ASSIGNMENT NO:-3

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ROLL NO:- **2K20/B17/33**

P1 THEORY

A **prime** number (or a prime) is a **natural** number greater than 1 that is not a **product** of **two smaller** natural numbers , a number that is **divisible** by **1** and **itself** is classified as a **prime number**

There are **25 prime** numbers from **1** to **100**:

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97.

P2 THEORY

The **factorial** of a **positive** integer **n**, denoted by **n!** , is the **product** of all **positive integers less** than or equal to **n**

n	n!
0	1
1	1
2	2
3	6
4	24
5	120
6	720
7	5040

C programming has three types of loops:

- **for loop**
- **while loop**
- **do...while loop**

I HAVE USED "FOR LOOP" FOR P1 AND P2 PROGRAMS

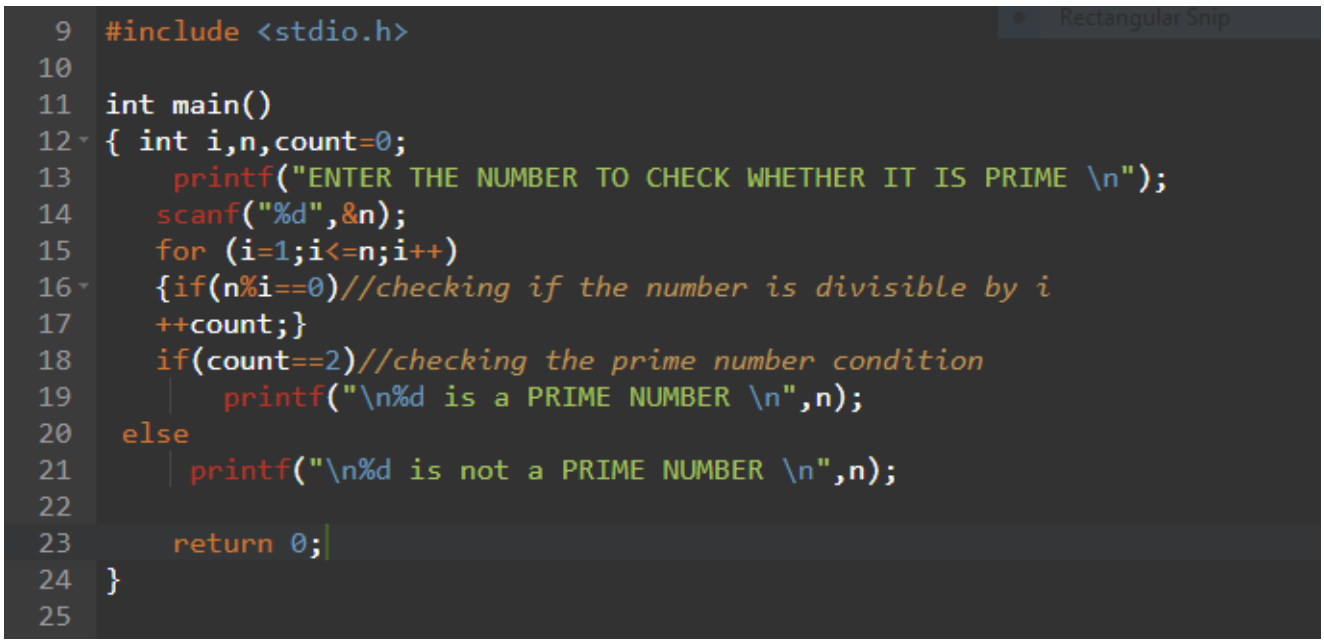
for Loop

The syntax of the **for loop** is:

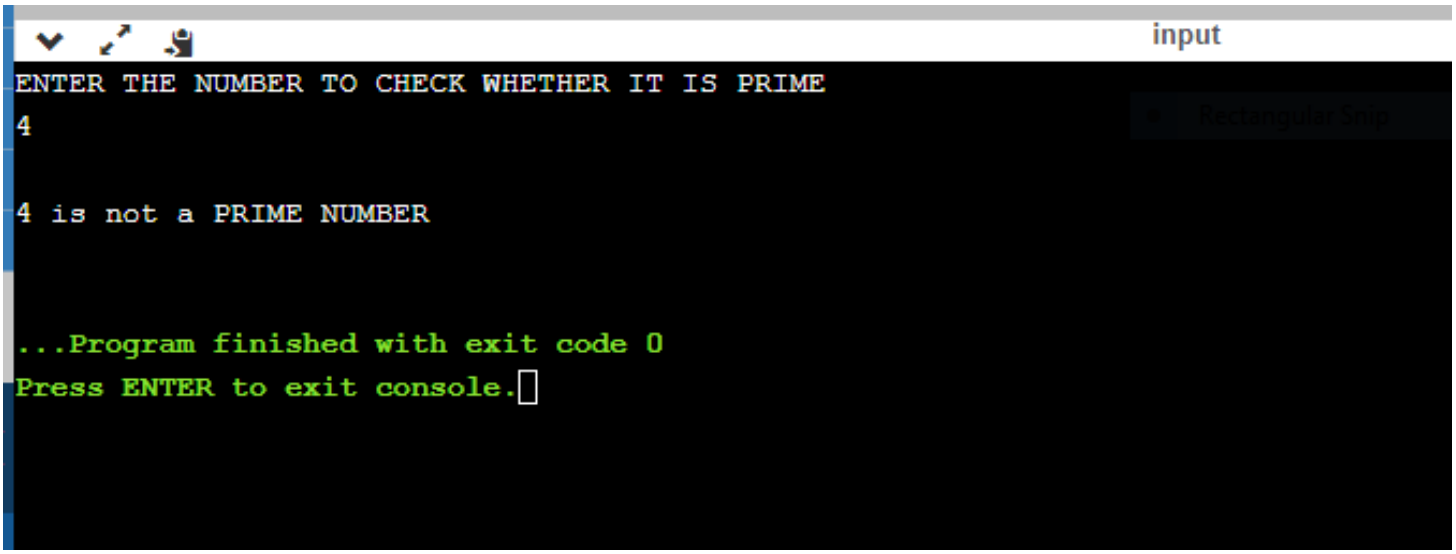
```
for (initializationStatement; testExpression; updateStatement)
{
    // statements inside the body of loop
}
```

P1

```
#include <stdio.h>


int main()
{ int i,n,count=0;
    printf("ENTER THE NUMBER TO CHECK WHETHER IT IS PRIME \n");
   scanf("%d",&n);
   for (i=1;i<=n;i++)
   {if(n%i==0)//checking if the number is divisible by i
   ++count;}
   if(count==2)//checking the prime number condition
       printf("\n%d is a PRIME NUMBER \n",n);
 else
     printf("\n%d is not a PRIME NUMBER \n",n);
    return 0;
}
```



```
ENTER THE NUMBER TO CHECK WHETHER IT IS PRIME
7

7 is a PRIME NUMBER


...Program finished with exit code 0
Press ENTER to exit console.
```



P2

```
#include <stdio.h>


int main()
{int i,n;
long f=1;
   printf("ENTER THE NUMBER TO CALCULATE ITS FACTORIAL VALUE \n");
  scanf("%d",&n);
  if(n>=0)
  {
     for (i=1;i<=n;i++)//running a loop from i=1 to i=n so that we can calculate the factorial
   f=f*i;
   printf("FACTORIAL VALUE FOR NUMBER %d!=%ld \n",n,f);
}
else
   printf("%d NOT A VALID POSITIVE NUMBER \n",n);


   return 0;
}
```

```c
#include <stdio.h>

int main()
{int i,n;
long f=1;
    printf("ENTER THE NUMBER TO CALCULATE ITS FACTORIAL VALUE \n");
   scanf("%d",&n);
   if(n>=0)
   {
       for (i=1;i<=n;i++)//running a loop from i=1 to i=n so that we can calculate the factorial
    f=f*i;
    printf("FACTORIAL VALUE FOR NUMBER %d!=%ld \n",n,f);
}
else
    printf("%d NOT A VALID POSITIVE NUMBER \n",n);

    return 0;
}
```

```
input
ENTER THE NUMBER TO CALCULATE ITS FACTORIAL VALUE
5
FACTORIAL VALUE FOR NUMBER 5!=120


...Program finished with exit code 0
Press ENTER to exit console.
```

```
input
ENTER THE NUMBER TO CALCULATE ITS FACTORIAL VALUE
-7
-7 NOT A VALID POSITIVE NUMBER


...Program finished with exit code 0
Press ENTER to exit console.
```