FUNDAMENTALS OF PROGRAMMING

HOME TASKS

(Manual 01 and 02)

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Section: C

Manual 01

Task 01:

Program to caculate distance between two points input by user:-

lab.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 y1: ";
    cin>>y1;
    cout<<"Enter y2: ";
    cin>>y2;
    //calculating distance between the points
    dist = (x2-x1)*(x2-x1) + (y2-y1)*(y2-y1);
    cout<<"The distance between two points is "<<dist;

}
```

C:\Users\pc planet\OneDrive\Documents\lab.exe

```
Enter x1: 30
Enter x2: 20
Enter y1: 10
Enter y2: 60
The distance between two points is 2600
--------------------------------
Process exited after 8.401 seconds with return value 0
Press any key to continue . . .
```

Task 02:

Code to convert length from cm to m and km:-

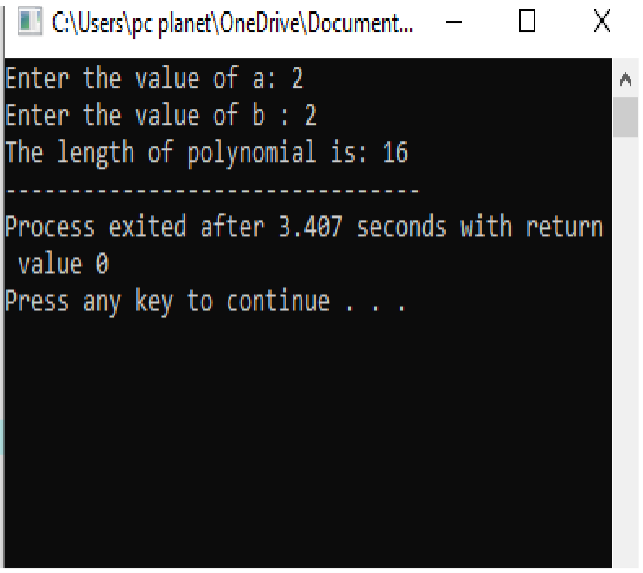
```cpp
#include <iostream>
using namespace std;
int main ()
{
    //declaring variables
    float cm,m,km;
    //calculatig length in meters and kilometers
    cout<<"Enter Length in cm: ";
    cin>>cm;
    m=cm/100;
    cout<<"The length in meters is: "<<m;
    cout<<"\n";
    km=cm/1000;
    cout<<"The length in km is: "<<km;
}
```

```
Enter Length in cm: 1000
The length in meters is: 10
The length in km is: 1
--------------------------------
Process exited after 6.112 seconds with return value 0
Press any key to continue . . .
```

Task 03:

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

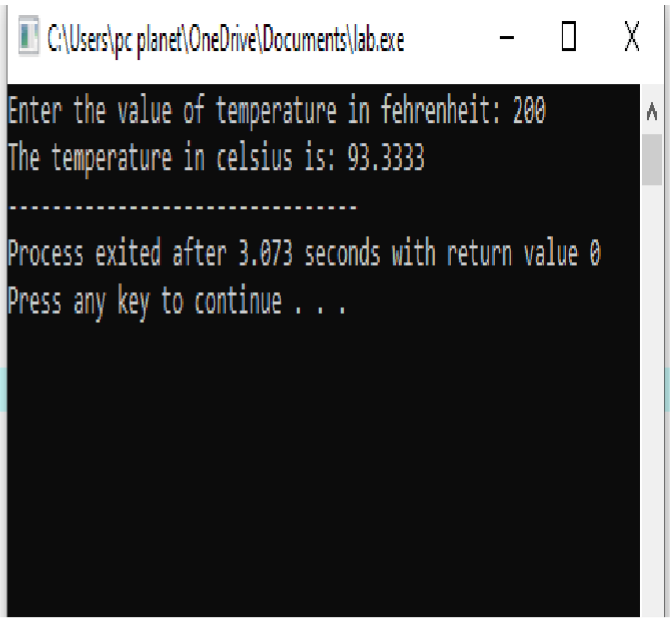
```cpp
#include <iostream>
using namespace std;
int main ()
{
    //declaring variables
    int a,b,ab,polynomial;
    cout<<"Enter the value of a: ";
    cin>>a;
    cout<<"Enter the value of b : ";
    cin>>b;
    //specifying the value of ab
    ab = a*b;
    //enetering the formula of the polynomial
    polynomial = a*a + 2*ab + b*b;
    cout<<"The length of polynomial is: "<<polynomial;
}
```



Task 04:

Code to convert temperature from Fehrenheit 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;
}
```



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() {
//declaring variables
    int score;
    char grade;

    cout << "Enter the student's score: ";
    cin >> score;
//specifying the criteria for grading
    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';
    }
//printing the grades
    cout << "The student's grade is: " << grade << endl;

    return 0;
```

```
Enter the student's score: 74
The student's grade is: C

--------------------------------
Process exited after 7.803 seconds with return va
lue 0
Press any key to continue . . .
```

TASK 02:

Program that takes an integer as input and determines if it is both even and devisible 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;
}
```

```
The number is both even and divisible by 5.

--------------------------------
Process exited after 7.946 seconds with return value
 0
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()
//declaring the variables
{
    float gpa;
    int attendance;
//getting the user input

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

    cout << "Enter student's attendance percentage: ";
    cin >> attendance;
//providing the conditions for eligibility of scholarship
    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;
}
```

```
Enter student's GPA: 3.6
Enter student's attendance percentage: 87
The student is eligible for the scholarship.

--------------------------------
Process exited after 12.44 seconds with return value 0
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 . . .
```