FUNDAMNETALS OF PROGRAMMING

HOME TASKS

Section C

Ahsan Kamran Kiyani (481898)

Manual 01

Task 01:

A Program to calculate the distance between two points that are input by the user: -

Project-1.cpp

```cpp
#include <iostream>
using namespace std;
int main()
{
    //declaring variables
    int x1,x2,y1,y2,dist;
    cout<<"Enter x1:";
    cin>>x1;
    cout<<"Enter x2:";
    cin>>x2;
    cout<<"Enter x3:";
    cin>>y1;
    cout<<"Enter x4:";
    cin>>y2;
    //Calculating distance between the points
    dist = (x2-x1)*(x2-x1)+(y2-y1)*(y2-y1);
    cout<<"The distance between the two points is"<<dist;
}
```

C:\Users\ahsen\OneDrive\[

```
Enter x1:10
Enter x2:15
Enter x3:20
Enter x4:25
The distance between the two points is50
Process returned 0 (0x0)   execution time : 6.9
01 s
Press any key to continue.
```

Task 02:

A Code to convert length from centimeter to meter and kilometer

```cpp
#include <iostream>

using namespace std;

int main() {
    double lengthInCm;

    cout << "Enter the length in centimeters: ";
    cin >> lengthInCm;

    double lengthInMeter = lengthInCm / 100.0; // 1 meter = 100 centimeters
    double lengthInKm = lengthInCm / 100000.0; // 1 kilometer = 100000 centimeters

    cout << "Length in meters: " << lengthInMeter << endl;
    cout << "Length in kilometers: " << lengthInKm << endl;

    return 0;
}
```

C:\Users\ahsen\OneD

```
Enter the length in centimeters: 30
Length in meters: 0.3
Length in kilometers: 0.0003

Process returned 0 (0x0)   execution time :
8.045 s
Press any key to continue.
```

Task 03:

Code that takes values of a and b from the user and displays the value of polynomial: $a^2 + b^2 + 2ab$

```cpp
#include <iostream>

using namespace std;

int main() {
    double a, b;

    cout << "Enter the value of a: ";
    cin >> a;

    cout << "Enter the value of b: ";
    cin >> b;

    double result = (a * a) + (2 * a * b) + (b * b * b);

    cout << "Result: " << result << endl;

    return 0;
}
```

```
C:\Users\ahsen\OneD
Enter the value of a: 7
Enter the value of b: 10
Result: 1189

Process returned 0 (0x0)   execution time :
19.328 s
Press any key to continue.
```

Task 04:

Code to convert temperature from Fahrenheit to Celsius:-

```cpp
#include <iostream>
using namespace std;
int main ()
{
    //declaring variables
    float F,C;
    cout<<"Enter the value of temperature in fehrenheit: ";
    cin>>F;
    //entering the formula for conversion
    C= (F -32) * 5/9;
    cout<<"The temperature in celsius is: "<<C;
    return 0;
}
```

```
C:\Users\pc planet\OneDrive\Documents\lab.exe
Enter the value of temperature in fehrenheit: 200
The temperature in celsius is: 93.3333
--------------------------------
Process exited after 3.073 seconds with return value 0
Press any key to continue . . .
```

Manual 02

TASK 01:

Program that takes student's score as input and assigns grade based on predefined criteria: -

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

int main() {
    int score;
    char grade;

    cout << "Enter the student's score: ";
    cin >> score;

    if (score >= 90) {
        grade = 'A';
    } else if (score >= 75) {
        grade = 'B';
    } else if (score >= 60) {
        grade = 'C';
    } else if (score >= 45) {
        grade = 'D';
    } else {
        grade = 'F';
    }

    cout << "The student's grade is: " << grade << endl;

    return 0;
}
```

```
C:\Users\ahsen\OneD
Enter the student's score: 91
The student's grade is: A

Process returned 0 (0x0)   execution time :
7.809 s
Press any key to continue.
```

TASK 02:

Program that takes an integer as input and determines if it is both even and divisible by 5:-

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

int main() {
    int num;

    cout << "Enter an integer: ";
    cin >> num;

    if (num % 2 == 0 && num % 5 == 0) {
        cout << "The number is both even and divisible by 5." << endl;
    } else {
        cout << "The number is not both even and divisible by 5." << endl;
    }

    return 0;
}
```

```
C:\Users\ahsen\OneD
Enter an integer: 7
The number is not both even and divisible by
 5.

Process returned 0 (0x0)   execution time :
4.684 s
Press any key to continue.
```

TASK 03:

Code that checks if the user-provided year is a leap year: -

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

int main()
//declaring variable
{
    int year;
    cout << "Enter a year: ";
    cin >> year;
//specifying the condition for leap year
    if ((year % 4 == 0 && year % 100 != 0) || year % 400 == 0)
    {
        cout << year << " is a leap year." << endl;
    }
    else {
        cout << year << " is not a leap year." << endl;
    }

    return 0;
}
```

```
Enter a year: 2024
2024 is a leap year.

--------------------------------
Process exited after 3.303 seconds with return value 0
Press any key to continue . . .
```

TASK 04:

Program that determines if a student is eligible for scholarship on basis of CGPA and attendance: -

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

int main() {
    float gpa;
    int attendance;

    cout << "Enter student's GPA: ";
    cin >> gpa;

    cout << "Enter student's attendance percentage: ";
    cin >> attendance;

    if (gpa >= 3.5 && attendance >= 80) {
        cout << "The student is eligible for the scholarship." << endl;
    } else {
        cout << "The student is not eligible for the scholarship." << endl;
    }

    return 0;
}
```

```
C:\Users\ahsen\OneD
Enter student's GPA: 3.76
Enter student's attendance percentage: 94
The student is eligible for the scholarship.


Process returned 0 (0x0)   execution time :
14.802 s
Press any key to continue.
```

TASK 05:

Code that checks if a given character is a vowel or a consonant using logical gates: -

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

int main()
 {
    //declaring variable
    char character;
    //taking user input
    cout << "Enter a character: ";
    cin >> character;
    // Convert the character to lowercase for easier comparison
    character = tolower(character);

    if (character == 'a' || character == 'e' || character == 'i' || character == 'o' || character == 'u')
     {
        cout << "The character is a vowel." << endl;
    }
    else {
        cout << "The character is a consonant." << endl;
    }

    return 0;
}
```

```
The character is a consonant.

--------------------------------
Process exited after 2.85 seconds with return
value 0
Press any key to continue . . .
```