PSP LAB Assignment -3

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Q-1 Write a program in C++ to Check Whether Given Number is Ugly or Not .(Ugly Numbers are those which are only divisible by 2,3 and 5.)

Ans :-

Code

```cpp
//Ugly Number are those which are divisible by 2,3,5 and nothing else


#include<iostream>
using namespace std;
int main()
{
    int n;
    cout<<"Enter Number You want to check is ugly or not :";
    cin>>n;

    while(n!=0)
    {
        if(n%2==0)
        {
            n=n/2;
        }
        else
        {
            break;
        }
    }
    while(n!=0)
    {
        if(n%3==0)
        {
            n=n/3;
```

```cpp
            }
        else
        {
            break;
        }
    }
    while(n!=0)
    {
        if(n%5==0)
        {
            n=n/5;
        }
        else
        {
            break;
        }
    }
    if(n==1)
    {
        cout<<"Given Number is UGLY";
    }
    else
    {
        cout<<"Given Number is NOT UGLY";
    }

}
```

OutPut

```
PS C:\Users\Sagar Gupta\OneDrive\Desktop> cd "c:\Us
Enter Number You want to check is ugly or not :25
Given Number is UGLY
PS C:\Users\Sagar Gupta\OneDrive\Desktop>
```
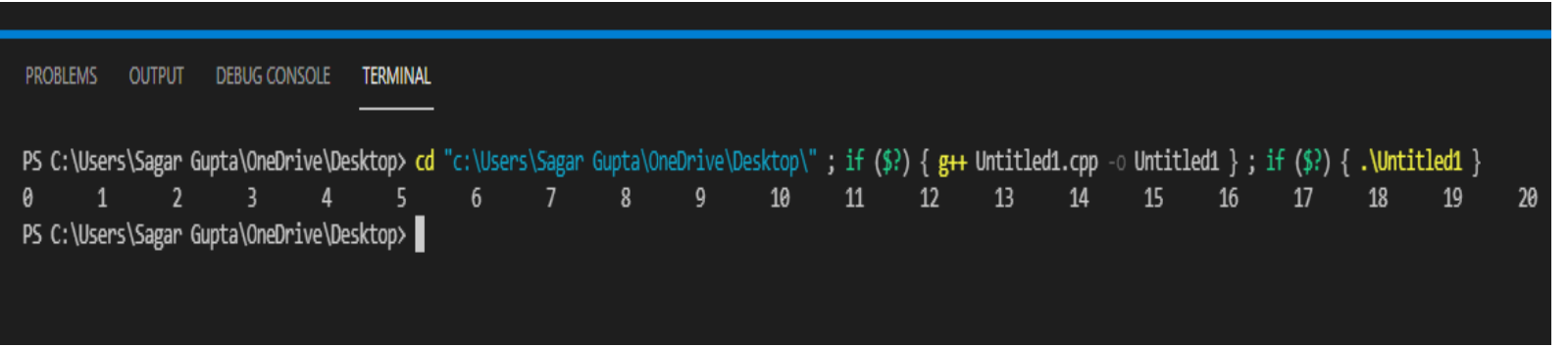
Q-2 Write a program in C++ to Print First 20 Natural Numbers from 0.

Ans :-

Code

```cpp
#include<iostream>
using namespace std;
int main()
{
    int n = 20;
    for(int i=0;i<=n;i++)
    {
        cout<<i<<"\t";
    }

}
```

OutPut

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL

```
PS C:\Users\Sagar Gupta\OneDrive\Desktop> cd "c:\Users\Sagar Gupta\OneDrive\Desktop\" ; if ($?) { g++ Untitled1.cpp -o Untitled1 } ; if ($?) { .\Untitled1 }
0    1    2    3    4    5    6    7    8    9    10    11    12    13    14    15    16    17    18    19    20
PS C:\Users\Sagar Gupta\OneDrive\Desktop>
```

Q-3 Write a program in C++ To Perform all Arithmetic Operations .

Ans :-

Code

```cpp
#include<iostream>
using namespace std;
int main()
{
    int a,b;
    cout<<"Enter 1st Number :";
    cin>>a;
    cout<<"Enter 2nd Number :";
    cin>>b;

    cout<<"Addition of these Numbers is :"<<a+b<<endl;
    cout<<"Subtraction of these Numbers is :"<<a-b<<endl;
    cout<<"Product of these Numbers is :"<<a*b<<endl;
    cout<<"Division of these Numbers is :"<<a/b<<endl;
    cout<<"Modulus of these Numbers is :"<<a%b<<endl;

    cout<<"value of a before Increment :"<<a<<endl;
    a++;
    cout<<"value of a after Increment :"<<a<<endl;

    cout<<"value of b before Decrement :"<<b<<endl;
    b--;
    cout<<"value of b after Decrement :"<<b<<endl;
}
```

OutPut

Q-4 Write a program in C++ To Perform all Logical Operations .

Ans :-

Code

```cpp
#include<iostream>
using namespace std;
int main()
{
    int a=11;

    if(a>10 && a<20)
    {
        cout<<"Logical AND Executed "<<endl;
    }
    if(a<0 || a>10)
    {
        cout<<"Logical OR Executed "<<endl;
    }
    if(a!=0)
    {
        cout<<"Logical Not Executed "<<endl;
    }
}
```

OutPut

**Q-5 Write a program in C++ To Perform all Assignment
Operations .**

Ans :-

Code

```cpp
#include<iostream>
using namespace std;
int main()
{
    int a=11;
    int b=10;

    a=b;//assigning b value to a
    cout<<"a after a = b :"<<a<<endl;
    a+=b;
    cout<<"a after a += b  :"<<a<<endl;
    a-=b;// a = a-b
    cout<<"a after a -= b :"<<a<<endl;
    a*=b;// a = a*b
    cout<<"a after a *= b :"<<a<<endl;
    a/=b;// a = a/b
    cout<<"a after a /= b :"<<a<<endl;
    a%=b;// a = a%b
    cout<<"a after a %= b :"<<a<<endl;
    a&=b;// a = a&b
    cout<<"a after a &= b :"<<a<<endl;
```

```cpp
    a|=b;// a = a|b
    cout<<"a after a |= b :"<<a<<endl;
    a^=b;// a = a^b
    cout<<"a after a ^= b :"<<a<<endl;
    a>>=b;// a = a>>b
    cout<<"a after a >>= b :"<<a<<endl;
    a<<=b;// a = a<<b
    cout<<"a after a <<= b :"<<a<<endl;


}
```

OutPut

```
PS C:\Users\Sagar Gupta\OneDrive\Desktop> cd "c:\User:
a after a = b :10
a after a += b  :20
a after a -= b :10
a after a *= b :100
a after a /= b :10
a after a %= b :0
a after a &= b :0
a after a |= b :10
a after a ^= b :0
a after a >>= b :0
a after a <<= b :0
PS C:\Users\Sagar Gupta\OneDrive\Desktop>
```

Q-6 Write a program in C++ To Perform all Comparison Operations .

Ans :-

Code

```cpp
#include<iostream>
using namespace std;
int main()
{
    int a,b;
```

```cpp
    cout<<"Enter 1st Number :";
    cin>>a;
    cout<<"Enter 2nd Number :";
    cin>>b;

    if(a==b)
    {
        cout<<"a is equal to b"<<endl;
    }
    if(a!=b)
    {
        cout<<"a is Not equal to b"<<endl;
    }
    if(a>b)
    {
        cout<<"a is greater than b"<<endl;
    }
    if(a<b)
    {
        cout<<"a is smaller than b"<<endl;
    }
    if(a>=b)
    {
        cout<<"a is Greater than and equal to b"<<endl;
    }
    if(a<=b)
    {
        cout<<"a is Smaller than and equal to b"<<endl;
    }

}
```

OutPut

```
PS C:\Users\Sagar Gupta\OneDrive\Desktop> cd "c:\Users\Sagar Gupta\OneDrive\Des
Enter 1st Number :15
Enter 2nd Number :23
a is Not equal to b
a is smaller than b
a is Smaller than and equal to b
PS C:\Users\Sagar Gupta\OneDrive\Desktop>
```

Q-7 Write a program in C++ To Perform all BitWise Operations .

Ans :-

Code

```cpp
#include<iostream>
using namespace std;
int main()
{
    int a,b;
    cout<<"Enter 1st Number :";
    cin>>a;
    cout<<"Enter 2nd Number :";
    cin>>b;

    cout<<"A & B (Bitwise AND): "<<(a&b)<<endl;
    cout<<"A | B (Bitwise OR): "<<(a|b)<<endl;
    cout<<"A ^ B (Bitwise XOR): "<<(a^b)<<endl;
    cout<<"A << B (Bitwise Shift Left): "<<(a<<b)<<endl;
    cout<<"A >> B (Bitwise Shift Right): "<<(a<<b)<<endl;
}
```
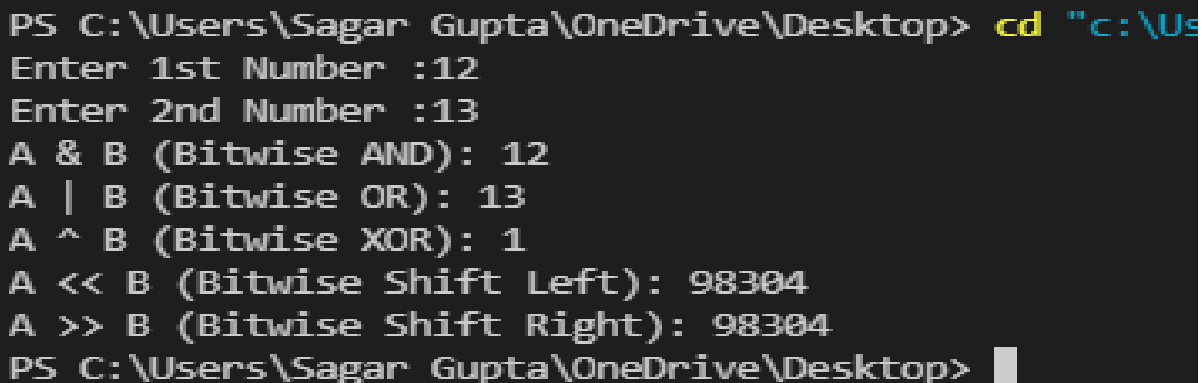
OutPut

```
PS C:\Users\Sagar Gupta\OneDrive\Desktop> cd "c:\Us
Enter 1st Number :12
Enter 2nd Number :13
A & B (Bitwise AND): 12
A | B (Bitwise OR): 13
A ^ B (Bitwise XOR): 1
A << B (Bitwise Shift Left): 98304
A >> B (Bitwise Shift Right): 98304
PS C:\Users\Sagar Gupta\OneDrive\Desktop>
```

Q-8 Write a program in C++ To Perform all Unary Operations .

Ans :-

Code

```cpp
#include<iostream>
using namespace std;
int main()
{
    int a =10;
    int b = -(a);//Unary -
    cout<<"a value"<<a<<endl;
    cout<<"Unary  - a value"<<b<<endl;

    b = +(a);//unary +
    cout<<"Unary  +a value"<<b<<endl;

    b = a++;
    cout<<"post increment of a"<<b<<endl;
    b = ++a;
    cout<<"pre increment of a"<<b<<endl;

    b = a--;
    cout<<"post Decrement of a"<<b<<endl;
    b = --a;
    cout<<"pre Decrement of a"<<b<<endl;

    int x;
    float y;
    char ch;
    double z;

    cout<<" The size of the int (x) variable is: "<<sizeof(x)<<endl;
    cout<<" The size of the float (y) variable is: "<<sizeof(y)<<endl;
    cout<<" The size of the char (ch) variable is: "<<sizeof(ch)<<endl;
    cout<<" The size of the double (z) variable is: "<<sizeof(z)<<endl;

    bool l= true,m;
    m = !l;
    cout<<"l value"<<l<<endl;
```
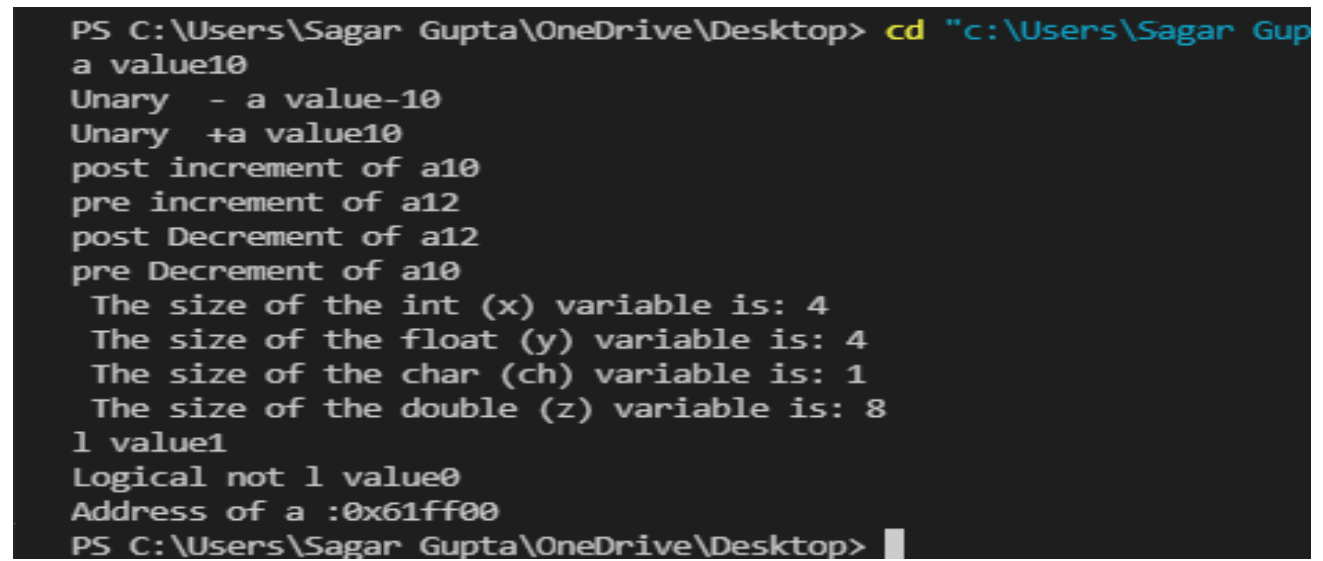
```
    cout<<"Logical not l value"<<m<<endl;


    int o =10;
    cout<<"Address of a :"<<&o<<endl;
}
```

OutPut

```
PS C:\Users\Sagar Gupta\OneDrive\Desktop> cd "c:\Users\Sagar Gup
a value10
Unary  - a value-10
Unary  +a value10
post increment of a10
pre increment of a12
post Decrement of a12
pre Decrement of a10
 The size of the int (x) variable is: 4
 The size of the float (y) variable is: 4
 The size of the char (ch) variable is: 1
 The size of the double (z) variable is: 8
 l value1
Logical not l value0
Address of a :0x61ff00
PS C:\Users\Sagar Gupta\OneDrive\Desktop>
```

Q-9 Write a program in C++ To Perform all Ternary Operations .

Ans :-

Code

```cpp
#include <iostream>
using namespace std;
int main() {
    int a = 10;
    int b = 20;
    int max = a > b ? a : b;
    //Ternary Operator to find max of 2
    cout <<"Maximum value = " << max <<endl;
    return 0;
}
```

OutPut

```
PS C:\Users\Sagar Gupta\OneDrive\Desktop> cd "c
Maximum value = 20
PS C:\Users\Sagar Gupta\OneDrive\Desktop>
```