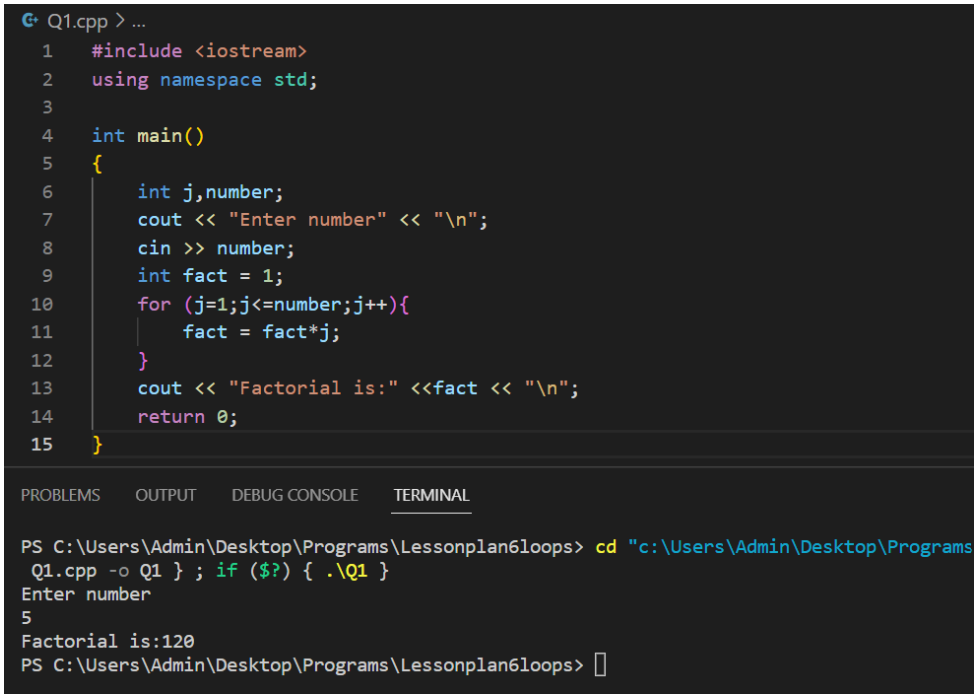
Problem on CPP loops-2

Assignment Solutions

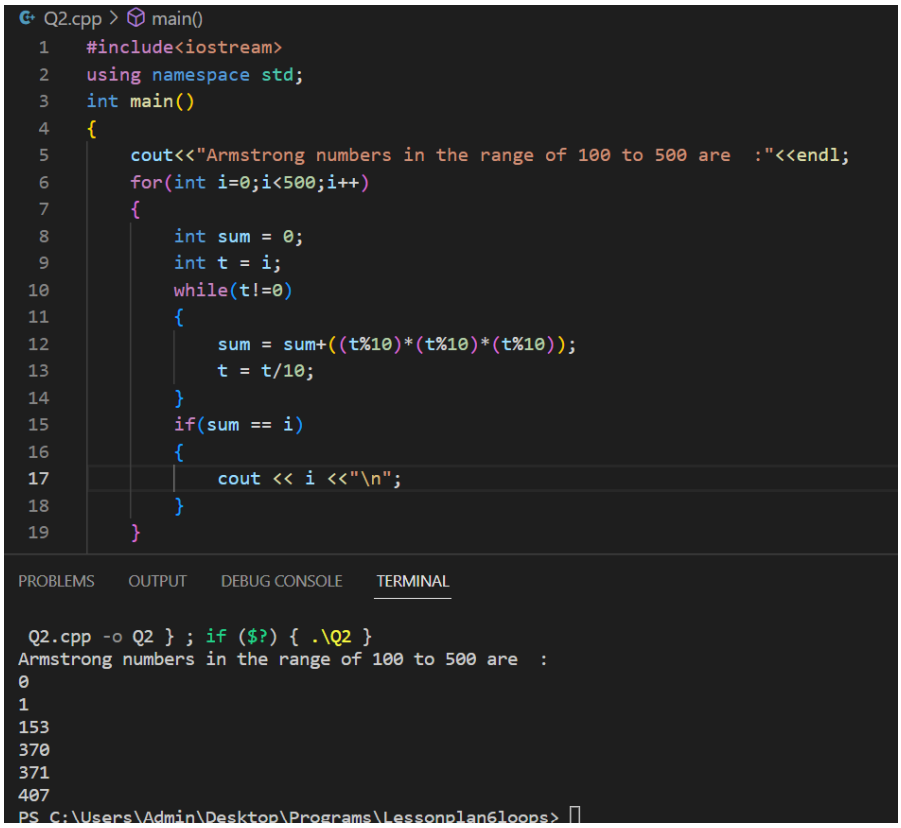
PW SKILLS

Q1- Write a program to calculate factorial of a number.




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

int main()
{
	int j,number;
	cout << "Enter number" << "\n";
	cin >> number;
	int fact = 1;
	for (j=1;j<=number;j++){
		fact = fact*j;
	}
	cout << "Factorial is:" <<fact << "\n";
	return 0;
}
```

Q2- Write a program to print all Armstrong numbers between 100 to 500.

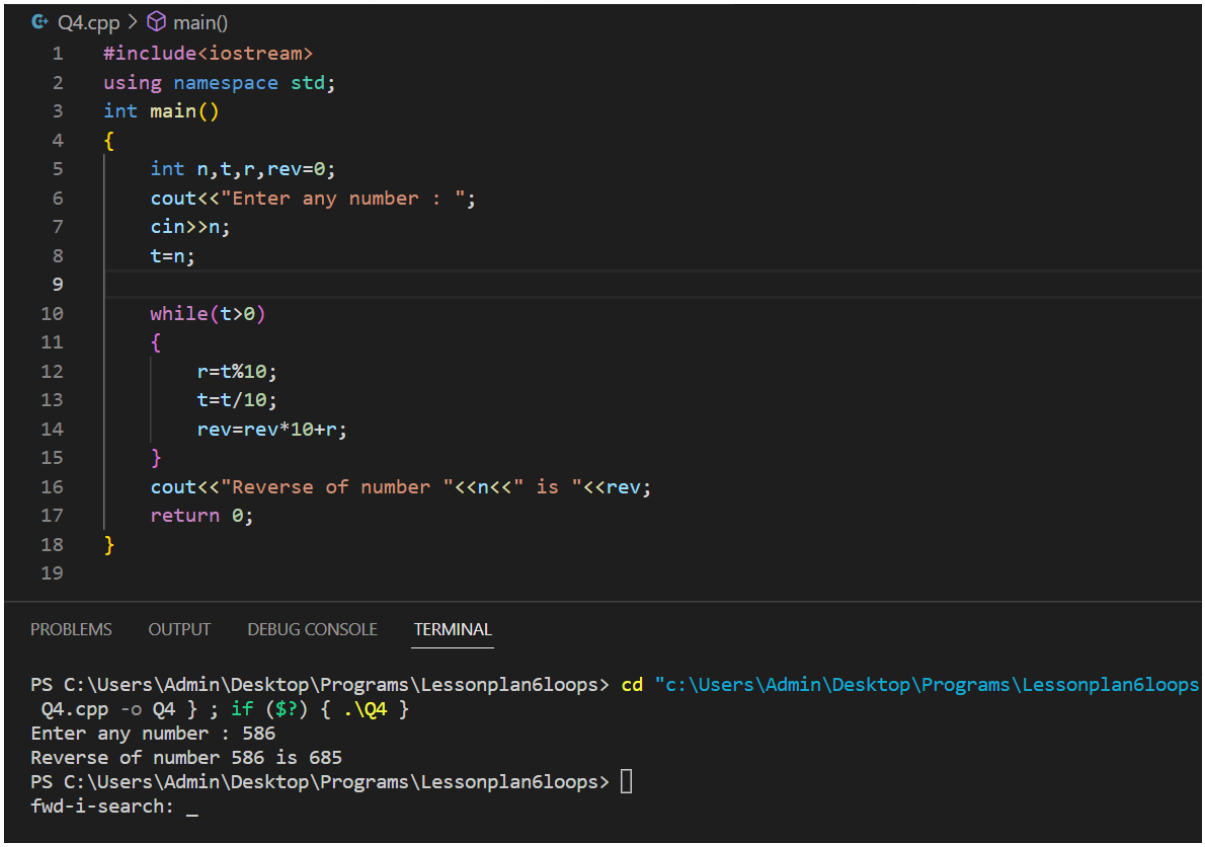



```
#include<iostream>
using namespace std;
int main()
{
    cout<<"Armstrong numbers in the range of 100 to 500 are  :"<<endl;
    for(int i=0;i<500;i++)
    {
        int sum = 0;
        int t = i;
        while(t!=0)
        {
            sum = sum+((t%10)*(t%10)*(t%10));
            t = t/10;
        }
        if(sum == i)
        {
            cout << i <<"\n";
        }
    }
    return 0;
}
```

Q3- Write a program to find the sum of n natural number.


```
include <iostream>
using namespace std;

int main() {
    int num, sum;
    sum = 0;

    cout << "Enter a positive integer: ";
    cin >> num;

    for (int i = 1; i <= num; ++i) {
        sum += i;
    }
    cout << "Sum = " << sum << endl;

    return 0;
}
```

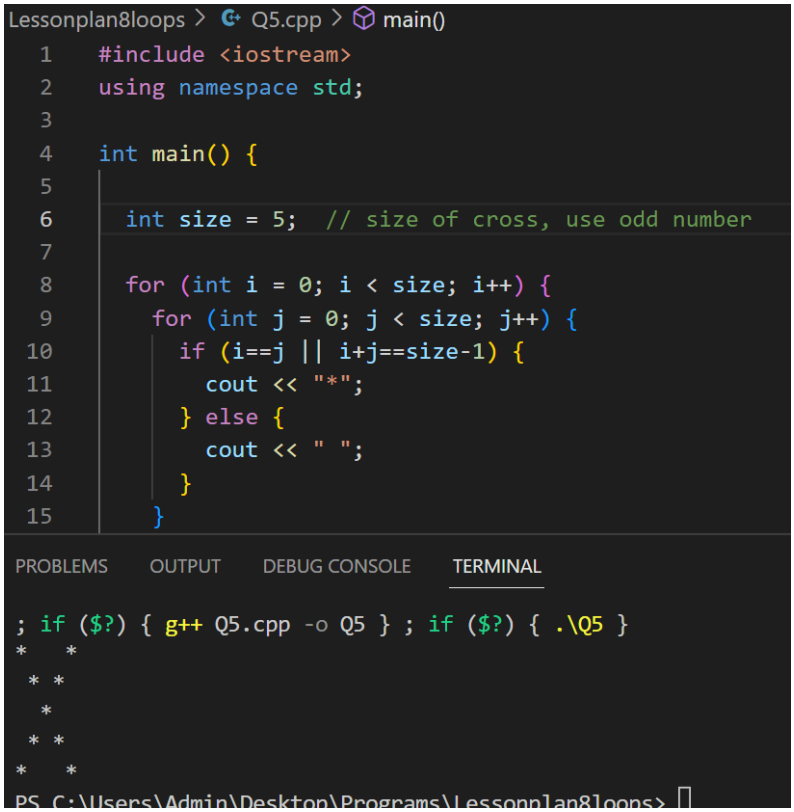
Q4 - Write a program to reverse a given integer number.




```
#include<iostream>
using namespace std;
int main()
{
      int n,t,r,rev=0;
      cout<<"Enter any number : ";
      cin>>n;
      t=n;

      while(t>0)
      {
            r=t%10;
            t=t/10;
            rev=rev*10+r;
      }
    cout<<"Reverse of number "<<n<<" is "<<rev;
    return 0;
}
```

Q5 - Write a program to print the cross pattern given below (in the shape of X):

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




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

int main() {

  int size = 5; // size of cross,use odd number

  for (int i = 0; i < size; i++) {
    for (int j = 0; j < size; j++) {
      if (i==j || i+j==size-1) {
        cout << "*";
      } else {
        cout << " ";
      }
    }
    cout << "\n";
  }
  return 0;
}
```

Q6- Write a program to print alphabet diamond pattern:

```
    A
   ABC
  ABCDE
 ABCDEFG
ABCDEFGHI
 ABCDEFG
  ABCDE
   ABC
    A
```

Lessonplan8loops > Q6.cpp > main()

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

int main() {
  int size = 5;
  int alpha = 65;
  int num = 0;
    // upside pyramid
  for (int i = 1; i <= size; i++) {
    // printing spaces
    for (int j = size; j > i; j--) {
      cout << " ";
```

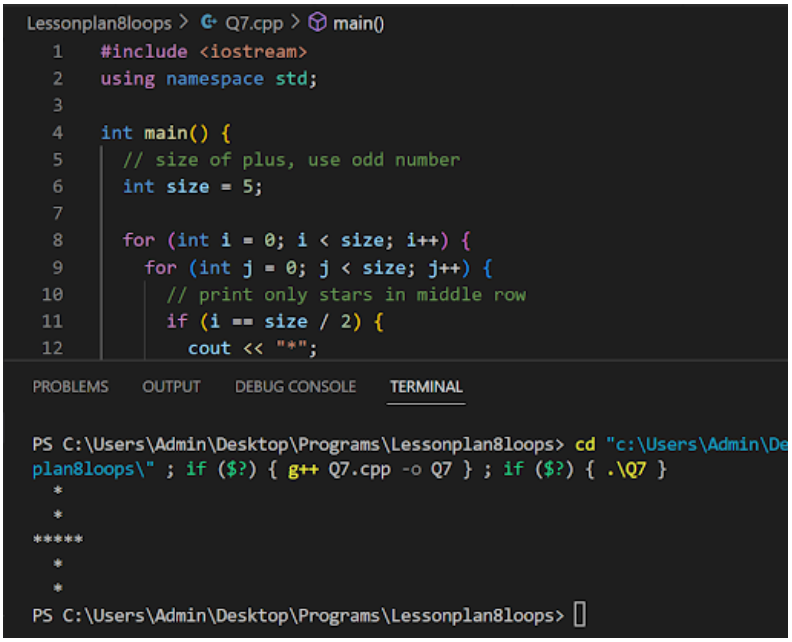
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
    A
   ABC
  ABCDE
 ABCDEFG
ABCDEFGHI
 ABCDEFG
  ABCDE
   ABC
    A
PS C:\Users\Admin\Desktop\Programs\Lessonplan8loops>
```

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

int main() {
  int size = 5;
  int alpha = 65;
  int num = 0;
      // upside pyramid
  for (int i = 1; i <= size; i++) {
     // printing spaces
    for (int j = size; j > i; j--) {
      cout << " ";
    }
    // printing alphabets
    for (int k = 0; k < i * 2 - 1; k++) {
      cout << ((char)(alpha+num++));
    }
    // set the number to 0
    num = 0;
    cout << "\n";
  }
    // downside pyramid
  for (int i = 1; i <= size - 1; i++) {
    // printing spaces
    for (int j = 0; j < i; j++) {
      cout << " ";
    }
    // printing alphabets
    for (int k = (size - i) * 2 - 1; k > 0; k--) {
      cout << ((char)(alpha+num++));
    }
    // set num to 0
    num = 0;
    cout << "\n";
  }
  return 0;
}
```

Q7- Write a program to print + pattern given below :

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




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

int main() {
  // size of plus, use odd number
  int size = 5;

  for (int i = 0; i < size; i++) {
    for (int j = 0; j < size; j++) {
      // print only stars in middle row
      if (i == size / 2) {
        cout << "*";
      }
      // other than middle row, print star only at index size/2
      else {
        if (j == size / 2) {
          cout << "*";
        } else {
          cout << " ";
        }
      }
    }
    cout << "\n";
  }
  return 0;
}
```

Q8 - Write a C++ program to print a triangle of prime numbers upto given number of lines of the triangle.

Lessonplan8loops > Q8.cpp > main()

```cpp
#include<iostream>
#include<conio.h>
using namespace std;
int main()
{
int x1;
int x2;
int x3;
int Number=3;
int Banner=0;
cout<<"Please enter the no of lines ";
cin>> x1;
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS C:\Users\Admin\Desktop\Programs\Lessonplan8loops> cd "c:\Users\Admi
plan8loops\" ; if ($?) { g++ Q8.cpp -o Q8 } ; if ($?) { .\Q8 }
Please enter the no of lines 6
      2
     3 5
    7 11 13
   17 19 23 29
  31 37 41 43 47
 53 59 61 67 71 73
```

```
#include<iostream>
#include<conio.h>
using namespace std;
int main()
{
int x1;
int x2;
int x3;
int Number=3;
int Banner=0;
cout<<"Please enter the no of lines ";
cin>> x1;
int d= x1;
for(x2=1;x2<= x1; x2++)
{
for(int e=1;e<=d;e++)
{
cout<<" ";
}
if(x2==1)
{
cout<<"2\n";
}
else
{
for(x3=0; x3!= x2;)
{
Banner=0;
for ( int k=2;k<Number;k++)
{
if((Number%k)==0)
Banner=1;
}
if(Banner==0)
{ x3++;
cout<<Number<<" ";
}
Number++;
}
cout<<"\n";
}
d--;
}
getch();
return 0;
}
```

Q9- Write a C++ program to check whether a Number can be expressed as a Sum of Two Prime Numbers.

Lessonplan8loops > Q9.cpp > main()

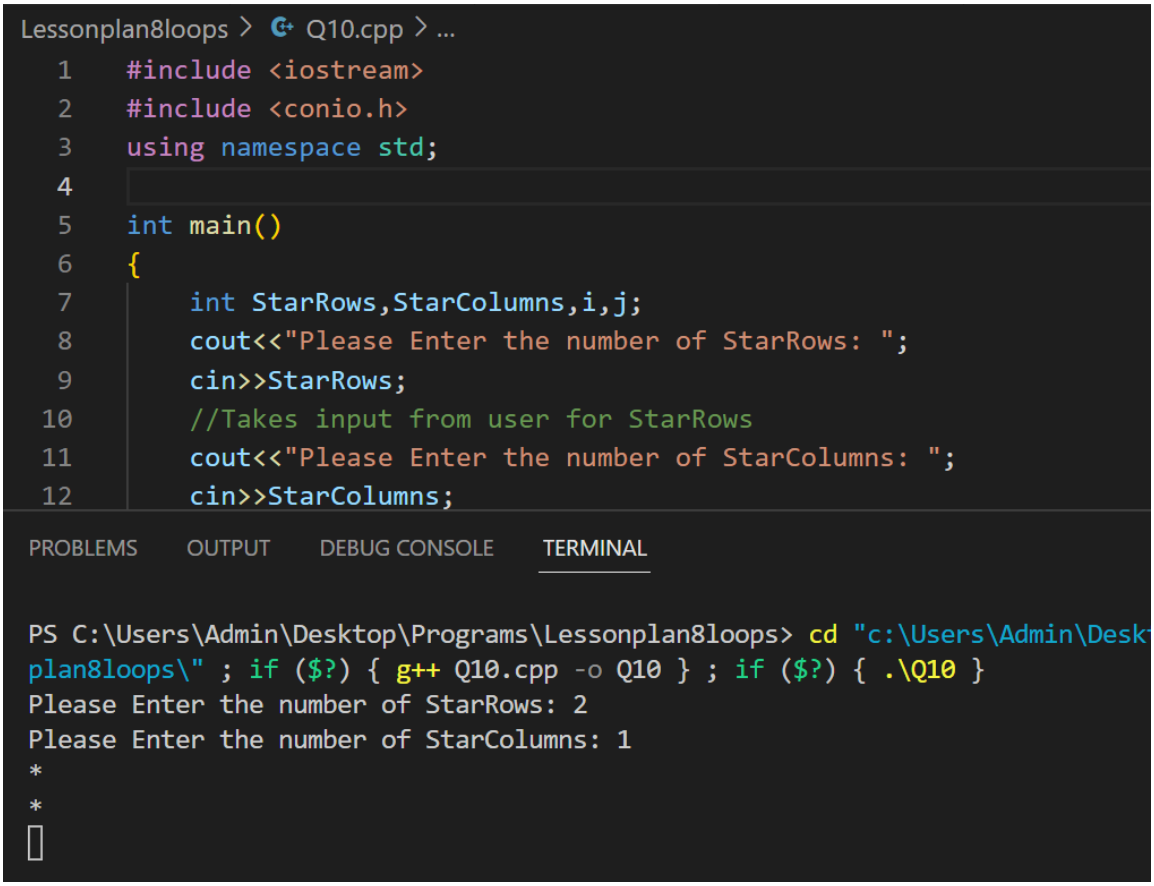
```cpp
#include<iostream>
using namespace std;
int main()
{
    int num, i, j;
    int f1=1 , f2=1, f3=0;
    cout<<"Enter a +ve Integar : ";
    cin>>num;
    i=3 ;
    do
    {
        f1=1;
        f2=1;
        j=2;
        do
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
PS C:\Users\Admin\Desktop\Programs\Lessonplan8loops> cd "c:\Users\Admin\Desktop
plan8loops\" ; if ($?) { g++ Q9.cpp -o Q9 } ; if ($?) { .\Q9 }
Enter a +ve Integar : 14
14 = 3 + 11
14 = 7 + 7
PS C:\Users\Admin\Desktop\Programs\Lessonplan8loops> \
```

```
#include<iostream>
using namespace std;
int main()
{
    int num, i, j;
    int f1=1 , f2=1, f3=0;
    cout<<"Enter a +ve Integar : ";
    cin>>num;
    i=3 ;
    do
    {
        f1=1;
        f2=1;
        j=2;
        do
        {
            if(i%j==0)
            {
                f1=0;
                j=i;
            }
            j=2;
            do
            {
                if((num-i)%j==0)
                {
                    f2=0;
                    j=num-i;
                }
                j++;
            }
            while(j<num-i );
            if(f1==1 && f2==1)
            {
                cout<<num <<" = "<<i<<" + "<<num-i<<endl;
                f3=1;
            }
            j++;
        }
        while(j<i);
        i++;
    }
    while(i<=num/2);
    if(f3==0)
    {
        cout<<num<<" can not be expressed as sum of two prime numbers.";
    }
}
```

Q10- Write a C++ program to print a rectangle out of *




```
#include <iostream>
#include <conio.h>
using namespace std;

int main()
{
    int StarRows,StarColumns,i,j;
    cout<<"Please Enter the number of StarRows: ";
    cin>>StarRows;
    //Takes input from user for StarRows
    cout<<"Please Enter the number of StarColumns: ";
    cin>>StarColumns;
     //Takes input from user for StarColumns
     for(i=1; i<=StarRows; i++){//outer for loop
    for (j=1; j<=StarColumns; j++){//inner for loop
        cout<<"*";//print star
    }
    cout<<"\n";//move to next line
}
getch();
    return 0;
}
```