Loop statement

// Loop = for, while, do...while

```
#include<stdio.h>
int main() {
  int i;
  for(i=1; i<=5; i++){
      printf("c programing\n");
    }
  return 0;
}
```

output

c programing
:
:
c programing

while Loop

[খালি বন্ধনী * থাকবে]

```
{
  int i=1;
  while( i<=10) {
      printf("%d\n", i);
       i++;
  }
```

output 1 : : 10

do while Loop

```
{
 int i =1;
   do {
   printf("%d\n", i);
    i++;
   } while (i<=10);
}
```

Even number ch. printf

```
{
 int i;
 for(i=2; i<=100; i=i+2){
      printf("%d\n",i);
  }
 }
```

break and continue statement

```
#include<stdio.h>
 int main(){
 int i;
 for(i=1; i<20; i++){
      if(i%3==0)
         continue;
      printf("%d\n", i);
        if (i==10)
           break;
  }
}
```

output
1
2
4
5
7
8
10

goto statement

```
{
  int i=1;
  ans:
    printf("%d\n", i);
    if (5>i)
      goto ans;
}
```

Multiplication table নামতা তৈরি

```
{ while (1) {
  int num, i;
  printf("Enter any number=");
  scanf("%d", &num);
  for(i=1; i<=10; i++){
    printf("%d x %d = %d\n", num, i, num*i);
  }
  }
}
```

অবশ্যই while চালানোর কারণে continue চলতে থাকবে।

factorial

```
{
  int n, i, fact = 1;
  printf("Enter any positive number= ");
  scanf("%d", &n);

  for(i=1; i<=n; i++){
  {
    fact = fact * i;
  }
  printf("%d\n", fact);
}
```

prime number:

```
{int num, count=0, i;
  printf("Enter any positive number = ");
  scanf("%d", &num);
  for(i=2; i<= num/2; i++){

    if(num%i==0) {
      count++;
      break; }
```

```
}
if (count==0){
   printf(" prime number\n"); }
else{
      printf(" not prime number\n"); }
}
# a. WAP to find L.C.M & G.C.D
{
int n1, n2, num1, num2, gcd, lcm;
printf(" Enter two number=");
Scanf (" %d %d", &num1, &num2);
n1 = num1;
n2 = num2;
While (n2!=0){
   rem = n1 % n2;
      n1 = n2;
      n2 = rem; }
gcd = n1;
Lcm = (num1 * num2) / gcd;
printf (" GCD = %d \n", gcd);
printf (" Lcm = %d \n", Lcm);
}
```

sum of digit

```
{ int num, temp, r, sum=0;
  printf("Enter any number: ");
  scanf("%d", &num);

  temp=num;

  while(temp!=0)
  {
     r= temp%10;
     sum = sum+r;
     temp = temp/10;
  }

  printf("sum of digits: %d\n", sum);
}
```

input — 123

output:
⇒ 1+2+3
= 6

Reverse

```
{
int num, temp, r, sum=0;
printf("Enter any number");
scanf("%d", &num);

temp = num;

While (temp!=0){
   r = temp%10;
   sum = sum*10+r;
   temp = temp/10;
}
  printf("Reverse of number: %d\n", sum);
}
```

input → 789 || 8109
output → 987 || 9018

palindom number → যদি Reverse করলে original সিরিয়াল মিলে যায় তাহলে সেটা palindom number.

num = 121
Reverse = 12 → palindrom

num = 1234
Reverse = 4321 → not palindrom

```
{
  Reverse প্রোগ্রাম
}
if (num == sum)
  { printf("palindom"); }
```

MATADOR PAGE NO.: DATE: / /

Armstrong number check

Armstrong মানে হলো নাম্বারের individually কিউব করে যোগ করলে যদি ওরিজিনাল নাম্বার পাওয়া যায় তাকে Armstrong বলে

$153 = 1^3 + 5^3 + 3^3 = 1 + 125 + 27 = 153$

```
{
  int sum=0, r, num, temp;

  temp= num;
  while (temp!=0){
        r= temp%10;
        sum= sum+ r*r*r;
        temp= temp/10;
  }
  if ( num== sum){
     printf ("Armstrong number");}
  else{
     printf ("not Armstrong number");}
```

counting digit

```
{
int num, count=0;
printf("Enter any integer: ");
scanf("%d", &num);
while (num!=0){
        num = num/10;
        ++count;}
printf("Total number of digits: %d\n", count);
}
```

input = 12345
output = 5;

strong number → যদি number এর factorial এর যোগফল আবার ঐ number এর সমান হয় তবে তাকে strong num বলে।

```
{ int num, sum=0, rem, temp, i, fact=1;
  temp=num;
. while (temp!=0){
    rem= temp%10;
    fact=1;
    sum=sum+
    for (i=1; i<=rem; i++){ fact= fact*i;}
    sum= sum+fact;
    temp= temp/10;}
if (num==sum) {printf("strong number")} else printf("not");
```

series

MATADOR PAGE NO.: DATE: / /

*** series ~~1st~~ start ***

// 1+2+3+ ..... +n → সমাধান দিবে

#sum of series

```
{int n, sum=0, i;
 printf("Enter the last number of the series = ");
 scanf("%d", &n);
 for(i=1; i<=n; i++){
     sum=sum+i;
 }
 printf("1+2+3+--+%d = %d\n", n, sum);
}
```

#series 2

// 1*2 + 2*3 + 3*4 + ... + n1*n2

```
{int num1, num2, sum=0, a=1, b=2;
 printf("Enter num1 and num2 digit=");
 scanf("%d %d", &num1, &num2);
 while(a<=num1 && b<=num2){
     sum=sum+a*b;
     a=a+1;
     b=b+1;
 }
 printf("1*2+2*3+....+num1*num2
 printf("1*2+2*3+...+%d*%d = %d", num1, num2, sum);}
```

1 to কত পর্যন্ত print করবে

MATADOR PAGE NO.: DATE: / /

1 থেকে n পর্যন্ত প্রোগ্রাম

```
{
 int n, i;
 printf ("Enter n = ");
 scanf ("%d", &n);
 for (i = 1; i<=n; i = i+1) {
    printf ("%d", i); } }
```

sum of series even or odd

সব series এর প্রথমটার মতো

শুধু condition change হবে

for (i=2 ; i<=n ; i = i+2) → (2+4+···+n) → even

for (i=1 ; i<=n ; i = i+2) → (1+3+5+···+n) → odd

for (i = 1 ; i<=n ; i = i+3) → (1+4+7+···n) → প্রথমটি 3

for (i = 7 ; i<=n ; i = i+4) → (7+11+15+···n) → প্রথমটি 4

MATADOR PAGE NO.: DATE:

square series ka sum (after)

```
// 1^2+2^2+3^2+ ... n^2
{
int i, n, sum=0;
printf ("Enter n=");
scanf ("%d", &n);
for (i=1; i<=n; i++) {
  sum = sum + i*i;
}
printf ("%d\n", sum);
}
```

series of divide

```
// 1/1 + 1/2 + 1/3 + ... 1/n
{
double sum=0, n, i;
printf ("Enter n = ");
scanf ("%lf", &n);
for (i=1; i<=n; i++) {
  sum = sum + (1/i);
}
printf ("=%.2lf\n", sum);
}
```

n সংখ্যক সংখ্যার গুণফল

// 1×2×3×...×n

```
{ int i,n, result=1;
  printf("Enter n=");
  scanf("%d",&n);
  for(i=1; i<=n; i++){
      result= result*i;}
  printf("Result =%d\n", result);
}
```

1×3×3+...×n

উপরের মত নেয়া

```
for(i=1; i<=n; i=i+2){
    result=result*i*i;}
```

2×4×6×...×n

উপরের মত নেয়া

```
for(i=2; i<=n; i=i+2){
    result=result*i*i;}
```

$2^3 \times 4^3 \times 6^3 \times ... \times n^3$

```
for(i=2; i<=n; i=i+2){
    result=result*i*i*i;}
```

MATADOR PAGE NO.: DATE:

series

// sum = 1-2+3-4+5-6+.....
// sum = (1+3+5+...) - (2+4+6+...)

```
{ int n, i, even=0, odd=0;
  printf("Enter the last term=");
  scanf("%d", &n);
  for(i=1; i<=n; i++){
    if(i%2==0){
      printf even=even+i;}
    else{
      odd = odd+i; }}
  printf("sum=%d\n", odd-even); }
```

Fibonacci → আগে 0, 1 দিয়ে শুরু হয়; আগের দুটো সংখ্যা যোগ করলে পরের সংখ্যা হয়

0 1 1 2 3 5 8 ...

```
{ int first=0, second=1, count=0, fibo, n;
  while(count<=n){
    if(count<=1){ fibo=count; }
    else{ fibo = first+second;
          first = second;
          second = fibo; }
    printf("%d ", fibo); count++;
  }}
```