Game!" << endl;

cout << "Please select an option:" << endl;

cout << "1. Start Game" << endl;

cout << "2. Settings" << endl;

cout << "3. Exit" << endl;

cout << "Enter your choice (1-3): ";

cin >> mainOption;

switch (mainOption)

{

case 1:

cout << "Starting the game..." << endl;

break;

case 2:

cout << "Settings Menu:" << endl;

cout << "1. Display" << endl;

cout << "2. Sound" << endl;

cout << "3. Back to Main Menu" << endl;

cout << "Enter your choice (1-3): ";

cin >> settingsOption;

switch (settingsOption)

{

case 1:

cout << "Display Settings:" << endl;

cout << "1. Graphics" << endl;

cout << "2. Resolution" << endl;

cout << "3. Back to Settings Menu" << endl;

cout << "Enter your choice (1-3): ";

cin >> displayOption;

switch (displayOption)

{

case 1:

cout << "Graphics Settings:" << endl;

cout << "1. High" << endl;

cout << "2. Medium" << endl;

cout << "3. Low" << endl;

cout << "Enter your choice (1-3): ";

int graphicsChoice;

cin >> graphicsChoice;

switch (graphicsChoice)

{

case 1: cout << "Graphics set to High." << endl; break;

case 2: cout << "Graphics set to Medium." << endl; break;

case 3: cout << "Graphics set to Low." << endl; break;

default: cout << "Invalid choice." << endl; break;

}

break;

case 2:

cout << "Resolution Settings:" << endl;

cout << "1. 1920x1080" << endl;

cout << "2. 1280x720" << endl;

cout << "3. 800x600" << endl;

cout << "Enter your choice (1-3): ";

int resolutionChoice;

cin >> resolutionChoice;

switch (resolutionChoice) {

case 1: cout << "Resolution set to 1920x1080." << endl; break;

case 2: cout << "Resolution set to 1280x720." << endl; break;

case 3: cout << "Resolution set to 800x600." << endl; break;

default: cout << "Invalid choice." << endl; break;

}

break;

case 3:

cout << "Returning to Settings Menu." << endl;

break;

default:

cout << "Invalid choice." << endl;

break;

}

break;

case 2:

cout << "Sound Settings (Placeholder for future options)." << endl;

break;

case 3:

cout << "Returning to Main Menu." << endl;

break;

default:

cout << "Invalid choice." << endl;

break;

}

break;

case 3:

cout << "Exiting the game. Goodbye!" << endl;

break;

default:

cout << "Invalid choice. Please enter a valid option (1-3)." << endl;

break;

}

return 0;

}

PROGRAM 12:

#include <iostream>

#include <cmath> // for square root

using namespace std;

int main() {

int num, choice;

cout << "Enter a number: ";

cin >> num;

cout << "\nChoose an option from the menu:\n";

cout << "1. Calculate the square root\n";

cout << "2. Calculate the cube\n";

cout << "3. Print the number 50 times\n";

cout << "4. Print the multiplication table\n";

cout << "Enter your choice (1-4): ";

cin >> choice;

switch (choice) {

case 1:

// Calculate the square root

if (num >= 0) {

cout << "The square root of " << num << " is " << sqrt(num) << endl;

} else {

cout << "Error: Cannot calculate the square root of a negative number." << endl;

}

break;

case 2:

// Calculate the cube

cout << "The cube of " << num << " is " << num \* num \* num << endl;

break;

case 3:

// Print the number 50 times

cout << "Printing the number 50 times:" << endl;

for (int i = 0; i < 50; ++i) {

cout << num << " ";

}

cout << endl;

break;

case 4:

// Print the multiplication table of the number

cout << "Multiplication table for " << num << ":" << endl;

for (int i = 1; i <= 10; ++i) {

cout << num << " \* " << i << " = " << num \* i << endl;

}

break;

default:

// Handle invalid choices

cout << "Invalid choice." << endl;

break;

}

return 0;

}

PROGRAM 05:

#include <iostream>

using namespace std;

int main()

{

double A, b, x, y, a, c, d;

cout << "Enter the values for b, x, y, a, c, d: ";

cin >> b >> x >> y >> a >> c >> d;

A = 7 \* 7 \* b \* (x \* y + a) / c - 0.8 + 2 \* b \* d \* (x + a) \* (1 / y);

cout << "The value of A is: " << A << endl;

return 0;

}

PROGRAM 04:

#include <iostream>

#include <cmath> // For sqrt() function

using namespace std;

int main() {

float a = 2.5, b = 5.0;

int c;

cout << "Enter the value of c: ";

cin >> c;

float discriminant = b \* b - 4 \* a \* c;

if (discriminant >= 0)

{

float sqrt\_discriminant = sqrt(discriminant);

float x1 = (-b + sqrt\_discriminant) / (2 \* a); // First root (with +)

float x2 = (-b - sqrt\_discriminant) / (2 \* a); // Second root (with -)

// Output the two roots

cout << "The roots of the quadratic equation are: " << endl;

cout << "x1 = " << x1 << endl;

cout << "x2 = " << x2 << endl;

} else {

// If the discriminant is negative, no real roots exist

cout << "No real roots exist because the discriminant is negative." << endl;

}

return 0;

}