

C++ ASSIGNMENT 3 (RECURSION)

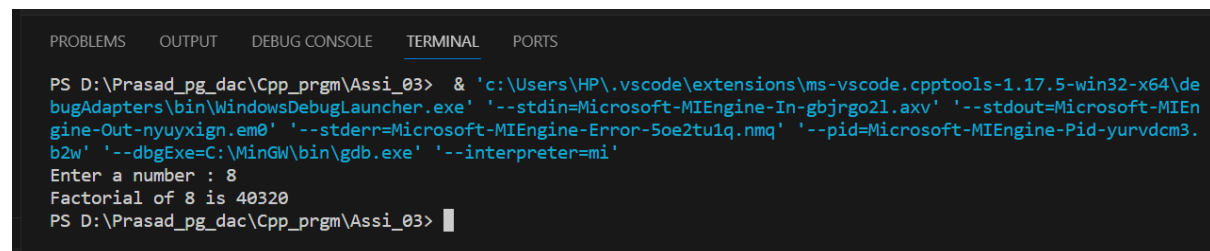
Name:--Prasad Bhandare.

1. WAP to calculate factorial of a number.

Code:--

```
#include<iostream>
using namespace std;
int fact(int n)
{
    if(n==0)
        return 1;
    else
        return n*fact(n-1);
}
int main()
{
    int n;
    cout<<"Enter a number : ";
    cin>>n;
    cout<<"Factorial of "<<n<<" is "<<fact(n);
    return 0;
}
```

Output:--



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
PS D:\Prasad_pg_dac\Cpp_prgm\Assi_03> & 'c:\Users\HP\.vscode\extensions\ms-vscode.cpptools-1.17.5-win32-x64\debugAdapters\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-gbjrjo2l.axv' '--stdout=Microsoft-MIEngine-Out-nyuyxign.em0' '--stderr=Microsoft-MIEngine-Error-5oe2tu1q.nmq' '--pid=Microsoft-MIEngine-Pid-yurvdc3.b2w' '--dbgExe=C:\MinGW\bin\gdb.exe' '--interpreter=mi'
Enter a number : 8
Factorial of 8 is 40320
PS D:\Prasad_pg_dac\Cpp_prgm\Assi_03>
```

2. WAP to print all digits of a number and their sum.

Code:--

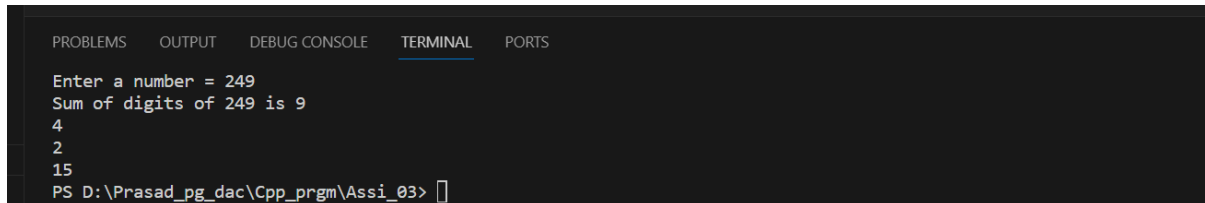
```
#include<iostream>
using namespace std;
int sum(int n)
{
    if(n==0)
        return 0;
    cout<<n%10<<endl;
    return n%10 + sum(n/10);
}
int main()
{
    int n;
```

```

    cout<<"Enter a number = ";
    cin>>n;
    cout<<"Sum of digits of "<<n<<" is \n";
    cout<<sum(n);
    return 0;
}

```

Output:--



```

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
Enter a number = 249
Sum of digits of 249 is 9
4
2
15
PS D:\Prasad_pg_dac\Cpp_prgm\Assi_03>

```

3. WAP to print reverse of a number.

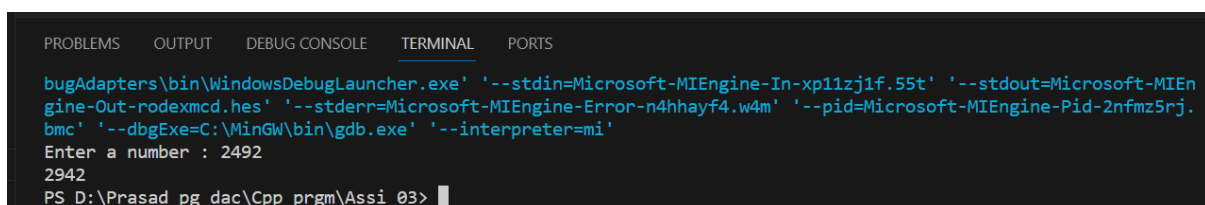
Code:--

```

#include<iostream>
using namespace std;
int reverse(int n, int sum)
{
    if(n>0)
    {
        int r = n % 10;
        sum = sum * 10 + r;
        sum=reverse(n/10,sum);
    }
    return sum;
}
int main()
{
    int n;
    cout<<"Enter a number : ";
    cin>>n;
    cout<<reverse(n, 0);
    return 0;
}

```

Output:--



```

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS
bugAdapters\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-xp11zj1f.55t' '--stdout=Microsoft-MIEngine-Out-rodexmcd.hes' '--stderr=Microsoft-MIEngine-Error-n4hhayf4.w4m' '--pid=Microsoft-MIEngine-Pid-2nfmz5rj.bmc' '--dbgExe=C:\MinGW\bin\gdb.exe' '--interpreter=mi'
Enter a number : 2492
2942
PS D:\Prasad_pg_dac\Cpp_prgm\Assi_03>

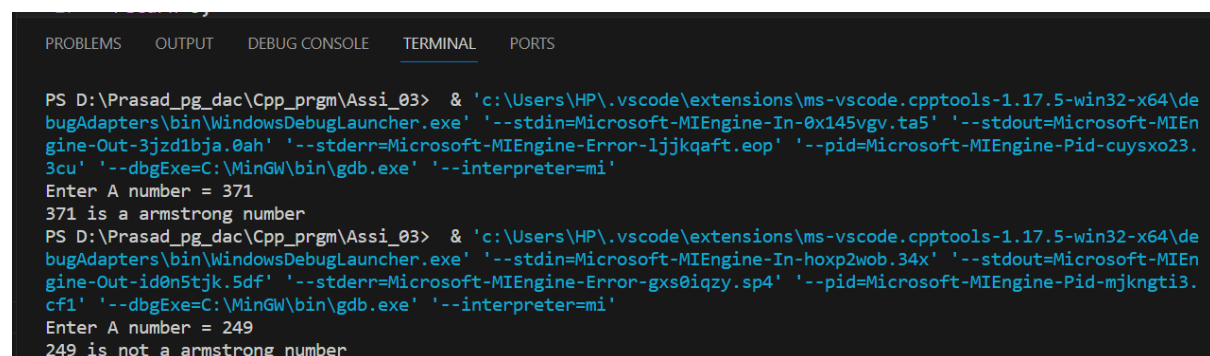
```

4. WAP to check whether the number is Armstrong or not.

Code:--

```
#include<iostream>
#include<cmath>
using namespace std;
int armstrong(int num, int count)
{
    if(num==0)
        return 0;
    return pow((num%10), count)+armstrong((num/10), count);
}
int main()
{
    int n, count=0;
    cout<<"Enter A number = ";
    cin>>n;
    int num = n;
    while(n!=0)
    {
        count++;
        n=n/10;
    }
    int temp = armstrong(num, count);
    if (temp == num)
        cout<<num<<" is a armstrong number";
    else
        cout<<num<<" is not a armstrong number";
    return 0;
}
```

Output:--



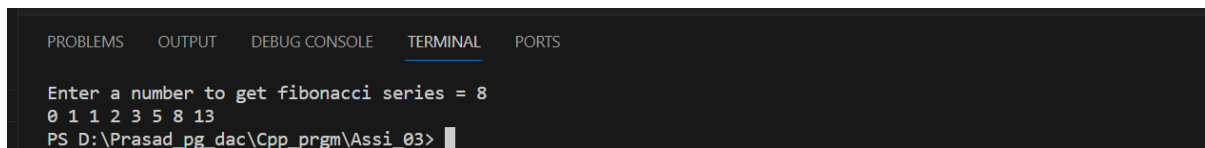
```
PS D:\Prasad_pg_dac\Cpp_prgm\Assi_03> & 'c:\Users\HP\.vscode\extensions\ms-vscode.cpptools-1.17.5-win32-x64\debugAdapters\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-0x145vgv.ta5' '--stdout=Microsoft-MIEngine-Out-3jzd1bja.0ah' '--stderr=Microsoft-MIEngine-Error-ljjkqaft.eop' '--pid=Microsoft-MIEngine-Pid-cuysxo23.3cu' '--dbgExe=C:\MinGW\bin\gdb.exe' '--interpreter=mi'
Enter A number = 371
371 is a armstrong number
PS D:\Prasad_pg_dac\Cpp_prgm\Assi_03> & 'c:\Users\HP\.vscode\extensions\ms-vscode.cpptools-1.17.5-win32-x64\debugAdapters\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-hoxp2wob.34x' '--stdout=Microsoft-MIEngine-Out-id0n5tjk.5df' '--stderr=Microsoft-MIEngine-Error-gxs0iqzy.sp4' '--pid=Microsoft-MIEngine-Pid-mjkgnti3.cf1' '--dbgExe=C:\MinGW\bin\gdb.exe' '--interpreter=mi'
Enter A number = 249
249 is not a armstrong number
```

5. WAP to print the Fibonacci series in a given range.

Code:--

```
#include<iostream>
using namespace std;
int fibonacci(int n)
{
    if(n==0 || n==1)
        return n;
    else
        return fibonacci(n-1)+fibonacci(n-2);
}
int main()
{
    int n;
    cout<<"Enter a number to get fibonacci series = ";
    cin>>n;
    for(int i=0; i<n; i++)
    {
        cout<<fibonacci(i)<<" ";
    }
    return 0;
}
```

Output:--



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

Enter a number to get fibonacci series = 8
0 1 1 2 3 5 8 13
PS D:\Prasad_pg_dac\Cpp_prgm\Assi_03>
```

6. WAP to check whether the number entered is palindrome or not.

Code:--

```
#include<iostream>
using namespace std;
int palindrome(int n, int rev)
{
    if(n==0)
        return rev;
    rev = (rev*10) + (n%10);
    return palindrome(n/10, rev);
}
int main()
{
    int n;
```

```

cout<<"Enter a number = ";
cin>>n;
int ans = palindrome(n, 0);
if(n==ans)
cout<<"Given Number is a Palindrome Number";
else
cout<<"Given Number is Not a Palindrome Number";
return 0;
}

```

Output:--

```

z3n' '--dbgExe=C:\MinGW\bin\gdb.exe' '--interpreter=mi'
Enter a number = 249
Given Number is Not a Palindrome Number
PS D:\Prasad_pg_dac\Cpp_prgm\Assi_03> & 'c:\Users\HP\.vscode\extensions\ms-vscode.cpptools-1.17.5-win32-x64\de
bugAdapters\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-f35gnfc0.pxt' '--stdout=Microsoft-MIEn
gine-Out-h401jhlc.31v' '--stderr=Microsoft-MIEngine-Error-x42ttv0o.ncf' '--pid=Microsoft-MIEngine-Pid-vn1jjhd1.
4ho' '--dbgExe=C:\MinGW\bin\gdb.exe' '--interpreter=mi'
Enter a number = 23432
Given Number is a Palindrome Number
PS D:\Prasad_pg_dac\Cpp_prgm\Assi_03>

```