LOOP PROGRAMS SOLUTIONS

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BSCS IST SELF (SS1)

Question 1

Write a program to print number from 1 to 10.

```cpp
#include<iostream>

using namespace std;

int main()

{

int n;

for (n=1; n<=10; n++)

cout<<n<<endl;

return 0;

}
```

Question 2

 Write a program to print number from 10 to 1.


```cpp
#include<iostream>

using namespace std;

int main()

{

int n;

for (n=10 ;n>=1; n-- )

{

cout<<n<<endl;
```

}

return 0;

}

Question 3

Write a program that inputs 5 numbers from the user and the display their sum and average.

```cpp
#include<iostream>

using namespace std;

int main()

{

int n,sum=0,avg;

cout<<"enter a number"<<endl;

cin>>n;

while (n!=0)

{

sum=sum+n%10;

n=n/10;

avg=sum/5;

}

cout<<"sum of digits is"<<sum<<endl;

cout<<"average of digits is"<<avg <<endl;


return 0;

}
```

Question 4

Write a program to calculate the sum of first 10 natural number.

```cpp
#include<iostream>

using namespace std;

int main()

{

int n=1,sum;

while (n<=10)

{

cout<<n<<endl;

sum=sum+n;

n=n+1;

}


cout<<"sum is"<<sum<<endl;

return 0;

}
```

Question 5

Write a program that display odd numbers from 1 to 100.

```cpp
#include<iostream>

using namespace std;

int main()

{

int n=1,odd;

for (n=1; n<=100; n=n+2)
```

```
{

odd=n;



cout<<""<<odd<<endl;

}

return 0;

}
```

Question 6

Write a program that display Sum of odd numbers from 1 to 100.

```cpp
#include<iostream>

using namespace std;

int main()

{

int sum=0;

    for(int i=1;i<=100; i=i+2 )

    {

      sum=sum+i;

         cout<<sum<<endl;

      }

return 0;

}
```

Question 7

Write a program that display product of odd numbers from 1 to 100.

```cpp
#include<iostream>

using namespace std;

int main()

{

int product=1;

    for(int i=1;i<=100;i=i+2){

        product=product*i;

        cout<<"odd numbers="<<i<<"\tproduct="<<product<<endl;

        }

return 0;

}
```

Question 8

Write a program that inputs number and then display the table of enter no.

```cpp
#include<iostream>

using namespace std;

int main()

{

int n;

cout<<"enter a number"<<endl;

cin>>n;

    for(int i=1;i<=10; i++)

{

cout<<n<<"*"<<i<<"="<<n*i<<endl;
```

```cpp
}


return 0;

}
```

Question 9

Write a program that inputs number and length, then display the table.

```cpp
#include<iostream>

using namespace std;

int main()

{

int n,l;

cout<<"enter a number"<<endl;

cin>>n;

cout<<"enter length of table"<<endl;

cin>>l;

    for(int i=1;i<=l; i++)

{

cout<<n<<"*"<<i<<"="<<n*i<<endl;




}



return 0;
```

}

Question 10

Write a program to find the factorial value of any number entered through the keyboard.

```cpp
#include<iostream>

using namespace std;

int main()

{

int n,f=1,i;

cout<<"enter a number"<<endl;

cin>>n;

for (i=1; i<=n ; i++)

{

f=f*i;

}

cout<<"factorial of given number"<< " "<<n<<"is"<<f<<endl;

return 0;

}
```

QNO11:

Two numbers are entered through the keyboard. Write a program to find the value of one number raised to the power of another.

```cpp
#include<iostream>

using namespace std;

int main()

{

int no,power, product=1;

cout<<"enter a number "<<endl;

cin>>no;

cout<<"enter power"<<endl;

cin>>power;

for (int i=1; i<=power;i++)

{

product=product*no;

}

cout<<"product of number"<<"="<<product<<endl;

    return 0;

}
```

Question 12

Write a program that enter a number from the use. The program reveres the given integer number and display it on the screen.

Question 13 Write a program to reveres any given integer number.

```cpp
#include<iostream>
```

```cpp
using namespace std;

int main()
{
int no,reverse=0,remainder;

cout<<"enter a number "<<endl;//876

cin>>no;

while (no!=0)
{
remainder = no % 10;

no=no/10;

    reverse = reverse* 10 + remainder;


}
cout<<reverse <<endl;




    return 0;

}
```

Question 14 Write a program that enter a number from the use. The program find the sum of all digits of this number and display the sum on the screen.

```cpp
#include<iostream>

using namespace std;

int main()

{

int no,sum=0;

cout<<"enter a number "<<endl; //876

cin>>no;

while (no!=0)

{

sum=sum+no%10;

no=no/10;


}

cout<<"sum is"<<sum<<endl;



    return 0;

}
```

Question 15 Write a program that inputs numbers from your till user enters negative number. At the end program calculates the average, sum, maximum, and minimum, of all positive numbers.


```cpp
#include<iostream>

using namespace std;

int main()
```

```cpp
{
int num,z;
float avg, sum=0.0f,min,max;
cout<<"enter a positive number"<<endl;
cin>>num;
min=num;
max=num;
while (num>=0.0f)
{
sum=sum+num;
avg=sum/num;
if (num>max)
{
max=num;
}
if (num<min)
{
min=num;
}
z++;
cin>>num;

}
cout<<"total values"<<"="<<z<<endl;
cout<<"sum of numbers ="<<sum<<endl;
cout<<"avg of numbers ="<<avg<<endl;
```

cout<<"max number ="<<max<<endl;

cout<<"min number ="<<min<<endl;

    return 0;

}

Question 16 Write a program to sum of digits of given integer number.

```cpp
#include<iostream>

using namespace std;

int main()

{

int n,sum=0;

cout<<"enter a number"<<endl;

cin>>n;

while (n!=0)

{

sum=sum+n%10;

n=n/10;

}

cout<<"sum of digits ="<<sum<<endl;




return 0;

}
```

Question 17 Write a program that accept no from the user. It check the given number

is prime or not.

```cpp
#include<iostream>

using namespace std;

int main()

{

int no;

bool prime=false;

cout<<"enter a number"<<endl;

cin>>no;

for (int i=2; i<=no/2 ;i++)

{

if (no%i==0)

{

prime=false;

cout<<"given number is not a prime number"<<endl;

break;

}

else if (no%2!=0)

{

prime=true;

cout<<"given number is a prime number "<<endl;

break;

}

}
```

```
return 0;

}
```

Question 18 Write a program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered.

```
#include<iostream>

using namespace std;

int main()

{

int num,neg=0,pos=0,zero=0;

char choice;

for (int i=1; i>=0 ; i++)

{

cout<<"enter a number"<<endl;

cin>>num;

if (num>0)

{

pos++;

}

if (num<0)

{

neg++;

}

if(num=0)
```

```cpp
{

zero++;

}

cout<<"do you want to enter more numbers Y/N"<<endl;

cin>>choice;

if (choice=='N' || choice=='n')

{

break;

}

}

cout<<" positive numbers ="<<pos<<endl;

cout<<" negative numbers ="<<neg<<endl;

cout<<"zero numbers ="<<zero<<endl;


return 0;

}
```

Question 19

Write a program to enter the numbers till the user wants and at the end it should display the maximum and minimum number entered.

```cpp
#include<iostream>

using namespace std;

int main()

{

int no,max,min;

char choice;

cout<<"enter a number"<<endl;
```

```cpp
cin>>no;

max=no;

min=no;

while (no>=0)

{

if (no>max)

{

max=no;

}

if (no<min)

{

min=no;

}

cout<<"do you want to enter more numbers Y/N"<<endl;

cin>>choice;

if (choice == 'Y' || choice=='y')

{

cout<<"enter number"<<endl;

cin>>no;

}

if (choice == 'N' || choice=='n')

{

break;

}

}

cout<<"Max number="<<max<<endl;
```

```cpp
cout<<"Min number="<<min<<endl;

return 0;

}
```

Question 20+21

 Write a program to print out the enter number is Armstrong numbers or not. If sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number. For example 153 (111)+(555)+(3*3*3)

```cpp
#include<iostream>

using namespace std;

int main()

{

int num, n, r, sum;

cout<<"Enter a number:";

cin>>num;

n = num;

sum = 0;

while(n != 0)

{

r = n % 10;

  sum = sum +(r*r*r);

n/= 10;

}

if (sum == num)

{

cout<<num<<" is an Armstrong number";

}

if (sum!= num)
```

```cpp
{
cout<<num<<" is not a Armstrong number "<<endl;
}
return 0;
}
```

[10:33 pm, 04/02/2023] Selectively Available: //Qno17

```cpp
#include<iostream>
using namespace std;
int main()
{
int no;
bool prime=false;
cout<<"enter a number"<<endl;
cin>>no;
for (int i=2; i<=no/2 ;i++)
{
if (no%i==0)
{
prime=false;
cout<<"given number is not a prime number"<<endl;
break;
}
else if (no%2!=0)
{
prime=true;
cout<<"given number is a prime number "<<endl;
```

break;

}

}

return 0;

}

Question 22 Write a program to print Fibonacci series of n terms where n is input by user. 01123581324.....

```cpp
#include<iostream>

using namespace std;

int main()

{

int num=1,prenum=0,sum,n;

cout<<"enter number for Fibonacci series"<<endl;

cin>>n;

cout<<"Fibonacci series "<<endl;

cout<<"0,1 ,";

for (int i=0; i<n-2 ; i++)

{

sum=num+prenum;

prenum=num;

num=sum;

cout<<num<<","<<endl;
```

```
}

return 0;

}
```

Question 23 Write a program to calculate the sum of following series where n is input by user.

1 + 1/2 + 1/3 + 1/4 + 1/5 +............1/n

```cpp
#include<iostream>

 using namespace std;

 int main()

{

int n,i;

float sum=0.0f;

cout<<"enter number for Fibonacci series"<<endl;

cin>>n;

for (int i=1; i<=n ; i++)

{

sum=sum+(1.0f/i);

}

cout<<"sum is"<<sum<<endl;

return 0;

}
```

Question 24 Write a program to calculate the sum of following series where n is input by user.

1 - 1/2 + 1/3 - 1/4 + 1/5 - 1 / r where n is a positive integer and input by user.

```cpp
#include<iostream>
```

```cpp
using namespace std;

int main()
{
int n,i;

int sign= -1;

float sum=0.0f;

cout<<"enter number for Fibonacci series"<<endl;

cin>>n;

for (int i=1; i<=n ; i++)

{

sign=sign*-1;

sum=sum+(1.0f/i)*sign;

}

cout<<"sum is"<<sum<<endl;

return 0;

}
```

Question No 28:

Display the prime numbers form 1 to 500.

```cpp
#include<iostream>

using namespace std;

int main()

{
bool prime =true;

for (int i=1;i<=500; i++)

{
```

```cpp
prime=true;

for( int j=2; j<=i/2;j++)

{

if (i%j==0)

prime =false;

}

if (prime==true)

cout<<i<<" is a prime number"<<endl;

}

return 0;

}
```

Question 25

i)
```
**********
**********
**********
**********
```

ii)
```
*
**
***
****
*****
```

iii)
```
    *
   **
  ***
 ****
*****
```

iv)
```
1
12
123
1234
12345
```

v)
```
    1
   21
  321
 4321
54321
```

vi)
Assignment
```
1
2 4
3 6 9
4 8 12 16
5 10 15 20 25
```

vii)
Assignment
1	2	3	4	5
2	4	6	8	10
3	6	9	12	15
4	8	12	16	20
5	10	15	20	25

viii)
```
A
A B
A B C
A B C D
A B C D E
```

ix)
```
    *
   ***
  *****
 *******
*********
```

x)
Assignment
```
BBBBBBBBB
 BBBBBBB
  BBBBB
   BBB
    B
```

xi)
Assignment
```
    1
   222
  33333
 4444444
555555555
```

xii)
Assignment
```
    1
   212
  32123
 4321234
543212345
```

xiii)
Assignment
```
        5
      4 8
    3 6 9
  2 4 6 8
1 2 3 4 5
```

-

QNO25(i)

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

**********

**********

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

#include<iostream>

 using namespace std;

```cpp
int main()

{

for (int i=1; i<=3 ; i++)

{

for (int j=1;j<=10; j++)

{

cout<<"*";

}

cout<<endl;

}

return 0;

}
```

(ii)

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

```cpp
#include<iostream>

using namespace std;

int main()

{

for (int i=1; i<=5 ; i++)

{

for (int j=1;j<=i; j++)
```

```
{

cout<<"*";

}

cout<<endl;

}

return 0;

}
```

(iii)

```
*****

****

***

**

*
```

```
#include<iostream>

  using namespace std;

  int main()

{

for (int i=1; i<=5 ; i++)

{

for (int k=1; k<=5-i ; k++)

{

cout<<"   ";

}

for (int j=1;j<=i; j++)

{
```

```
cout<<"*";
}
cout<<endl;
}
return 0;
}
```

(iv)

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

```
#include<iostream>
  using namespace std;
  int main()
{
for (int i=1; i<=5 ; i++)
{
for (int j=1;j<=i; j++)
{
cout<<j;
}
cout<<endl;
}
return 0;
```

}

```
    1
   2 1
  3 2 1
 4 3 2 1
5 4 3 2 1
```

```cpp
#include<iostream>
using namespace std;
int main()
{
for (int i=1; i<=5; i++)
{
for(int j=1; j<=5-i; j++)
{
cout<<"  ";
}
for (int k=i;k>=1; k--)
{
cout<<k;
}
cout<<endl;
}
return 0;
}
```

1

2 4

3 6 9

4 8 12 16

5 10 15 20 25

```cpp
#include<iostream>
 using namespace std;
 int main()
{
for (int i=1; i<=5; i++)
{
for (int k=1;k<=i; k++)
{
cout<<"    "<<i*k;
}
cout<<endl;
}
return 0;
}
```

1 2 3 4 5

2 4 6 8 10

3 6 9 12 15

4 8 12 16 20

5 10 15 20 25

```cpp
#include <iostream>

using namespace std;

int main() {

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

        for(int j = 1; j <= 5; j++) {

            cout << i * j << " ";

        }
        cout << endl;

    }

    return 0;
}
```

(viii)

A

A B

A B C

A B C D

A B C D E

#include <iostream>

using namespace std;

```cpp
int main() {

    char i,j,k;

    for(i = 'A'; i <= 'E'; i++)

    {

        for(j = 'A'; j <= i; j++) {

            cout << j <<"   ";

        }

        cout << endl;

    }

    return 0;

}
```

(IX)

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

```cpp
#include <iostream>

using namespace std;

int main() {

    int i,j,k;

    for(i=1; i<=5;i++)
```

```cpp
    {
    for(k=1; k<=5-i;k++)
      { cout<<"   ";
      }
    for(j=1;j<i*2;j++)
      {
                cout << "*" <<"   ";
          }
          cout << endl;
      }


      return 0;
}
```

<center>**(X)**</center>

```
BBBBBBBBB
 BBBBBBB
  BBBBB
   BBB
    B
```

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


int main()
{
    int i,j,k;
   for(i=5; i>=1;i--)
```

```cpp
    {
    for(k=1; k<=5-i;k++)
      { cout<<"   ";
      }
    for(j=1;j<i*2;j++)
    {
                cout << "B" <<"   ";
           }
           cout << endl;
      }


      return 0;
}
```

(XI)

```
      1
     222
    33333
   4444444
  555555555
```

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


int main()
{
    int i,j,k;
    for(i=1; i<=5;i++)
```

```cpp
 {
  for(k=1; k<=5-i;k++)
   { cout<<"   ";
   }
  for(j=1;j<i*2;j++)
  {
              cout << i <<"   ";
         }
         cout << endl;
     }


     return 0;
}
```

(XII)

```
   1
   212
  32123
 4321234
543212345
```

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


int main()
{
    int i,j,k,l;
   for(i=1; i<=5;i++)
```

```
  {

  for(k=1; k<=5-i;k++)

   { cout<<"   ";

    }

  for(j=i;j>=1;j--)

   {

               cout << j<<"   ";

           }

  for (l=2; l<=i ; l++)

{

cout<<l;

}

        cout<<endl;

     }


     return 0;

}
```

(XIII)

```
        5

       4 8

      3 6 9

     2 4 6 8

1 2 3 4 5
```

```
#include <iostream>

using namespace std;
```

```cpp
int main()

{

int i,j,k,l;

for (i=5; i>=1; i--)

{

for (k=1; k<=i-1; k++)

cout<<"   ";

for (j=1;j<=6-i; j++)

{

l=j*i;

cout<<l;

}

cout<<endl;

}

    return 0;

}
```

Question 26 Find the sum of first five terms of the following series.

1/(1!) + 2/(2!) + 3/(3!) + 4/(4!) + 5/(5!)

```cpp
#include <iostream>

using namespace std;


int main()

{

int i,j;

double fact=1,sum=0;
```

```cpp
for (i=1; i<=5;i++)

{

fact=1;

for (j=1;j<=i; j++)

{

fact=fact*j;

}

sum=sum+(i/fact);

cout<<"sum of series is"<<sum<<endl;

}

    return 0;

}
```

Question 27 Find the sum of first five terms of the following series.

1/(1!) + 2/(2!) - 3/(3!) + 4/(4!) - 5/(5!)

```cpp
#include <iostream>

using namespace std;


int main()

{

int i,j,sign=-1;

double fact=1,sum=1;

for (i=2; i<=5;i++)

{

fact=1;

sign=sign*-1;
```

```cpp
for (j=2;j<=i; j++)

{

fact=fact*j;

}

sum=sum+(i/fact)*sign;

cout<<"sum of series is"<<sum<<endl;

}

    return 0;

}
```

THE END:)