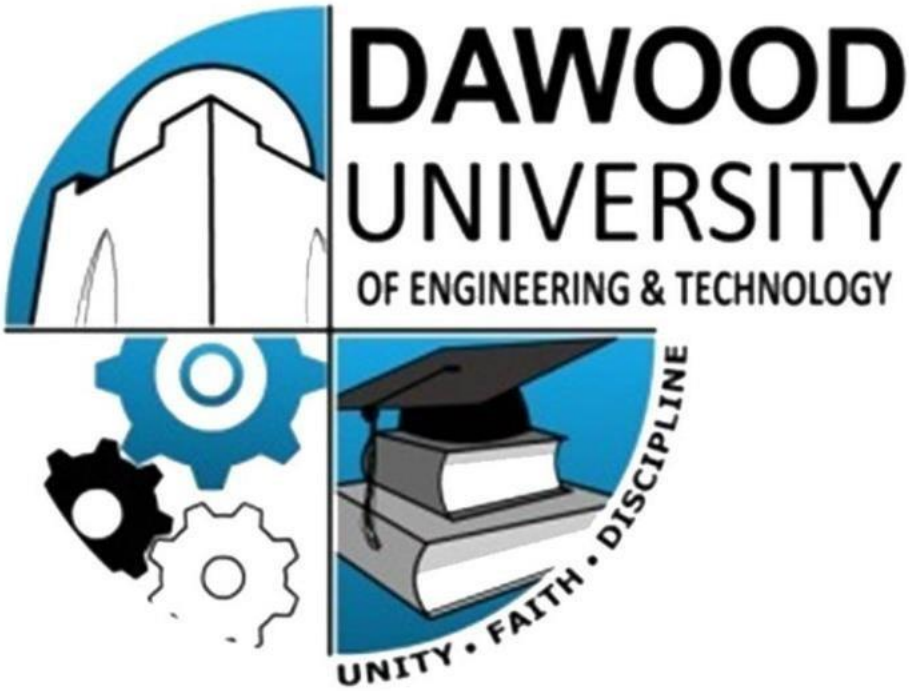


NAME: **SAFI AHMED**

ROLL NO: **22F-BSCS-35**

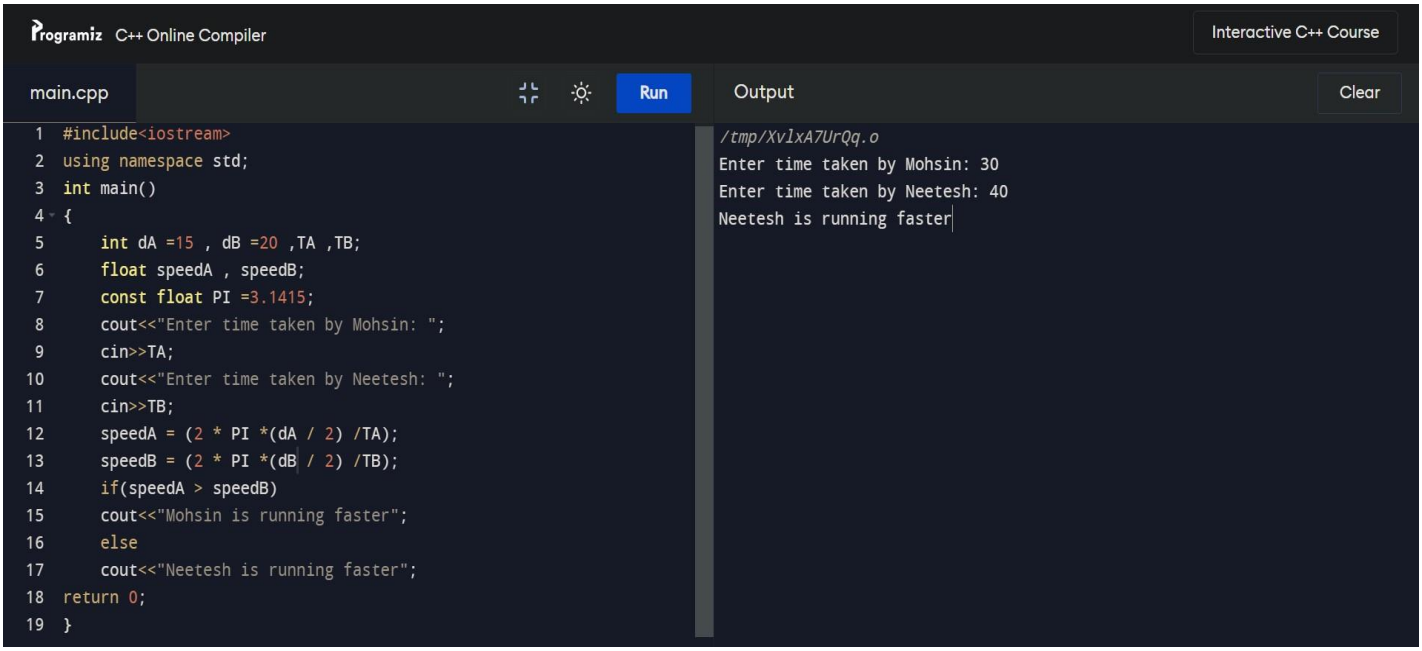
SUBJECT: **PROGRAMMING FUNDAMENTALS PRACTICAL**

SUBMITTED TO: **ENGR. SOFIA HAJANO**

PF Practical # 5

Problem Statement 01

There are two circular grounds Ground-A and Ground-B. Ground-A is having diameter of 15 meters and Ground-B is having diameter of 20 meters. Mohsin is running in Ground-A and Neetesh is running in Ground-B. Write a program in C++ that asks the user to input the time taken, in seconds, to complete one complete round of the ground by both the friends and displays who is running faster.



Problem Statement 02

Write a program in C++ that asks the user to enter three angles of a triangle. The program displays

whether the triangle is right-angle, acute-angle or obtuse-angle.

```cpp
#include <iostream>

using namespace std;

int main() {
  // Read three angles of a triangle from the user.
  double angle1, angle2, angle3;
  cout << "Enter three angles of a triangle: ";
  cin >> angle1 >> angle2 >> angle3;

  // Calculate the sum of the three angles.
  double sum = angle1 + angle2 + angle3;

  // Determine the type of triangle.
  if (sum == 180.0) {
    cout << "The triangle is a right-angle triangle.\n";
  } else if (sum < 180.0) {
    cout << "The triangle is an acute-angle triangle.\n";
  } else {
    cout << "The triangle is an obtuse-angle triangle.\n";
  }

  return 0;
}
```

```
Enter three angles of a triangle: 90
40
65
The triangle is an obtuse-angle triangle.

--------------------------------
Process exited after 4.895 seconds with return value 0
Press any key to continue . . .
```

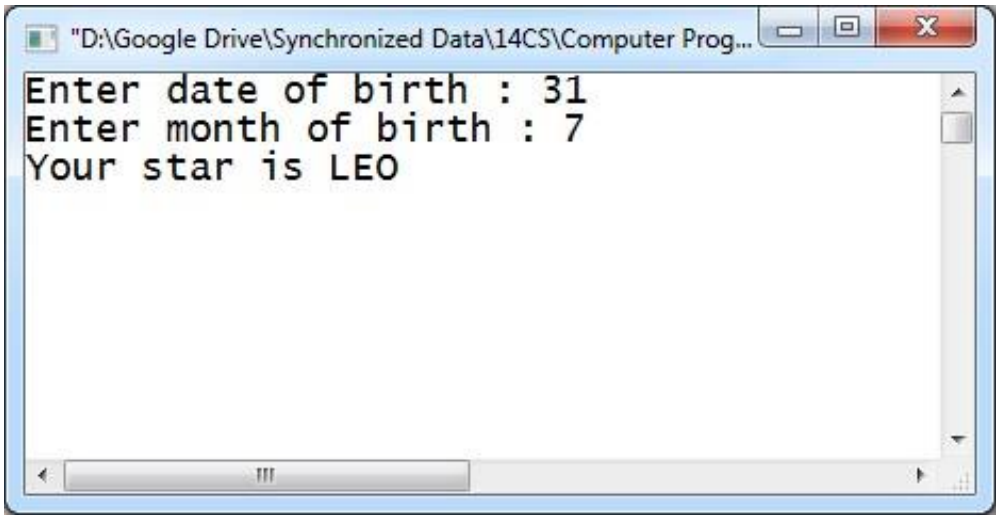
Problem Statement 03

Write a program in C++ that asks the user to enter date of birth and month of birth. The program

should display the zodiac star.

Capricorn	Aquarius	Pisces	Aries
			
22 Dec - 20 Jan	21 Jan -19 Feb	20 Feb - 20 Mar	21 Mar- 19 Apr
Taurus	**Gemini**	**Cancer**	**Leo**
			
20 Apr - 20 May	21 May - 21 Jun	22 Jun - 23 Jul	24 Jul - 23 Aug
Virgo	**Libra**	**Scorpio**	**Sagitarius**
			
24 Aug - 22 Sept	23 Sept - 22 Oct	23 Oct - 22 Nov	23 Nov - 20 Dec

```cpp
#include<iostream>
#include<conio.h>

using namespace std;

int main()
{
    int date, month;

    cout<<"Enter date of birth : ";
    cin>>date;
    cout<<"Enter month of birth : ";
    cin>>month;

    if( (date>=22 && date<=31 && month== 12) || (date>=1 && date<=20 && month==1) )
        cout<<"Your star is CAPRICORN";
    else if( (date>=21 && date<=31 && month==1) || (date>=1 && date<=19 && month==2) )
        cout<<"Your star is AQUARIUS";
    else if( (date>=20 && date<=31 && month==2) || (date>=1 && date<=20 && month==3) )
        cout<<"Your star is PISCES";
    else if( (date>=21 && date<=31 && month==3) || (date>=1 && date<=19 && month==4) )
        cout<<"Your star is ARIES";
    else if( (date>=20 && date<=31 && month==4) || (date>=1 && date<=20 && month==5) )
        cout<<"Your star is TAURUS";

   else if( (date>=21 && date<=31 && month==5) || (date>=1 && date<=21 && month==6) )
       cout<<"Your star is GEMINI";
    else if( (date>=22 && date<=31 && month==6) || (date>=1 && date<=23 && month==7) )
       cout<<"Your star is CANCER";
    else if( (date>=24 && date<=31 && month==7) || (date>=1 && date<=23 && month==8) )
       cout<<"Your star is LEO";
    else if( (date>=24 && date<=31 && month==8) || (date>=1 && date<=22 && month==9) )
       cout<<"Your star is VIRGO";
    else if( (date>=23 && date<=31 && month==9) || (date>=1 && date<=22 && month==10) )
       cout<<"Your star is LIBRA";
    else if( (date>=23 && date<=31 && month==10) || (date>=1 && date<=22 && month==11) )
       cout<<"Your star is SCORPIO";
    else
       cout<<"Your star is SAGITARIUS";

    getch();
    return 0;
}
```

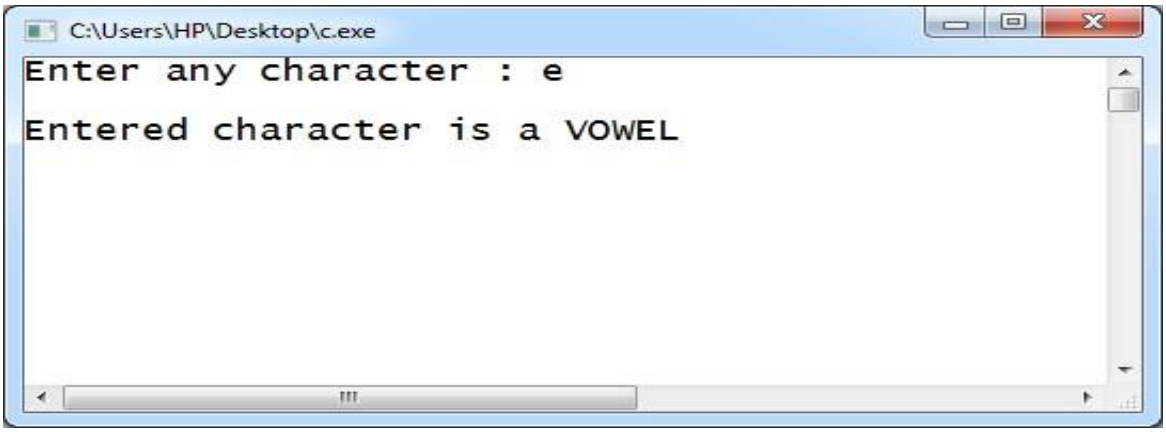


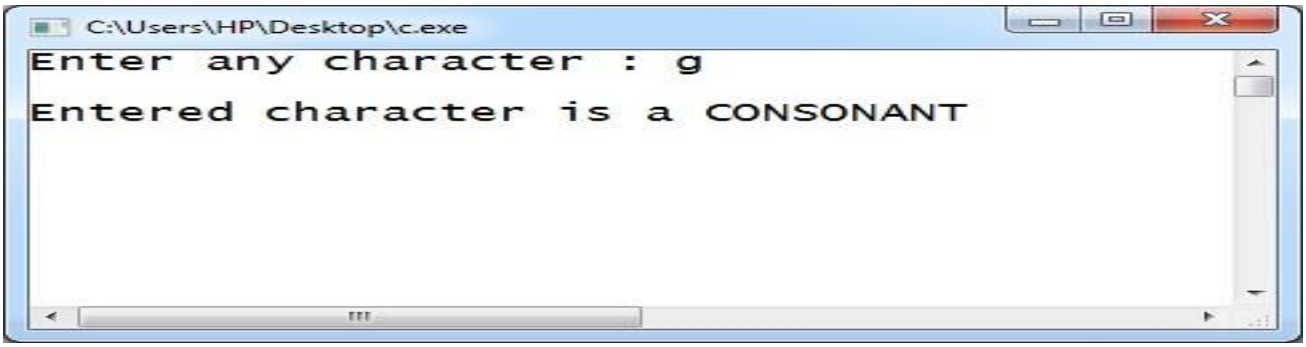
Problem Statement 04

Write a program in C++ that asks the user to enter any character. The program should whether the entered character is a vowel or a consonant.

```
#include<iostream>
#include<conio.h>

using namespace std;

int main()
{
    char ch;

    cout<<"Enter any character : ";
    ch = getche();

    switch(ch)
    {
        case 'a':
        case 'e':
        case 'i':
        case 'o':
        case 'u':
            cout<<endl<<endl<<"Entered character is a VOWEL";
            break;
```

```
        default:
            cout<<endl<<endl<<"Entered character is a CONSONANT";
            break;
    }

    getch();
    return 0;
}
```





Problem Statement 5

Write a program that allows the user to convert a temperature given in degrees from either Celsius to Fahrenheit or Fahrenheit to Celsius. Use the following formulas:

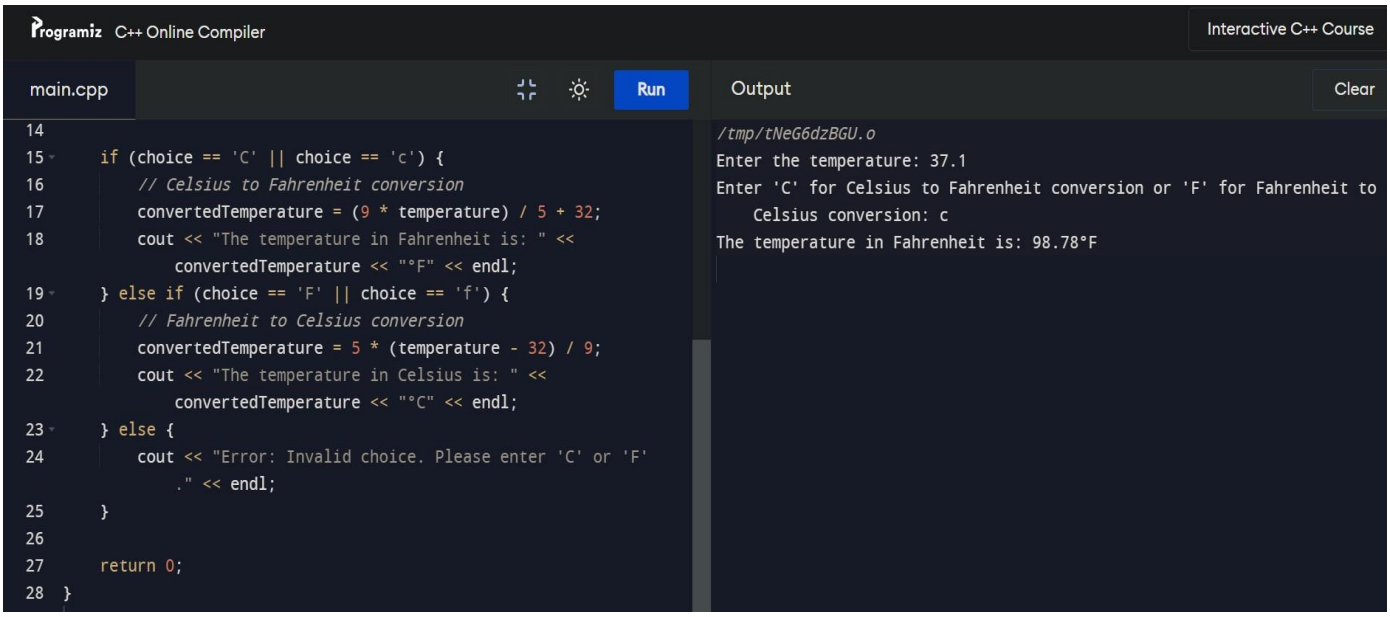
Degrees_C= 5(Degrees_F−32)/9

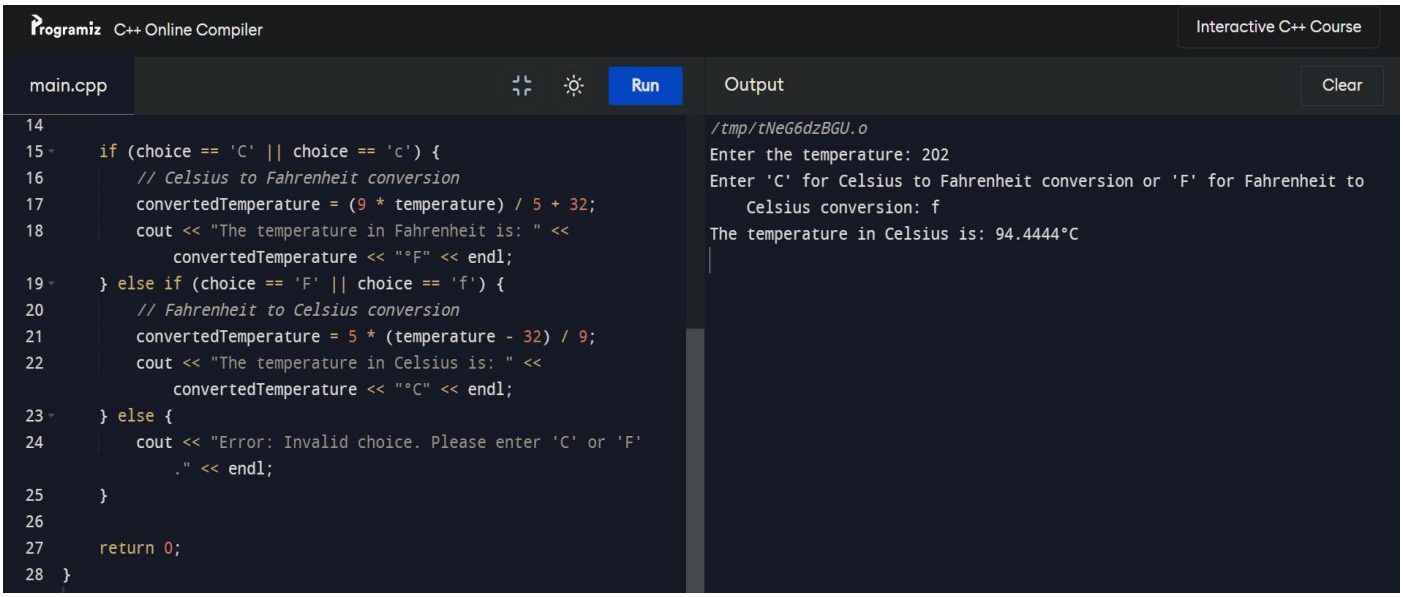
Degrees_F= (9(Degrees_C)/5) + 32)

Prompt the user to enter a temperature and either a C or c for Celsius or an F or f for Fahrenheit.

Convert the temperature to Fahrenheit if Celsius is entered or to Celsius if Fahrenheit is entered.

Display the result in a readable format. If anything other than C, c, F, or f is entered, print error message and stop.



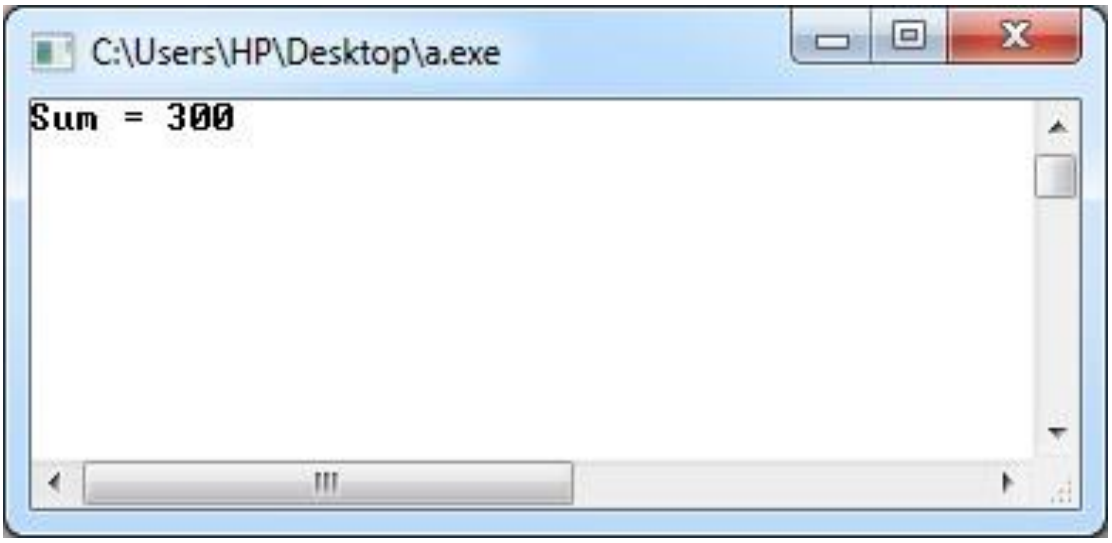


PF Practical # 6

Problem Statement 01

Write a program in C++ that displays the sum of first 10 odd multiples of 3.

```cpp
#include<iostream>
#include<conio.h>

using namespace std;

int main()
{
	int sum = 0;

	for(int i=1; i<=10; i++)
	{
		sum += (2*i - 1)*3;
	}

	cout<<"Sum = "<<sum;

	getch();
	return 0;
}
```

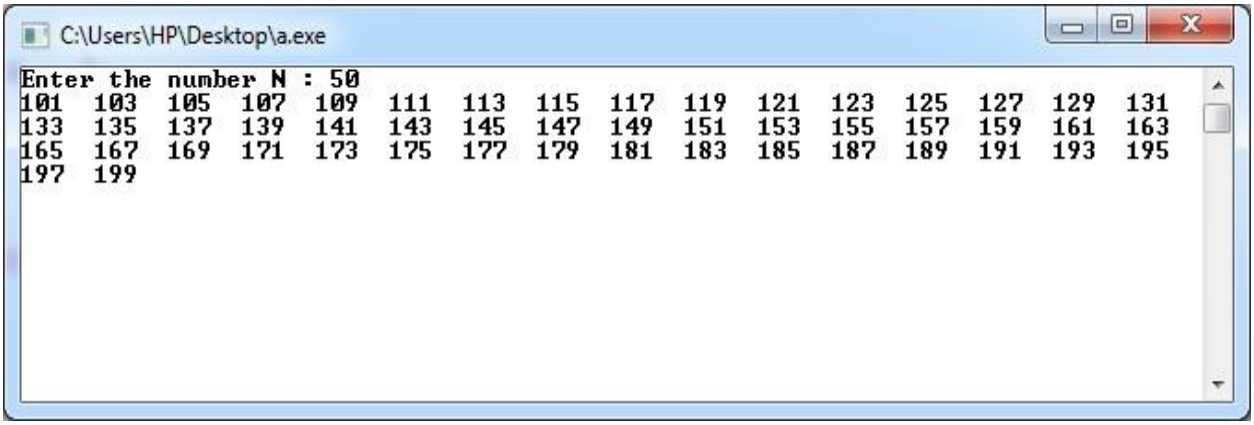


Problem Statement 02

Problem Statement 02

Write a program in C++ that generates and displays the first N three digit odd numbers. Whereas the number N is provided by the user.

```cpp
#include<iostream>
#include<conio.h>

using namespace std;

int main()
{
	int N;

	cout<<"Enter the number N : ";
	cin>>N;

	for(int i=1; i<=N; i++)
	{
		cout<<(2*i - 1) + 100<<"   ";
	}

	getch();
	return 0;
}
```



Problem Statement 03

Problem Statement 03

Write a program in C++ that displays the sum of last 5 four digit multiples of 5.

PF_Assignment3.cpp > ...

```cpp
#include <iostream>
using namespace std;
int main() {
    int count = 0;
    int sum = 0;

    // Start checking from the highest four-digit multiple of 5
    int number = 9995;

    while (count < 5) {
        if (number % 5 == 0) {
            sum += number;
            count++;
        }

        number--;
    }

    cout << "Sum of the last 5 four-digit multiples of 5: " << sum << endl;

    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS C:\Users\Mohit Computers\Desktop\16 JUNE> cd "c:\Users\Mohit Computers\Desktop\16 JUNE\" ; if ($?) { g++ PF_Assignment3.cpp -o PF_Assignment3 } ; if ($?) { .\PF_Assignment3 }
Sum of the last 5 four-digit multiples of 5: 49925
PS C:\Users\Mohit Computers\Desktop\16 JUNE>
```

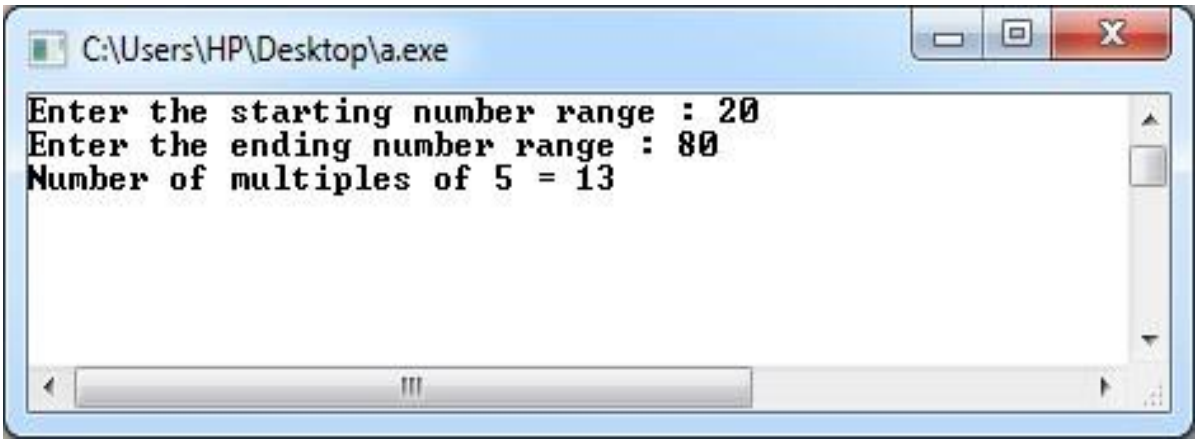
Problem Statement 04

Problem Statement 04

Write a program in C++ that asks the user to input the starting number and ending number of the range. The program should display the number of multiples of 5 in between that range.

```cpp
#include<iostream>
#include<conio.h>

using namespace std;

int main()
{
    int multiples=0, startRange, endRange;

    cout<<"Enter the starting number range : ";
    cin>>startRange;
    cout<<"Enter the ending number range : ";
    cin>>endRange;
```

```
    for(int i=startRange; i<=endRange; i++)
    {
        if((i%5)==0)
            multiples++;
    }

    cout<<"Number of multiples of 5 = "<<multiples;

    getch();
    return 0;
}
```



Problem Statement 5

Problem Statement 05

Write a program in C++ that uses a for statement to evaluate and display the factorials of the integers from 1 to 5.

PF_Assignment3.cpp > ...

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

int main() {
    for (int i = 1; i <= 5; i++) {
        int factorial = 1;

        for (int j = 1; j <= i; j++) {
            factorial *= j;
        }

        cout << "Factorial of " << i << ": " << factorial << endl;
    }

    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS C:\Users\Mohit Computers\Desktop\16 JUNE> cd "c:\Users\Mohit Computers\Desktop\16 JUNE\" ; if ($?) { g++ PF_Assignment3.cpp -o PF_Assignment3 } ; if ($?) { .\PF_Assignment3 }
Factorial of 1: 1
Factorial of 2: 2
Factorial of 3: 6
Factorial of 4: 24
Factorial of 5: 120
PS C:\Users\Mohit Computers\Desktop\16 JUNE>
```

PF Practical # 7

Problem Statement 01

Write a program in C++ to display reverse pyramid

```
* * * * * * * * *

 * * * * * * *

  * * * * *

   * * *

    *
```

PF_Assignment3.cpp > main()

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

int main() {
    int rows = 5;  // Number of rows in the pyramid

    for (int i = rows; i >= 1; i--) {
        for (int j = 1; j <= i; j++) {
            std::cout << "* ";
        }

        cout << endl;
    }

    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS C:\Users\Mohit Computers\Desktop\16 JUNE> cd "c:\Users\Mohit Computers\Desktop\16 JUNE\" ; if ($?) { g++ PF_Assignment3.cpp -o PF_Assignment3 } ; if ($?) { .\PF_Assignment3 }
* * * * *
* * * *
* * *
* *
*
PS C:\Users\Mohit Computers\Desktop\16 JUNE>
```

Problem Statement 02

Write a program to print following

****

****

****

****

PF_Assignment3.cpp > main()

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

int main() {
    int rows = 4;  // Number of rows in the pattern
    int columns = 10;  // Number of columns in the pattern

    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < columns; j++) {
            std::cout << "*";
        }
        cout << endl;
    }

    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS C:\Users\Mohit Computers\Desktop\16 JUNE> cd "c:\Users\Mohit Computers\Desktop\16 JUNE\" ; if ($?) { g++ PF_Assignment3.cpp -o PF_Assignment3 } ; if ($?) { .\PF_Assignment3 }
**********
**********
**********
**********
PS C:\Users\Mohit Computers\Desktop\16 JUNE>
```